Care about care for healthcare professionals providing palliative care

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Prevalence of burnout in healthcare professionals providing palliative care and the effect of interventions to reduce symptoms: A systematic literature review

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ABSTRACT

Background

In recent years there has been increasing attention for the prevalence and prevention of burnout among healthcare professionals. There is unclarity about prevalence of burnout in healthcare professionals providing palliative care and little is known about effective interventions in this area.

Aim

To investigate the prevalence of (symptoms of) burnout in healthcare professionals providing palliative care and what interventions may reduce symptoms of burnout in this population.

Design

A systematic literature review based on criteria of the PRISMA statement was performed on prevalence of burnout in healthcare professionals providing palliative care and interventions aimed at preventing burnout.

Data sources

PubMed, PsycInfo and CINAHL were searched for studies published from 2008-2020. Quality of the studies was assessed using the method of Hawkers for systematically reviewing research.

Results

In total 59 studies were included. Burnout among healthcare professionals providing palliative care ranged from 3%-66%. No major differences in prevalence were found between nurses and physicians. Healthcare professionals providing palliative care in general settings experience more symptoms of burnout than those in specialised palliative care settings. Ten studies reported on the effects of interventions aimed at preventing burnout. Reduction of one or more symptoms of burnout after the intervention was reported in six studies which were aimed at learning meditation, improving communication skills, peer-coaching and art-therapy based supervision.

Conclusions

The range of burnout among healthcare professionals providing palliative care varies widely. Interventions based on meditation, communication training, peer-coaching and art-therapy based supervision have positive effects but long-term outcomes are not known yet.

INTRODUCTION

Being a healthcare professional is demanding and often leads to work-related stress.[1] Persistent work-related stress can ultimately result into burnout.[2,3] Burnout consists of three core aspects: emotional exhaustion, depersonalisation and feelings of reduced personal accomplishment. It is seen as a complex process that develops gradually ranging from absence of symptoms into mild and eventually severe symptoms of burnout.[4,5]

It is known that burnout is common in healthcare professionals and often is higher than burnout in the general population. Shanafelt and colleagues showed a significant increase in symptoms of burnout among physicians in the U.S. from 45.5% in 2011 to 54.4% in 2014, whilst burnout among the general population remained similar over the years (28.4% vs. 28.6%).[6] A meta-analysis of Zhang et al. on the prevalence of burnout among nurses working in various departments, such as neurology, psychiatry, gynaecology and oncology, found a burnout rate of 58.6%.[7]

In recent years there has been increasing attention for (symptoms of) burnout among healthcare professionals for several reasons. Symptoms of burnout not only affect personal well-being of staff, but are also associated with poor quality of patient care and increases the risk of making mistakes.[8-11] Furthermore, healthcare organisations are impacted by burnout due to increased absenteeism and increased intention to quit employment, resulting in shortage of staff and extra workload for those remaining. On a macro level, there is an increasing problem of shortages of healthcare professionals and due to the ageing population the demand on healthcare is likely to increase.[12,13] Drop out of healthcare professionals cannot be afforded in this time of staff shortage. As preventing burnout in healthcare professionals is essential to maintain good quality of care various interventions to prevent (symptoms) of burnout in healthcare professionals have been developed, such as meditation and mindfulness, communications skills training and selfcare efforts.[14] These interventions have shown to have a positive effect on symptoms of burnout.[15]

Little is known about the impact of providing palliative care on the development of symptoms of burnout in healthcare professionals. There are various ideas regarding the relation between providing palliative care and the development of burnout. On the one hand, some aspects of providing palliative care, such as repeated exposure to death and dying, complicated symptom management, difficulties in communication with patient and families, and inadequate coping with one's own emotional response

to the loss of patients are seen as risk factors for the development of burnout.[16-18,] On the other hand, it is thought that other aspects of palliative care such as being able to contribute to the quality of life and a good death, profound personal rewards, and personal growth can have a protective effect on the healthcare professional regarding the development of burnout.[19, 20] The study of Dougherty et al. showed that staff who deliberately decided to work in palliative care had significantly lower perceived stress compared to colleagues for whom this was not a conscious choice.[21] Possibly, interventions especially designed for healthcare professionals who provide palliative care are needed to address the specific challenges of providing care to incurable and terminally ill patients.

In recent years studies have been conducted into the prevalence of burnout among healthcare professionals working in different specialised palliative care settings, mainly in Europe, the United States and Asia.[22-24] These literature reviews focused on the prevalence of burnout in specialised palliative care healthcare professionals only, they did not investigate possible effective interventions and included studies until 2015. Therefore an updated synthesis of the current literature on 1) the prevalence of burnout in healthcare professionals providing palliative care and on 2) interventions to reduce early symptoms of burnout is necessary. Especially in the light of the growing shortage of healthcare professionals it is of importance to have a clear understanding of the risk of (symptoms of) burnout in this group and into preventive interventions. The aim of this systematic literature review is to provide an up-to-date overview of burnout rates among healthcare professionals providing palliative care and of interventions on reducing their burnout symptoms.

METHODS

We conducted a narrative systematic literature review on quantitative research and reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.[25] The objective of this review was to answer to following questions:

1) What are the burnout rates among healthcare professionals providing palliative care
2) What are the effects of interventions on reducing burnout among healthcare professionals providing palliative care.

Search strategy

An electronic search of the databases PubMed, PsycInfo, and CINAHL was performed to identify studies about the prevalence of burnout among healthcare professionals providing palliative care and interventions to reduce the symptoms of burnout that were published in English or Dutch between January 2008 and April 2020. A search strategy was developed for finding relevant studies in electronic literature databases. The computerised search was conducted to find studies on burnout in healthcare professionals providing palliative care including the following key constructs: 'burnout', 'palliative care', and 'healthcare professional'. Palliative care was operationalised using a standardised search procedure for palliative care developed by Rietjens et al.[26] The complete search string of all keywords and MeSH terms can be found in supplement 1. The search string was initially developed for PubMed and later adapted for the other databases. Additionally, the reference lists of selected articles were screened to retrieve additional relevant publications which had not been found in the computerised search. The focus of this review was on studies among healthcare professionals providing palliative care and not only specialists in palliative care in order to also include those healthcare professionals who take care of patients with life-threatening illness but may not necessarily have received a training in this area.

Selection process

A stepwise procedure was used to select all relevant studies. Titles and abstracts were screened by one reviewer (AD) using the following predetermined criteria: (i) target population of the study includes healthcare professionals working with adult human patients, (ii) area of study is palliative care, (iii) subject of the study includes burnout, (iv) quantitative research, (v) full-text article should be written in English or Dutch. Duplicates and studies published before 2008 were excluded. The title and abstracts of the remaining potential relevant studies were assessed by two reviewers (AD and NR) to include quantitative studies and exclude systematic literature reviews. Studies had to report on the prevalence of burnout in healthcare professionals providing palliative care and/or the effects of burnout interventions for healthcare professionals in palliative care. Healthcare professionals providing palliative care include those working in fields of non-acute care in which it is common that patients die due to life threatening illness and frailty. Articles referring to terms such as palliative care, end of life care and terminally/critically ill patients in their research were included. Titles were discussed until consensus was reached. Reasons for exclusion were listed for all studies that did not pass the selection process (flowchart figure 1). All remaining (potential relevant) studies were full text screened (AD) for which again the aforementioned criteria were used.

Data extraction

Appropriate information for data abstraction was determined based on the research question using a standard extraction form. For each included study the following details were abstracted: country of research, participant characteristics, setting, study design, used measurements including cut-off scores, relevant results (prevalence rates of burnout, effects of interventions on burnout) and conclusions. Type of intervention and effects were also registered for intervention studies. Results of the studies were reported in a descriptive manner. All the relevant outcome measures were described in tables.

Quality assessment

Methodological quality of the included studies was established using the quality assessment tool developed by Hawker et al.[27] This tool consists of nine questions and is rated on a four-point scale from 4 (good) to 1 (very poor), total range 9-36. Scores were categorised into three groups: very poor to poor (9-17), poor to fair (18-26) and fair to good (27 to 36). The nine topics are as follows: abstract and title, introduction and aims, method and data, sampling, data analysis, ethics and bias, results, transferability or generalizability, implications and usefulness.

To guarantee uniformity in the quality assessment, the methodological quality of six studies was assessed by both reviewers (AD and NR). Results of the reviewers were compared and discussed. This procedure was repeated three times. After 12 studies, the interobserver reliability was good, both assessors scored the quality comparable. After that, one researcher assessed the quality of the remaining studies. In case of doubt the quality of the paper was discussed with the second reviewer until consensus was reached.

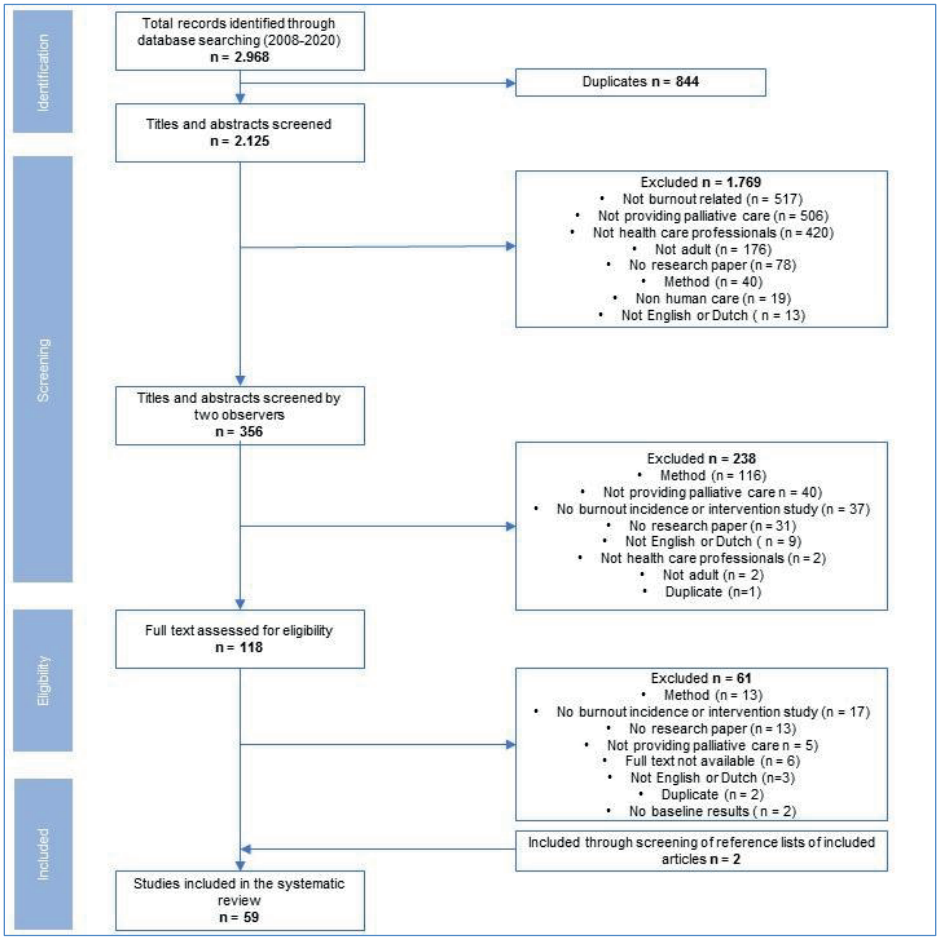
RESULTS

Study selection

In total, 2.968 studies were identified after the electronic search (see figure 1). After removing the duplicates, 2.125 articles remained for screening. Based on the title 1.769 articles were excluded as not being relevant for this research. The abstracts of the remaining 356 studies were assessed on relevance by two reviewers (NR and AD) and 238 were excluded based on the abstract. In total, 118 studies were full text articles assessed for eligibility and 57 studies were included. Main reasons for excluding the 61 studies were: no information present on burnout prevalence or effect of interventions (n=18), qualitative studies (n=13), no research paper (n=13) and not addressing

professionals who provide palliative care (n=5). A manual search of the reference lists of all 57 included studies was conducted, resulting in two extra studies. In total, 59 studies were included in this systematic literature review.

Figure 1 PRISMA flowchart



Study characteristics

In total, 13.845 participants were included and the number of participants ranged from 17 to 1.156 participants. The included studies were conducted in North America (United States of America (n=19), Canada (n=3)), Europe (Portugal (n=6), Spain (n=5), Italy (n=1), Czech Republic, France, Germany, United Kingdom, Poland, Romania (all n=1)), Asia (Japan (n=3), China (n=2), Hong Kong, India, Singapore (all n=1)), Oceania (Australia (n=3), New Zealand (n=2)), Central and South America (Brazil (n=2), Mexico (n=1)), South Africa (n=2) and Israel (n=1). Quality of the papers was assessed as 'fair'

to 'good' in 29 papers.[21, 28-55] Thirty studies were rated 'poor' to 'fair'.[56-85] Ten studies were intervention studies, the quality of seven of these was assessed between 'poor' to 'fair'. Studies were conducted mostly in hospitals, hospices and in palliative care teams. Most participants were physicians and nurses, but also research containing other healthcare professionals such as social workers and chaplains and others such as volunteers were included.

Instruments to detect symptoms of burnout

All 59 included studies reported on the prevalence of burnout in healthcare professionals providing palliative care, mainly measured by two validated instruments. Thirty-six studies used the Maslach Burnout Inventory (MBI) and 14 used the Professional Quality of Life Scale (ProQOL). The MBI was used in English, Spanish, Portuguese, Japanese, Chinese, French, German, Polish and Italian. The ProQOL was used in English, Spanish and Hindi. The Hindi questionnaire was not validated.[68] Four studies used another tool to measure burnout: three studies used a single item burnout query and two studies a self-developed tool. The original MBI measures burnout and consists of 22 questions representing three constructs of burnout: emotional exhaustion, depersonalisation and personal accomplishment. The ProQOL measures the professional quality of life of healthcare professionals on three subscales: secondary traumatic stress (previously known as compassion fatigue), burnout and compassion satisfaction.

Prevalence of (symptoms of) burnout in healthcare professionals providing palliative care

The studies using the MBI were mainly conducted in Europe (Table 1). High emotional exhaustion ranged from 3% to 48.7%, with an outlier of 93% in Australia.[86] High depersonalisation ranged from 1.3% to 48%, with an outlier of 67% in Italy and 87% in Australia.[51] Low personal accomplishment ranged from 3% to 85%. Twelve studies reported an overall burnout rate among participants, varying from 3% to 38.7% with an outlier of 51% in China.[41]

Table 1 Incidence of burnout among healthcare professionals working in palliative care – MBI

first author, year	country	type of study	setting/ population	N	type of healthcare professional	measure	% BO[a]	emotional exhaustion (EE)	depersonalisation (DP)	personal accomplishment (PA)	quality
Anderson, et al., 2011	USA	cross-sectional study	nursing homes	380	other healthcare professional = 100%	MBI	*not specified*	mean = 2.0 (0.6)	mean = 0.8 (0.8)	mean 1.5 (0.5)	27
Boerner, et al., 2017	USA	cross-sectional study	nursing homes and home care	220	other healthcare professional = 100% (64% = nursing assistant, 36% = home care worker)	MBI	*not specified*	**certified nursing assistants** mean = 18.12 (10.9) **home health aides** mean = 12.94 (10.4)	**certified nursing assistants** mean = 4.74 (5.9) **home health aides** mean = 3.71 (4.6)	**certified nursing assistants** mean = 38.89 (8.0) **home health aides** mean = 40.54 (6.9	24
Davhana-Masalesele, et al., 2008	South Africa	cross-sectional study	hospitals	174	nurses = 100%	MBI	*not specified*	median = 33	median = 29	median = 52	24
Dreano-Hartz, et al., 2016	France	cross-sectional study	pcu[b] & palliative care mobile team	309	physician = 100%	MBI	*not specified*	high EE = 9%	high DP = 4%	low PA = 23%	30
Ercolani, et al., 2020	Italy	cross-sectional study	home palliative care teams	207	physician = 50.2% nurse = 36.2% other healthcare professional = 13.5%	MBI	*not specified*	**HCP** mean = 13.8 high = 11% **physicians** mean = 14.5 high = 14% **nurses** mean = 12.7 high = 7%	**HCP** mean = 10.2 high = 67% **physicians** mean = 10.4 high = 66% **nurses** mean = 19.9 high = 65%	**HCP** mean = 33,6 low = 20% **physicians** mean = 33,2 low = 19% **nurses** mean = 33,4 low = 27%	31
Fernández-Sánchez, et al., 2018	Spain	cross-sectional study	pcu[b] of a single hospital	64	physician = 10.14% nurse = 43.48% other healthcare professional = 46.38%	MBI - HSS	26.09%	high = 26.1% moderate = 29% low =44.9% mean = 17.03 (9.46)	high = 21.7% moderate = 27.5% low = 50% mean = 5.15 (5.02)	low = 7.2% moderate = 23.2% high = 69.6% mean = 41.57 (5.43)	28

Table 1 (continued)

Freitas, et al., 2014	Brazil	quasi-experimental pre-post intervention study	pcu[b] of a single hospital	21	nurse = 100%	MBI	*not specified*	high = 33.3% moderate = 33.3% low = 33.3%	high = 47.6% moderate = 38.1% low = 14.3%	low = 14.3% moderate = 28.6% high = 57.1%	24
Gama, et al., 2014	Portugal	cross-sectional study	hospitals	360	nurse = 100%	MBI	*not specified*	mean total = 16.52 palliative care = 13.03	mean total = 5.43 palliative care = 3.42	mean total = 37.67 palliative care = 38.63	22
Gomez-Cantorna, et al., 2015	Spain	cross-sectional study	various hospital and nonhospital pcu[b]	162	nurse = 100%	MBI	*not specified*	high = 30.4% moderate = 24.2% low = 45.3%	high = 25.5% moderate = 23.6% low = 50.9%	low = 23.6% moderate = 18% high = 58.4%	25
Guo, et al., 2019	China	cross-sectional design	hospitals	279	nurses = 100%	MBI	*not specified*	mean = 25.73 (10.48) high = 48.7%	mean = 9.70 (5.42) high = 45.4%	mean = 31.79 (6.06) reduced = 65.1%	34
Hernandez-Marrero, et al., 2016	Portugal	cross-sectional mixed methods study	pcu[b] for inpatients; home care teams; and hospital support team	88	physician = 20% nurse = 80%	MBI-HS	in burnout = 3% high risk = 13%	median (P25-P75) = 18 (11-25) high = 28% moderate = 28% low = 43%	median (P25-P75) = 3 (1-7) high = 10% moderate = 34% low = 56%	median (P25-P75) = 38 (32-43) high = 26% moderate = 31% low = 43%	27
Hunnibell, et al., 2008	USA	cross-sectional study	members of Oncology Nursing Society and Hospice and Palliative Nurses Association	563	nurse = 100%	MBI - HSS	*not specified*	**hospice nurses** M = 17.04 (SD = 9.46) high = 18% moderate = 21.7% low = 60.2%	**hospice nurses** M = 2.94 (SD = 3.23) high = 4.5% moderate = 11.5% low = 84%	**hospice nurses** M = 42.60 (SD = 20.12) low = 2.9%, moderate = 18.9% high = 78.3%	25
Kalicińska, et al., 2012	Poland	cross-sectional questionnaire survey	hospital and hospices	117	nurse = 49.6% other healthcare professional = 50.4%	MBI	*not specified*	M = 16.83 (9.78)	M = 4.29 (4.04)	M = 21.64 (12.78)	20
Kamal, et al., 2020	USA	cross-sectional study	members of the American Academy of Hospice and Palliative Medicine	1056	physicians = 68% nurse = 21% other healthcare professional = 12 %	MBI-HSS	38.7% [c]	high EE = 34.8%	high DP = 8.8%		27
Koh, et al., 2015	Singapore	prospective, cross-sectional study	hospital pcu[b] palliative home care services;	273	physician = 28.1% nurse = 58.3%	MBI-HSS	**all respondents** = 33.3%[c]	high EE **all respondents** = 26.4%	high DP **all respondents** = 15.8%	Low PA **all respondents** = 40.3%	27

			inpatient hospices		social worker = 13.6%		**doctors** = 41.9%[c] **nurses** = 31.2%[c] **social workers** = 27.8%[c]	**doctors** = 31.1% **nurses** = 26% **social workers** = 22.2%	**doctors** = 20.3% **nurses** = 14.3% **social workers** = 13.9%	**doctors** = 29.7% **nurses** = 44.8% **social workers** = 44.4%	
Lobb, et al., 2010	Australia	cross-sectional study	an in home palliative care service	59	nurse = 85% other healthcare professional = 14%	MBI	*not specified*	M = 17.56 (10.8), range 0-54	M = 2.93 (3.57), range 0-30	M = 38.72 (7.053), range 12-48	29
Ma, et al., 2019	China	cross-sectional field survey	Chinese Society of Clinical Oncology and the Chinese Committee of Rehabilitation and Palliative Care	1620	physician = 100%	MBI-HSS	51%[c]	mean (SD) = 23.18 (12.17) high = 39% moderate = 21 % low = 27.5%	mean (SD) = 8.62 (6.38) high =37% moderate = 24.8 % low = 36.2%	mean (SD) = 30.7 (9.74) high = 20.9% moderate = 19.1% low = 57.2%	27
Mampuya, et al., 2017	Japan	cross-sectional study	hospitals	87	physician = 100%	MBI-HSS	3.4% 20.6%[c]	high = 14% moderate = 25% low = 61%	high = 10% moderate = 10% low = 79%	low = 20% moderate = 24% high = 56%	25
Martins Pereira, et al., 2014	Portugal	cross-sectional survey study	palliative care teams	88	physician = 20% nurses = 80%	MBI	3% 13% at high risk of deve-loping burnout	median = 18 (11-25)	median = 3 (1-7)	median = 38 (32-43)	27
Moreno-Jiménez, et al., 2008	Spain	cross sectional study	hospitals and health centres	130	physicians = 100% (23.8% terminal adults hcp)	MBI-HSS	*not specified*	mean (SD) = 20.37 (9.7)	mean (SD) = 7.96 (5.17)	mean (SD) = 38.3 (9.44)	24
Morita, et al., 2009	Japan	single institution randomised controlled study using a	a single general hospital	40	nurse = 100%	MBI and self develope d VAS	66.1[d]	Emotional exhaustion (1-7) = 4.11	Depersonalization (1-7) = 1.96	Personal accomplishment (1-7) = 4.16	25

Table 1 (continued)

		waiting list control									
Morita, et al., 2014	Japan	RCT using a waiting list control	pcu[b] inpatient hospices; palliative care consultation teams; general medical wards	76	nurse = 100%	MBI and self-developed VAS	**Group 1** overall mean[d] = 46 (24) **Group 2** overall mean[d] = 50 (26)	**Group 1** mean = 32 (9.5) **Group 2** mean = -	**Group 1** mean = 8.0 (3.0) **Group 2** mean = 6.8 (2.1)		27
Orellana-Rios, et al., 2017	Germany	observational pre-post mixed method pilot study	community hospital	28	physician = 3.6% nurse = 67.8% other healthcare professional = 14.3% other = 14.3%	MBI-HSS	*not specified*	M=14.85 (9.07)	M=2.72 (2.85)	M=39.27 (4.88)	29
Ostacoli, et al., 2010	Italy	cross-sectional survey	hospitals hospices	92	nurse = 100%	MBI	*not specified*	**hospice nurses** M=11.28 (6.69) high = 3% moderate = 24.2% low 72.8%	**hospice nurses** M=1.76 (2.25) high = 3% moderate = 18.2% low = 78.8%	**hospice nurses** M=40.88 (4.87) low = 84.9% moderate = 12.1% high = 3%	25
Pattison, et al., 2020	UK	cross-sectional survey	critical care and palliative care teams in a specialist tertiary cancer centre	61	nurse n = 36 physician n = 19 other healthcare professional n = 3 other n = 2	MBI	*not specified*	mean (SD) = 7.8 (5.3) high = 3.4% moderate = 6.9% low = 89.7%	mean (SD) = 9.9 (6) high = 20.3% moderate = 25.4% low = 52.3%	mean (SD) = 37.4 (7.2) high = 3.2% moderate = 44.4% low = 44.4%	28
Pereira, et al., 2012	Portugal	cross-sectional mixed methodology study	palliative care teams	73	nurse = 100%	MBI	*not specified*	median = 19.63	median = 4.95	median = 36.06	26

Pereira, et al., 2016	Portugal	Cross-sectional survey	pcu[b] and intensive care units	392 PCU = 92	**total** physician = 26% nurse = 74% **PCU** physician = 20% nurse = 80%	MBI-HSS	**PCU** in burnout = 3%, high risk = 13%, high level of burnout = 16%	**PCU** high = 28% moderate = 29% low = 43%	**PCU** high = 10% moderate = 36% low = 54%	**PCU** low = 43% moderate = 30% high = 27%	29
Podgurski, et al., 2019	USA	pre-, post-intervention survey assessment	palliative care section at an academic medical centre	29	physician = 61% nurse = 21% other hcp = 18%	MBI-HSS	18.5%[c]	mean (SD) = 18.9 (9.2) high = 17.2%	mean (SD) = 5.7 (4.4) high = 3.7%	mean (SD) = 37.1 (8.0) low = 24.1%	25
Popa-Velea, et al., 2019	Romania	longitudinal intervention study	hospitals	69	physicians = 100%	MBI	**study group** M (95%CI) = 69.80 (64.24–75.37) **control group** M (95%CI) = 71.89 (67.96–75.82)	**study group** M (95%CI) = 29.45 (25.96–32.94) **control group** M (95%CI) = 29.97 (27.55–32.39)	**study group** M (95%CI) = 11.77 (9.83–13.70) **control group** M (95%CI) = 11.78 (10.40–13.17)	**study group** M (95%CI) = 28.58 (26.53–30.62) **control group** M (95%CI) = 30.52 (28.78–32.26)	27
Potash, et al., 2014	Hong Kong	quasi-experimental pre-post intervention study	various settings	132	**art therapy group** nurse = 33.3% other healthcare professional = 20% other = 34.8% **skills based group** nurse = 41.4% other healthcare	MBI-GS	*not specified*	Exhaustion **art group** M=15.46 (5.93) **skills-based group** M=15.19 (6.22)	Cynicism **art group** M=10.84 (5.17) **skills-based group** M=11.63 (4.71)	Professional efficacy **art group** M=26.29 (6.46) **skills-based group** M=24.80 (6.02)	23

Table 1 (continued)

					professional = 30.2% other = 27%						
Puyat, et al., 2019	Canada	cross-sectional study	Long term care facilities	203	physicians and psychologists = 3.9% nurses = 23.2% other healthcare professionals = 48.8% other = 15.8% unknown = 8.4%	MBI	31.8% experienced EE and/or DP	31%	7%	low = 20%	25
Quinn-Lee, et al., 2014	USA	cross-sectional study	hospices	290	other healthcare professionals (hospice social workers) = 100%	MBI-HSS	*not specified*	mean =18.09 (8.73) = moderate high = 15% moderate = 42% low = 42%	mean =3.87 (3.21) = low high = 1.3% moderate = 17.9% low = 80%	mean = 41.16 (5.10) = low high = 6% moderate = 18% low = 76%	25
Rizo-Baeza. et al., 2018	Mexico	cross-sectional study	hospitals and health facilities	185	nurse = 100%	MBI	34.6% presented overall burnout (95% CI: 27.7%–41.4%)	high = 37.3% (95% CI: 30.3%–44.3%)	high = 35.1% (95% CI: 28.3%–42.0%)	low = 37.8% (95% CI: 30.8%–44.8%)	26
Singh, et al., 2017	Australia	cross-sectional online survey	members of the Australian Society of Medical Imaging and Radiation Therapy	200	physician = 100%	MBI	*not specified*	high = 93% mean 38.5, SD 8.2	high = 87% mean 17.5, SD 4.7	low = 61% mean 30.5, SD 4.3	28
Turner, et al., 2009	Australia	quasi-experimental design	hospital	32	nurse = 100%	MBI	*not specified*	**T1** 19 (range 5-43) **T2** 20 (range 4-38)	**T1** 3.0 (range 0-20) **T2** 3.5 (range 0 -15)	T1 37.0 (range 19-48) **T2** 37.0 (18-48)	23

Valjee, et al., 2014	South Africa	cross-sectional, exploratory mixed-design study	palliative care organisations	28	physician = 7.1% nurse = 32.1% other healthcare professional = 60.9%	MBI	Frequency M = 2.0724 (0.61841), range 1.14 - 3.27	Frequency M = 2.4856 (1.09525) range 1.00 - 4.56	Frequency M = 1.2963 (0.53312), range 1.00 - 3.00	Frequency M = 5.8973 (1.17608), range 1.00 - 7.00	26

[a] MBI defines Burnout as high EE, high DP and low PA
[b] PCU = palliative care unit
[c] other method of defining burnout than defined by MBI
[d] overall burnout based on VAS (0-100)

Table 2 Incidence of burnout among healthcare professionals working in palliative care – ProQOL

first author, year	country	type of study	setting	N =	type of healthcare professional	measure	Compassion fatigue / Secondary Traumatic Stress	Burnout	Compassion satisfaction	Quality
Alkema, et al., 2008	USA	cross-sectional study	two home hospice care agencies	37	nurse = 45.9% other healthcare professional = 37.8% other = 16.2%	ProQOL-RIII	M = 17.5	M = 23.8	*not administered*	26
Al-Majid, et al., 2018	USA	cross-sectional survey design	hospital	48	nurse = 100% (direct care nurse n = 38 charge nurse n = 10)	ProQOL V [a]	**direct care nurse** mean = 47.6 (9.6) high STS = 21% **charge nurse** mean = 57.2 (7.4) high STS = 20%	**direct care nurse** mean = 48.6 (6.6) high = 21% **charge nurse** mean = 49.5 (7.4) high = 10%	**direct care nurse** mean = 50.3 (10.10) high = 23.7% **charge nurse** mean = 52.9 (6.2) high = 0%	29
Frey, et al., 2018	New Zealand	cross-sectional study	New Zealand Nurses Organisation	157	nurse = 100%	ProQOL[a]	**all** high STS = 22.9% moderate STS = 51.6% **specialisation PC** mean (SD) = 21.93 (4.58) **other** mean (SD) = 22.01 (5.54)	**all** high = 26.8% moderate = 48.4% **specialisation PC** mean (SD) = 20.91 (4.65) **other** mean (SD) = 23.89 (5.29)	**all** moderate = 48.4% high = 28.8% **specialisation PC** mean (SD) = 42.17 (3.98) **other** mean (SD) = 39.71 (5.16)	27
Galiana, et al., 2017	Brazil and Spain	two surveys with cross-sectional design	hospitals, hospice, home based care	546 B = 161 S = 385	**Spain** physician = 40.3% nurses = 33.3% other healthcare professional = 23% other = 0.8% **Brazil** physician = 21.1% nurses = 19.3% other healthcare	ProQOL V	**Spain** M=12.42 (5.79), range 0-40. High = 16.80%, Medium = 62.7%, Low = 20.50% **Brazil** M=14.24 (6.47), range 1-34 High = 29.30%, Medium = 56.60%,	**Spain** M=15.62 (5.13), range 0-31. High = 1.8%, Medium = 32.5%, Low = 65.7% **Brazil** M=15.05 (6.34), range 2-32. High = 3.30%, Medium = 28.30%,	**Spain** M=41.05 (4.70), range 24-50. Low = 4.3%, Medium = 47.4%, High = 48.30% **Brazil** M=41.63 (6.61), range 23-50. Low = 12.6%, Medium = 27.4%,	20

					professional = 41.6% other = 18%		Low = 14.10%	Low = 68.50%	High = 60%	
Hayuni, et al., 2019	Israel	cross-sectional study	Israeli Society for Clinical Oncology and Radiation Therapy, and the Israel Society of Haematology and Blood Transfusion	71	physicians = 100%	ProQOL	M = 17.24, SD = 7.35, range 3-39	M = 26.64, SD = 6.82, range 4-41),	*not administered*	26
Heeter, et al., 2017	USA	pre-post interventi on study	hospice and palliative care healthcare professionals of a healthcare network	36	physicians = 11% nurses = 39% other healthcare professional = 12% other = 39%	ProQOL[a, b]	mean = 21.34 (4.14) very low = 81% low = 14% neutral = 5%	mean = 22.22 4.52) very low = 94% low = 3% neutral = 3%	*not administered*	22
Kaur, et al., 2018	India	cross-sectional study	hospitals and hospices	65	physicians = 21.5% nurses = 32.3% other healthcare professional = 46.1%	ProQOL-version 5[a]	M = 70 (6.97)	M = 54.9 (6.01)	M = 54.6 (6.55)	24
Klein, 2018	USA	explorato ry pre-post interventi onal pilot study	academic medical centre (inpatient palliative care department and neonatal advanced practice)	17	physicians = 11.8% nurses = 70.6% other healthcare professional = 17.6%	ProQOL - version 5[c]	M = 26.1 (10.5) 95%CI: 19.4 - 32.8	M=27.3 (6.0) 95%CI: 23.5 -31.0	M=35.2 (5.3) 95%CI: 31.8 - 38.5	23

Table 2 (continued)

Montross-Thomas, et al., 2016	USA	cross-sectional study	hospices	390	hospice staff and volunteers	ProQOL-version 5	M = 19	M = 20	M = 43	28
O'Mahony, et al., 2018	USA	cross-sectional survey	professionals participating in a continuing education program on palliative medicine	66	physicians = 33.3% nurses = 36.3% other healthcare professional = 28.8%	ProQOL-5	M = 20.70 (4.13)	M = 20.30 (4.17)	M = 42.70 (4.20)	18
Pelon, et al., 2017	USA	cross-sectional survey	hospice organisations	55	other healthcare professional (social work clinicians) = 100%	ProQOL-5[a, b]	M = 50 (10), range = 33.3 - 76.4 high = 21.8% moderate = 56.4% low = 21.8%	*not administered*	M = 50 (10), range 31.3 - 63.5, low = 20% moderate = 43.6% high = 36.4%	27
Sanso, et al., 2015	Spain	cross-sectional survey	members of the Spanish Society of Palliative Care	385	physicians = 43.6% nurses = 33.2% other healthcare professional = 23.2%	ProQOL	M = 12.42 (5.59)	M = 15.62 (5.13)	M = 41.05 (4.79)	26
Slocum-Gori et al.,	Canada	cross-sectional survey	hospices and palliative care organisations	480	physician = 6.9% nurses = 42.3% other healthcare professional = 17.7% other = 33.1%	ProQOL	total = 18.6 medicine = 17.6 nursing = 20.1 integrative medicine = 17.3	total = 20.8 medicine = 22.4 nursing = 22.3 integrative medicine = 17.5	total = 43.9 medicine = 44.6 nursing = 43.4 integrative medicine = 48.1	27
Whitebird, et al., 2013	USA	cross-sectional survey	hospice programs	547	nurses = 37.3% other healthcare professional = 39.2% other = 22.2%	ProQOL - RIII	M = 9.9 (6.6)	M = 13.9 (7.2)	*not administered*	29

[a] Raw scores were converted to T-scores.

[b] Scale 1-5 was used, all other studies used 6 point Likert scale (0-5)

Fourteen studies, mainly from the USA, used a version of the ProQOL (Table 2). Six studies showed a mean on secondary traumatic stress (compassion fatigue) ranging between 21.34 and 70. These studies converted the raw scores into standardized t-scores according to the ProQOL manual.[87] The standardised mean t-scores for all three scales is 50 with a standard deviation of 10. The remaining eight studies used raw mean scores (scale ranges from 0-50 with higher scores indicating greater risk of burnout) and showed a mean secondary stress score ranging from 9.9 to 17.5.
Five studies used the burnout scale of the ProQOL with mean standardised scores between 22.22 and 54.9. Eight studies reported the raw mean burnout scores ranging from 13.9 to 26.6 (total range: 0 – 50 per scale). Higher scores equals greater risk of burnout.

In total 11 studies used a different measure to assess the level of burnout among healthcare professionals such as single item burnout queries, abbreviated versions of the MBI, self-developed burnout measures, and The Burnout Measure developed by Pines et al. and The Burnout Measure -short version (Table 3). Two studies used a VAS for burnout in addition to the MBI (Table 2). These studies show a range of burnout prevalence between 6% and 66%.

Burnout in dedicated palliative care settings compared to other healthcare settings
Three European studies compared the prevalence of burnout in general healthcare settings with dedicated palliative care units and reported better results in the latter. Pereira et al. reported that healthcare professionals working in intensive care units had a significant higher likelihood of developing high levels of burnout than their colleges in palliative care units (31% vs 16%, p=.006).[49] Gama et al. reported significantly lower symptoms of burnout in nurses working in palliative care units than in other departments.[62] Nurses working in palliative care units had lower levels of emotional exhaustion compared to nurses working in oncology units (m=13.03 vs. m=18.4, t = 2.71, <.008), in haematology (m = 13.03 vs. m=19.03, t=3.47, p<.001) and in internal medicine (m=13.03 vs. m=16.42, t =2.62, p<.009). When comparing hospice and hospital nurses Ostacoli et al. reported that nurses working in hospitals showed significantly higher mean levels of burnout symptoms than nurses working in hospice (emotional exhaustion m=19.65 vs m=11.28, depersonalisation m=5.15 vs m=1.76, personal accomplishment m=34.58 vs m=40.88, p <0.001).[75] The authors state that the precise identification of factors contributing to this significant difference is not yet possible.

Table 3 Incidence of burnout among healthcare professionals working in palliative care - Other

first author, year	country	type of study	setting	N =	type of healthcare professional	measurement instrument	% BO	Outcome	Outcome	Outcome	Quality
Frey, et al., 2015	New Zealand	Cross-sectional study	residential care facilities	431	nurse = 25.5% other hcp = 60.8% other = 11%	Burnout Measure-Short Version	mean = 2.8 (SD = .96)				23
Chamberlin, et al., 2019	USA	Cross-sectional study	hospitals	333	physician = 41.7% nurse = 56.1% missing = 2.1%	single item screen	43%				27
Clayton, et al., 2019	USA	cross-sectional study	hospices	175	nurse = 100%	abbreviated version of the Maslach Burnout Inventory (12 items)	mean (SD) 33.98 (5.71) median (range) 33 (19-50)	emotional exhaustion mean (SD) 8.97 (3.6) median (range) 9 (3-19)	depersonalisation mean (SD) 4.16 (1.8) median (range) 3 (3-11)	personal accomplishment mean (SD) 18.81 (2.2) median (range) 20 (12-21)	27
Dougherty, 2009	Canada	cross-sectional study	a single oncology centre with an inpatient unit and a pcu[a]	60	nurses = 71.1% other healthcare professional = 28.9%	53-question survey (self-developed)		55.9% feeling emotionally drained			28
Lambden, et al., 2018	USA	cross-sectional study	hospitals	333	physician = 41.7% nurse = 56.1%	Single item question	43%				28
Marchalik, et al., 2019	USA	cross-sectional study	members of the American Academy of Hospice and	709	physician = 75% nurse = 8% other healthcare professional = 12.8% other = 1.7%	validated abridged 2-item version of the Maslach Burnout Inventory (MBI)	18.2%	high emotional exhaustion = 16.6%	high depersonalisation = 6.3%	*Not administered*	27

			Palliative Medicine								
Melo, 2011	Portugal	mixed methods study using a control group	pcu[a] and other settings (participants worked with dying patients but not in a pcu[a])	total = 176 intervention = 150 control = 26	physician = 5% nurses = 58% other healthcare professional = 12%	self-developed questionnaire based on MBI	**Participants above cut-off point** emotional exhaustion = 30.0% depersonalisation = 1.3% professional fulfilment = 89.3%	emotional exhaustion total: 3.10 (.80) outside PCU: 3.31 (.83) control group: 3.21 (.57)	depersonalisation total: 1.82 (.60) outside PCU: 1.85 (.59) control group: 1.98 (.64)	professional fulfilment total: 4.44 (.60) outside PCU: 4.40 (.64) control group: 4.35 (.59)	22
Pavelkova, et al., 2015	Czech Republic	Cross-sectional observational study	hospices	241	physician = 0.8% nurse = 57.7% other healthcare professional = 41.5%	Burnout Measure	burnout = 5.8% alarming levels = 28.2% mean burnout score = 2.8 (0.8) median = 2.7, range = 1–5.3)				21
Yoon, 2017	USA	self-administered questionnaire	members of the American Medical Association	1156	physicians = 100%	single item burnout query	**overall** = 23% **end-of-life specialities** = 20% **general specialties** = 24%				35

[a] PCU palliative care unit

Table 4 The effect of interventions aimed to decrease burnout among healthcare professionals working in palliative care

first author, year	country	type of study	setting	N =	type of healthcare professional	intervention	measurement instrument	effect	outcome	effect size	quality
Heeter, et al., 2017	USA	pre-post intervention study	a healthcare network	36	physicians = 11% nurses = 39% other healthcare professionals = 12% other = 39%	a technology - assisted meditation program	ProQOL	+	**Compassion fatigue** significant effect (paired t-test, p= .034) Mean = 21.34 M = 20.00 (pre-post) **Burnout** significant effect (paired t-test, p= .047) M = 22.22 vs M = 20.64 (pre-post)	**Compassion fatigue** Delta pre-post = 1.34 CI 95% = -2.57 - 0.12 **Burnout** Delta = 1.58 CI 95% 0.03 – 3.14	22
Orellana-Rios, et al., 2017	Germany	observational pre-post mixed method pilot study	community hospital	28	physicians = 3.6% nurses = 67.8% other healthcare professionals = 14.3% other = 14.3%	mindfulness and compassion-oriented meditation training for interdisciplinary teams	MBI-HSS	+/-	**Emotional exhaustion** significant effect (t = -3.13, p=0.005) M = 14.85 (9.07) vs M = 11.29 (7.63) (pre to post) **Depersonalisation** no significant effect (t = 0.71, p = 0.48) M = 2.72 (2.85) vs M = 2.53 (2.80) **Personal Accomplishment** significant effect (t = -2.71, p=0.012) M = 39.27 (4.88) vs M = 41.22 (4.03)	Cohen's d **Emotional exhaustion** = 0.41 **Depersonalisation** = 0.07 **Personal Accomplishment** = 0.43	29

Podgurski, et al., 2019	USA	pre-, post--intervention survey assessment	palliative care section at an academic medical center	29	physician = 61% nurse = 21% other healthcare professional = 18%	Mindfulness	MBI-HSS	-	Emotional Exhaustion **Pre** mean (SD) = 18.9 (9.2) **7 month post** Mean (SD) = 17.6 (8.9) p = 0.479 Depersonalisation **Pre** Mean (SD) = 5.7 (4.4) **7 month post** Mean (SD) = 4.8 (4.5) p = 0.243 Personal accomplishment **Pre** Mean (SD) = 37.1 (8.0) **7 month post** Mean (SD) = 38.8 (6.9) p = 0.348	Emotional exhaustion Delta = - 1.3 Depersonalisation Delta = - 0.9 Personal accomplishment Delta = 1.7	25
Melo, et al., 2011	Portugal	mixed methods study using a control group	palliative care units and other settings* *participants worked with dying patients but not in a pcu[a]	intervention = 150 control = 26	physician = 5% nurses = 58% other healthcare professional = 12%	training in communication, in offering emotional and spiritual support to patients, and in personal introspection on death anxiety	self-developed questionnaire based on MBI	+	**Emotional exhaustion** *total*: significant effect (p <0.001) M = 3.10 (.80) vs M = 2.89 (.81) (pre vs post) *experimental group*, *outside PCU*: significant effect (p <0.001) M = 3.31 (.83) vs M = 2.90 (.81) *control group*: not significant M = 3.21 (.57) vs M = 3.18	**Emotional exhaustion** total group Delta = -0.21 **Depersonalisation** total group Delta = -0.18 **Personal accomplishment** total group Delta = 0.18	22

Table 4 (continued)

	(.74) **Depersonalisation** *total*: significant effect (p <0.001) M = 1.81 (.62) vs 1.63 (.60) (pre vs post) *experimental group outside PCU*: significant effect (p <0.001) M = 1.85 (.59) vs 1.59 (.57) *control group*: not significant M = 1.98 (.64) vs M = 1.85 (.54) **Professional fulfilment** *total*: significant effect (p<0.001) M = 4.44 (.60) vs M = 4.62 (.58) (pre vs post) *experimental group* outside PCU: significant effect (p<0.005) M = 4.40 (.64) vs M = 4.61 (.60) *control*: not significant M = 4.35 (.59) vs M = 4.50 (.51)

Morita, et al., 2009	Japan	single institution randomised controlled study using a waiting list control	a single general hospital	40	nurses = 100%	Education about communication skills, the conceptual framework of meaninglessness and the use of the Spiritual Conference Summary Sheet.	MBI and self-developed VAS	+/-	**Emotional exhaustion** significant effect (p=0.012) M = 4.11 vs M = 3.62 (pre-post) **Depersonalisation** no significant effect (p = 0.15) M = 1.96 vs M = 1.67 (pre-post) **Personal Accomplishment** significant effect (p = 0.024) M = 4.16 vs M = 4.70 (pre-post)	Change ratio **Emotional exhaustion** = -12% **Depersonalisation** = – 15% **Personal accomplishment** = 13%	25
Potash, et al., 2014	Hong Kong	quasi-experimental pre-post intervention study	various settings	132	**art therapy group** nurses = 33.3% other healthcare professional = 20% other = 34.8% **skills based group** nurses = 41.4% other healthcare professional = 30.2% other = 27%	**art-therapy-based supervision group**: breathing exercise, guided visualisation, making art, reflective writing, group discussions **standard skills-based supervision group** learn new clinical skills, share case material,	MBI-GS	+/-	**Exhaustion** *Artgroup* significant effect (t = 2.64, p=0.011) M = 15.46 5.93) vs M = 13.73 (5.40) (pre to post) *Skills based group* no significant effect (t = 0.82, p =0.42) M = 15.19 (6.22) vs M = 14.74 (6.15) **Cynicism** *Art group* no significant effect (t = -1.08, p = 0.29) M = 10.84 (5.17) vs M = 11.58 (4.83) (pre to post)	**Exhaustion** Artgroup Delta = -1.73 Skills based group Delta = - 0.45 Cynicism Art group Delta = 0.74 Skills based group Delta = 1.31	23

Table 4 (continued)

						engage in case analysis			*Skills based group* significant effect (t = -2.60, p=0.012) M = 11.63 (4.71) vs M = 12.94 (3.65)		
Popa-Velea, et al., 2019	Romania	longitudinal intervention study	hospitals	69	physicians = 100%	Balint groups	MBI	+	**Burnout** To study vs control group M = 69.80 vs M = 71.89, p = 0.52 T1 study vs control group M = 65.66 vs M = 76.06, p=0.003 **Emotional exhaustion** To study vs control group M = 29.45 vs M = 29.97, p = 0.79 T1 study vs control group M = 26.86 vs M = 33.00, p=0.004 **Depersonalisation** To study vs control group M = 11.77 vs M = 11.78, p = 0.98 T1 study vs control group M = 10.63 vs M = 13.80, p=0.005 **Low personal accomplishment** To study vs control group M = 28.58 vs M = 30.52, p = 0.14	**Burnout** Study group To vs T1 Delta = - 4.44 Control group To vs T1 Delta = 4.17 **Emotional exhaustion** Study group To vs T1 Delta = - 2.59 Control group To vs T1 Delta = 3.03 **Depersonalization** Study group To vs T1 Delta = - 1.14 Control group To vs T1 Delta = 2.02 **Low personal accomplishment** Study group To vs T1 Delta = - 0.42 Control group To vs T1 Delta = - 0.96	27

									T1 study vs control group M = 28.16 vs M = 29.56, p=0.30		
Klein, et al., 2018	USA	exploratory pre-post interventional pilot study	a medical centre	17	physicians = 11.8% nurses = 70.6% other HEALTHCARE PROFESSIONAL = 17.6%	an educational resiliency program about CS, CF, vicarious trauma, self-care, resilience and quality of life	ProQOL - version 5	-	No significant differences *1st survey compared to 2nd* **Secondary traumatic stress** M = 26.1 vs M = 26.3 (pre-post) **Burnout** M = 27.3 vs M= 26.5 **Compassion Satisfaction** M = 35.2 vs M= 36.8 *1st survey compared to 3rd* **Secondary traumatic stress** M = 26.1 vs M = 26.0 **Burnout** M = 27.3 vs M = 26.6 **Compassion Satisfaction** M = 35.2 vs M = 36.4	Effect size Secondary traumatic stress = 0.03 Burnout = 0.14 Compassion satisfaction = 0.35	23
Morita, et al., 2014	Japan	randomised controlled study using a waiting list control	palliative care units, inpatient hospices palliative care consultation teams and general medical wards	76	nurses = 100%	interactive education program focused on working with the Spiritual Pain Assessment Sheet	MBI and self-developed VAS	-	**Emotional exhaustion** No significant effect Group 1 M = 32 (9.5) vs M = 32 (11), Group 2 M = 34 (8.5) vs M = 32 (8.1), **Depersonalisation** No significant effect Group 1: M = 8.0 (3.0) vs M = 8.0 (3.3),	**Emotional Exhaustion** Group 1 ES = 0.0, 95% CI = -0.3 - 0.2 Group 2 ES = 0.1, 95% CI = -0.3 - 0.1 **Depersonalisation** Group 1	27

Table 4 (continued)

									Group 2: M = 6.8 (2.1) vs M = 6.9 (2.5),	ES = 0.0, 95% CI = -0.4 - 0.4 Group 2 ES = 0.1, 95% CI = -0.2 - 0.4	
Freitas, et al., 2014	Brazil	quasi-experimental pre-post intervention study in a single setting	hospital palliative care unit	21	nurse = 100%	Workplace physical activity program	MBI	-	**Emotional exhaustion** no significant effect (p =0.61) high = 33.3% vs 19.0% (pre-post) **Depersonalisation** no significant effect (p=0.88) high = 47.6% vs 52.4% (pre-post) **Personal accomplishment** no significant effect (p = 0.54) low = 14.3% vs 4.8% (pre-post)	High emotional exhaustion = -14.3% High Depersonalisation = 4.8% Low Personal accomplishment = -9.5%	24

[a] PCU = palliative care unit

Interventions to reduce early symptoms of burnout

Ten studies reported on interventions to reduce early symptoms of burnout in healthcare professionals providing palliative care, including 11 interventions (such as meditation, workplace activity, (communication) education and art-therapy based supervision) (Table 4). Most interventions were aimed at the individual healthcare professional. One intervention was aimed at the interdisciplinary team, in order to integrate the learned skills into their work.[46] Two were offered to the entire team, but they were not necessarily developed as a team intervention.

Six studies reported a significant positive effect post-intervention on at least one of the administered dimensions of the questionnaire that was used to measure burnout. Effective interventions on reducing burnout symptoms were meditation (n=2), communication training (n=2), peer-coaching (n=1) and art-therapy based supervision (n=1).[46,65,71,73,79] The meditation focused interventions consisted of a group programme provided by an experienced meditation teacher and a technology assisted meditation program focusing on body, breath and mind.[46,65] The communication skills intervention used by Melo et al. consisted of 2 modules; 1 focused on personal introspection on death anxiety in order to improve the capacity of healthcare professionals to empathize with patients.[71] The second module was about improving communication skills and understanding psychological and spiritual needs of patients. The study of Morita et al. aimed at developing basic communication skills and working with the Spiritual Conference Summary Sheet.[73] The peer-coaching intervention regarded six Balint group meetings run by moderators with a medical background.[50] The art-therapy-based supervision used by Potash et al. used breathing exercises, guided visualisation, making art, reflective writing and small and large group discussions related to themes such as self-care and stress management, care sharing and clinical skills and grief and bereavement.[79]

The four remaining studies reported no positive significant post-intervention effect, these studies included an educational program (n=2), a mindfulness program (n=1) and a workplace physical activity program (n=1).[45,69,59] One study showed a negative effect: the skills-based intervention studied by Potash et al. led to more cynicism.[79] Possible reasons for the lack of a positive significant effect given by the authors are the absence of a social or emotional component in the intervention and a low level of burnout at baseline.

DISCUSSION

Main findings

This systematic literature review has synthesized studies on burnout rates among healthcare professionals providing palliative care and the effects of interventions aimed at reducing symptoms of burnout in this group of healthcare professionals. Overall burnout prevalence among healthcare professionals providing palliative care ranges from 3% to 66%, with most studies reporting a prevalence of 18% or higher. Burnout was measured by using mostly the Maslach Burnout Inventory (MBI). Symptoms of burnout as measured in the MBI showed wide ranges of 'high emotional exhaustion' (3%-49%), 'high depersonalisation' (1%-48%) and 'low sense of personal accomplishment' (3%-85%). Healthcare professionals providing palliative care working in general healthcare settings report higher rates on (symptoms of) burnout compared to healthcare professionals providing palliative care working in specialised palliative care settings.

Few interventions to reduce symptoms of burnout for healthcare professionals providing palliative care were found. Moreover, only six studies showed positive effects of such interventions. These interventions mainly aim at awareness and spirituality using a form of meditation, communication training, peer-coaching and art-therapy based supervision.

Some findings need to be highlighted. First, burnout seems to be prevalent in almost one fifth of healthcare professionals providing palliative care, although the range of burnout prevalence rates found in this systematic literature review is very wide. This seems comparable with the prevalence of burnout among physicians and nurses in general and somewhat higher compared to healthcare professionals working in specialised palliative care settings.[22,88,89,90] This is in line with our results showing a lower burnout rate among healthcare professionals providing palliative care in specialised settings compared to those providing palliative care in general settings. However a recent study showed a positive association between the number of suffering patients healthcare professionals see on a daily basis and reduced emotional wellbeing.[91] This could indicate that there is a maximum amount of suffering one can cope with on a daily basis.[92]

Furthermore, all studies show a wide range. Due to this wide range in prevalence it is difficult to compare the prevalence of burnout among healthcare professionals providing palliative care with other healthcare professionals and to get a clear

understanding of the unique impact of providing palliative care in relation to developing (symptoms) of burnout.

Second, the included intervention studies showed little improvement. This is in line with other research on improving wellbeing of healthcare professionals providing palliative care. A systematic literature review of Hill et al. on this subject found little improvement in the psychological wellbeing of healthcare professionals working in palliative care settings after the use of psychosocial interventions such as music therapy, art therapy, (psycho)existential interventions and stress reduction.[93] Most of these interventions were focused on the individual healthcare professional.

Thirdly, there were few interventions found that aim at reducing symptoms of burnout for healthcare professionals providing palliative care. Most interventions were directed at the individual healthcare professional. However, research has shown that interventions directed at organisational level are more effective in reducing symptoms of burnout than interventions directed at the individual healthcare professional.[14,94] Since the development of burnout is related to work conditions, interventions aimed solely at the individual do not seem sufficient to bring permanent changes in the situation.[3]

Lastly, the use of measurement instruments to assess burnout is diverse and not according to the published manuals of the two mainly used validated measurement instruments as already indicated by Rotenstein et al.[87, 88, 95] In the studies using the MBI different cut-off scores were used for defining burnout. Maslach et al. define burnout as having high emotional exhaustion, high depersonalisation and low sense of personal accomplishment.[95] However several studies defined burnout as having an unfavourable score on two out of three subscales. Also the use of the ProQOL varied. Several studies used a 6-point response scale instead of the (renewed) 5-point scale as described in the manual.[87] Moreover not all studies computed t-scores but instead reported the raw scores. Rotenstein et al. also showed that the use of burnout measurements varies among studies.[88] This methodological issue combined with the wide range of burnout rates complicates the estimation of the magnitude of the problem.

Strengths and limitations

This study has strengths and limitations. To our knowledge, this is the first systematic literature review on burnout specific among healthcare professionals providing palliative care in all settings. It addresses an important topic and shows that limited

knowledge is present about the prevalence of symptoms of burnout among these healthcare professionals and about the prevention of these symptoms.

A limitation of this review is by definition of its search string, which solely addresses burnout and within the field of palliative care. Burnout is related to concepts such as (work-related) stress, compassion fatigue and job satisfaction and these concepts even may have some shared components. In order to focus it was decided to use burnout to have a demarcated search area. Therefore some relevant studies might have been missed. The findings from this review could be complemented with results from reviews on work-related stress, job satisfaction and compassion fatigue to get a broader understanding of the work-related wellbeing of healthcare professionals providing palliative care. Despite the use of the standardised search string for palliative care of Rietjens et al, the operationalisation of palliative care varies among the included studies.[26] It was also difficult to distinguish between healthcare professional who are generalist in palliative care and those who are specialist palliative care, which limits the insights of burnout in different subgroups. To minimalize the impact of these limitations references from included articles were screened and only two articles were added. Moreover, a reporting bias might be present regarding the interventions to reduce (symptoms of) burnout, as studies with positive outcomes are more likely to be published.

Another limitation is that the included studies were conducted in different countries with a variety of healthcare systems, settings and among different types of healthcare professionals. Therefore it is difficult to compare the outcomes. No meta-analysis was performed due to the heterogeneity in type of healthcare professional, gender, setting and measurement.

What this paper adds

Prevalence of burnout in healthcare professionals providing palliative care seems similar to healthcare professionals in general and affects a substantial amount of healthcare professionals. Due to the aging population, combined with the increase in patients with multimorbidity and living longer with a life-threatening illness, an increasing need for palliative care is expected.[96] This increasing need, combined with the already existing shortages of healthcare professionals, has the risk of leading to a vicious circle; healthcare professionals will have to work harder due to the increasing demand for care, which contributes to the risk of getting burned out, leading to a higher workload for the remaining healthcare professionals. Apart from general work-related stressors, providing palliative care has some specific stress factors. Many

healthcare professionals are exposed to the deaths of patients and its related risk factors. Especially those healthcare professionals providing palliative care in a non-specialised setting experience a higher burden of burnout symptoms.

The concept of burnout is developing. Research into the theoretical description of burnout and an empirical inventory of burnout characteristics has resulted in a new measurement instrument to assess burnout; the burnout assessment tool (BAT). The new definition of burnout, on which the BAT is based, constitutes of four dimensions: exhaustion, emotional impairment, cognitive impairment and mental distance. In addition, burnout is accompanied by psychological distress, psychosomatic complaints and depressed mood.[97] More research into the concept of burnout among healthcare professionals (proving palliative care) is needed. Also more research is needed to develop effective interventions on different levels of support (e.g. peer support service, team-meetings, individual therapies) to prevent burnout among healthcare professionals. Interventions aimed at preventing burnout found in this review almost all focus on the individual healthcare professional based on mindfulness and improving communication skills. This is in line with the article of Harrison et al. who state that the way burnout interventions are currently designed might suggest that healthcare professionals are personally accountable for burnout. However it is known that the development of burnout among healthcare professionals also has an organisational component.[98] In line with this previous studies have advocated an integrated approach of burnout in which both the level of the individual healthcare professional and the organisational level is included.[94, 99] Further research is needed on interventions aimed at both organisational changes and individual support to achieve strong positive and long-term effects.

Also, it seems wisely to incorporate specific issues regarding providing palliative care in general interventions aimed at preventing (symptoms of) burnout, as most healthcare professionals will provide care for patients with incurable diseases.

Conclusion

This systematic literature review identified 59 studies that investigated the prevalence of burnout among healthcare professionals providing palliative care. Ten of these were intervention studies. The range of burnout found is wide and was conducted among different types of healthcare professionals in various settings. The prevalence of burnout among healthcare professionals providing palliative care in specialised settings seems lower compared to those providing palliative care in general settings. Few interventions aimed at preventing burnout in healthcare professionals providing

burnout were found. Although interventions on meditation, communication, peer-coaching and art-therapy based supervision aimed at the individual healthcare professional seem worthwhile, interventions aimed at team and organisational changes are likely to have a stronger effect. Further research on interventions aimed at both team and organisational changes and at individual healthcare professionals is needed.

DECLARATIONS

Authorship

AD and NR participated in the design of the review. AD, LB and NR were involved in the data collection, analysis and interpretation. AD drafted the manuscript. All authors were involved in the critical revision of the manuscript and approved the final version of the manuscript.

Declaration of conflicts of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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Data management and sharing

The data that support the findings of this study are available on request from the corresponding author.

REFERENCES

1. Sherman AC, Edwards D, Simonton S, et al.: Caregiver stress and burnout in an oncology unit. Palliat Support Care. 2006;4(1):65-80.
2. Maslach C, Jackson, S.E.: The measurement of experienced burnout. Journal of Occupational Behaviour 1981;2:99-113.
3. Maslach C, Schaufeli WB, Leiter MP: Job burnout. Annu Rev Psychol. 2001;52:397-422.
4. Schaufeli W, Leiter, M. and Maslach, C. : Burnout: 35 years of research and practice Career Development International. 2009; Vol. 14 (No. 3):204-220.
5. Maslach C, Leiter, M.P. & Schaufeli, W.B. (2008). Measuring burnout. In C.L. Cooper & S. Cartwright (Eds.) The Oxford handbook of organizational well-being (pp. 86-108). Oxford: Oxford University Press.
6. Shanafelt TD, Hasan O, Dyrbye LN, et al.: Changes in Burnout and Satisfaction With Work-Life Balance in Physicians and the General US Working Population Between 2011 and 2014. Mayo Clin Proc. 2015;90(12):1600-1613.
7. Zhang YY, Han WL, Qin W, et al.: Extent of compassion satisfaction, compassion fatigue and burnout in nursing: A meta-analysis. J Nurs Manag. 2018;26(7):810-819.
8. Hall LH, Johnson J, Watt I, et al.: Healthcare Staff Wellbeing, Burnout, and Patient Safety: A Systematic Review. PLoS One. 2016;11(7):e0159015.
9. Poghosyan L, Clarke SP, Finlayson M, et al.: Nurse burnout and quality of care: cross-national investigation in six countries. Res Nurs Health. 2010;33(4):288-298.
10. R Suñer-Soler AG-M, D Flichtentrei, M Prats, F Braga, S Font-Mayolas, E Gras: The consequences of burnout syndrome among healthcare professionals in Spain and Spanish speaking Latin American countries. Burnout Research 2014(1):82–89.
11. Salvagioni DAJ, Melanda FN, Mesas AE, et al.: Physical, psychological and occupational consequences of job burnout: A systematic review of prospective studies. PLoS One. 2017;12(10):e0185781.
12. Organization WH: A universal truth: No health without a workforce2014.
13. He W GD, and Kowal P: An Aging World: 2015. U.S. Government Publishing Office2016.
14. West CP, Dyrbye LN, Shanafelt TD: Physician burnout: contributors, consequences and solutions. J Intern Med. 2018;283(6):516-529.

15. West CP, Dyrbye LN, Erwin PJ, et al.: Interventions to prevent and reduce physician burnout: a systematic review and meta-analysis. Lancet (London, England). 2016;388(10057):2272-2281.
16. Payne N: Occupational stressors and coping as determinants of burnout in female hospice nurses. J Adv Nurs. 2001;33(3):396-405.
17. Kearney MK, Weininger RB, Vachon ML, et al.: Self-care of physicians caring for patients at the end of life: "Being connected... a key to my survival". JAMA. 2009;301(11):1155-1164, E1151.
18. Dean RA: Occupational stress in hospice care: causes and coping strategies. Am J Hosp Palliat Care. 1998;15(3):151-154.
19. Meier DE, Beresford L: Preventing burnout. J Palliat Med. 2006;9(5):1045-1048.
20. Ingebretsen LP, Sagbakken M: Hospice nurses' emotional challenges in their encounters with the dying. Int J Qual Stud Health Well-being. 2016;11:31170.
21. Dougherty EP, Bruce; Ma, Clement; Panzarella, Tony; Rodin, Gary; Zimmermann, Camilla: Factors associated with work stress and professional satisfaction in oncology staff. American Journal of Hospice & Palliative Medicine. 2009;26(2):105-111.
22. Parola V, Coelho A, Cardoso D, et al.: Prevalence of burnout in health professionals working in palliative care: a systematic review. JBI Database System Rev Implement Rep. 2017;15(7):1905-1933.
23. Pereira SM, Fonseca AM, Carvalho AS: Burnout in palliative care: a systematic review. Nursing ethics. 2011;18(3):317-326.
24. Parola V, Coelho, A., Cardoso, D., Sandgren, A., Apostolo, J.: Burnout in Palliative Care Settings Compared With Other Settings. A systematic review. Journal of Hospice & Palliative Nursing. 2017;19(5):442-451.
25. Moher D, Liberati A, Tetzlaff J, et al.: Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. PLoS Med. 2009;6(7):e1000097.
26. Rietjens JA, Bramer WM, Geijteman EC, et al.: Development and validation of search filters to find articles on palliative care in bibliographic databases. Palliat Med. 2019;33(4):470-474.
27. Hawker S, Payne S, Kerr C, et al.: Appraising the evidence: reviewing disparate data systematically. Qualitative health research. 2002;12(9):1284-1299.
28. Al-Majid S, Carlson N, Kiyohara M, et al.: Assessing the Degree of Compassion Satisfaction and Compassion Fatigue Among Critical Care, Oncology, and Charge Nurses. J Nurs Adm. 2018;48(6):310-315.

29. Anderson KA, Ewen HH: Death in the Nursing Home: An Examination of Grief and Well-Being in Nursing Assistants. Research in Gerontological Nursing. 2011;4(2):87-94.
30. Chamberlin P, Lambden J, Kozlov E, et al.: Clinicians' Perceptions of Futile or Potentially Inappropriate Care and Associations with Avoidant Behaviors and Burnout. J Palliat Med. 2019;22(9):1039-1045.
31. Clayton MF, Iacob E, Reblin M, et al.: Hospice nurse identification of comfortable and difficult discussion topics: Associations among self-perceived communication effectiveness, nursing stress, life events, and burnout. Patient Educ Couns. 2019;102(10):1793-1801.
32. Dreano-Hartz SR, W.; Ledoux, M.; Ruer, M.; Berthiller, J.; Schott, A. M.; Monsarrat, L.; Filbet, M.: Burnout among physicians in palliative care: Impact of clinical settings. Palliat Support Care. 2016;14(4):402-410.
33. Ercolani G, Varani S, Peghetti B, et al.: Burnout in Home Palliative Care: What Is the Role of Coping Strategies? Journal of Palliative Care. 2020;35(1):46-52.
34. Fernández-Sánchez JCP-M, José Manuel; Blásquez, Antonia; Santos-Ruiz, Ana María; Peralta-Ramírez, María Isabel; Fernández-Sánchez, José Carlos; Pérez-Mármol, José Manuel; Blásquez, Antonia; Santos-Ruiz, Ana María; Peralta-Ramírez, María Isabel: Association between burnout and cortisol secretion, perceived stress, and psychopathology in palliative care unit health professionals. Palliative & Supportive Care. 2018;16(3):286-297.
35. Frey R, Robinson J, Wong C, et al.: Burnout, compassion fatigue and psychological capital: Findings from a survey of nurses delivering palliative care. Appl Nurs Res. 2018;43:1-9.
36. Guo Q, Zheng R: Assessing oncology nurses' attitudes towards death and the prevalence of burnout: A cross-sectional study. European Journal of Oncology Nursing. 2019;42:69-75.
37. Hernandez-Marrero PP, S. M.; Carvalho, A. S.: Ethical Decisions in Palliative Care: Interprofessional Relations as a Burnout Protective Factor? Results From a Mixed-Methods Multicenter Study in Portugal. Am J Hosp Palliat Care. 2016;33(8):723-732.
38. Kamal AH, Bull JH, Wolf SP, et al.: Prevalence and Predictors of Burnout Among Hospice and Palliative Care Clinicians in the U.S. J Pain Symptom Manage. 2020;59(5):e6-e13.
39. Koh MY, Chong PH, Neo PS, et al.: Burnout, psychological morbidity and use of coping mechanisms among palliative care practitioners: A multi-centre cross-sectional study. Palliat Med. 2015;29(7):633-642.

40. Lobb EAO, L.; Vojkovic, S.; Kristjanson, L. J.; Smith, J.; Brown, J. M.; Dwyer, V. W. J.: Frontline grief: the workplace support needs of community palliative care nurses after the death of a patient. Journal of Hospice & Palliative Nursing. 2010;12(4):225-235.
41. Ma S, Huang Y, Yang Y, et al.: Prevalence of Burnout and Career Satisfaction Among Oncologists in China: A National Survey. Oncologist. 2019;24(7):e480-e489.
42. Marchalik D, Rodriguez A, Namath A, et al.: The impact of non-medical reading on clinician burnout: a national survey of palliative care providers. Ann Palliat Med. 2019;8(4):428-435.
43. Martins Pereira ST, Carla Margarida; Ribeiro, Orquídea; Hernández-Marrero, Pablo; Fonseca, António M.; Carvalho, Ana Sofia: Burnout in physicians and nurses: a multicentre quantitative study in palliative care units in Portugal. Revista de Enfermagem Referência. 2014;4(3):55-64.
44. Montross-Thomas LPS, Caroline; Meier, Emily A.; Irwin, Scott A.: Personally meaningful rituals: A way to increase compassion and decrease burnout among hospice staff and volunteers. Journal of Palliative Medicine. 2016;19(10):1043-1050.
45. Morita TT, Keiko; Kusajima, Etsuko; Sakai, Sayuri; Kawa, Masako; Imura, Chizuru; Ichihara, Kaori; Miyashita, Mitsunori; Yamaguchi, Takuhiro; Uchitomi, Yosuke: Nurse education program on meaninglessness in terminally ill cancer patients: A randomized controlled study of a novel two-day workshop. Journal of Palliative Medicine. 2014;17(12):1298-1305.
46. Orellana-Rios CLR, L.; Kern, M.; Regel, Y. U.; Anton, A.; Sinclair, S.; Schmidt, S.: Mindfulness and compassion-oriented practices at work reduce distress and enhance self-care of palliative care teams: a mixed-method evaluation of an "on the job" program. BMC Palliat Care. 2017;17(1):3.
47. Pattison N, Droney J, Gruber P: Burnout: Caring for critically ill and end-of-life patients with cancer. Nursing in Critical Care. 2020;25(2):93-101.
48. Pelon SB: Compassion Fatigue and Compassion Satisfaction in Hospice Social Work. Journal of Social Work in End-of-Life & Palliative Care. 2017;13(2/3):134-150.
49. Pereira SMT, Carla Margarida; Carvalho, Ana Sofia; Hernandez-Marrero, Pablo: Compared to palliative care, working in intensive care more than doubles the chances of burnout: Results from a nationwide comparative study. PLoS ONE Vol 11(9), 2016, ArtID e0162340. 2016;11(9).
50. Popa-Velea O, TruȚEscu C-I, Diaconescu LV, et al.: The impact of Balint work on alexithymia, perceived stress, perceived social support and burnout among

physicians working in palliative care: a longitudinal study. International Journal of Occupational Medicine & Environmental Health. 2019;32(1):53-63.
51. Singh NW, C.; Knight, K.; Baird, M.; Akroyd, D.; Adams, R. D.; Schneider, M. E.: Occupational burnout among radiation therapists in Australia: Findings from a mixed methods study. Radiography. 2017;23(3):216-221.
52. Slocum-Gori SH, David; Chan, Winnie W.; Carson, Anna; Kazanjian, Arminee: Understanding compassion satisfaction, compassion fatigue and burnout: A survey of the hospice palliative care workforce. Palliative Medicine. 2013;27(2):172-178.
53. Whitebird RRA, Stephen E.; Thompson, Gretchen L.; Rossom, Rebecca; Heinrich, Richard: Stress, burnout, compassion fatigue, and mental health in hospice workers in Minnesota. Journal of Palliative Medicine. 2013;16(12):1534-1539.
54. Yoon JDH, Natalie B.; Ravella, Krishna C.; Jun, Christine S.; Curlin, Farr A.: Physician burnout and the calling to care for the dying: A national survey. American Journal of Hospice & Palliative Medicine. 2017;34(10):931-937.
55. Lambden JP, Chamberlin P, Kozlov E, et al.: Association of Perceived Futile or Potentially Inappropriate Care With Burnout and Thoughts of Quitting Among Health-Care Providers. Am J Hosp Palliat Care. 2018:1049909118792517.
56. Alkema KL, Jeremy M.; Davies, Randall: A study of the relationship between self-care, compassion satisfaction, compassion fatigue, and burnout among hospice professionals. Journal of Social Work in End-of-Life & Palliative Care. 2008;4(2):101-119.
57. Boerner K, Gleason H, Jopp DS: Burnout After Patient Death: Challenges for Direct Care Workers. J Pain Symptom Manage. 2017;54(3):317-325.
58. Davhana-Maselesele M, Igumbor JO: The impact of caring for persons living with HIV and AIDS on the mental health of nurses in the Limpopo Province. Curationis. 2008;31(2):67-73.
59. Freitas ARC, Estela Cristina; Paiva, Carios Eduardo; Ribeiro Paiva, Bianca Sakamoto: Impact of a physical activity program on the anxiety, depression, occupational stress and burnout syndrome of nursing professionals. Revista Latino-Americana de Enfermagem. 2014;22(2):332-336.
60. Frey R, Boyd M, Foster S, et al.: Burnout matters: The impact on residential aged care staffs' willingness to undertake formal palliative care training. Progress in Palliative Care. 2014;23(2):68-74.

61. Galiana LA, F.; Oliver, A.; Sanso, N.; Benito, E.: Compassion Satisfaction, Compassion Fatigue, and Burnout in Spain and Brazil: ProQOL Validation and Cross-cultural Diagnosis. J Pain Symptom Manage. 2017;53(3):598-604.
62. Gama GB, F.; Vieira, M.: Personal determinants of nurses' burnout in end of life care. European journal of oncology nursing : the official journal of European Oncology Nursing Society. 2014;18(5):527-533.
63. Gomez-Cantorna CC, Miguel; Fariña-Lopez, Emilio; Estevez-Guerra, Gabriel J.; Gandoy-Crego, Manuel: The Effect of Personality Type on Palliative Care Nursing Staff Stress Levels. Journal of Hospice & Palliative Nursing. 2015;17(4):342-347.
64. Hayuni G, Hasson-Ohayon I, Goldzweig G, et al.: Between empathy and grief: The mediating effect of compassion fatigue among oncologists. Psycho-Oncology. 2019;28(12):2344-2350.
65. Heeter CL, Rebecca; Allbritton, Marcel; Day, Tom; Wiseman, Michelle: Effects of a Technology-Assisted Meditation Program on Healthcare Providers' Interoceptive Awareness, Compassion Fatigue, and Burnout. Journal of Hospice & Palliative Nursing. 2017;19(4):314-322.
66. Hunnibell LSR, P. G.; Quinn-Griffin, M.; Fitzpatrick, J. J.: Self-transcendence and burnout in hospice and oncology nurses. Journal of Hospice & Palliative Nursing. 2008;10(3):172-179.
67. Kalicińska MC, Joanna; Wilczek-Różyczka, Ewa: Professional burnout and social support in the workplace among hospice nurses and midwives in Poland. International Journal of Nursing Practice. 2012;18(6):595-603.
68. Kaur AS, Mahendra; Chaturvedi, Santosh: Professional quality of life among professional care providers at cancer palliative care centers in Bengaluru, India. Indian journal of palliative care. 2018;24(2):167-172.
69. Klein CJR-H, Jami J.; Sollenberger, Laura M.; Harney, Diane M.; McGarvey, Jeremy S.: Quality of Life and Compassion Satisfaction in Clinicians: A Pilot Intervention Study for Reducing Compassion Fatigue. American Journal of Hospice & Palliative Medicine. 2018;35(6):882-888.
70. Mampuya WAM, Y.; Nakamura, A.; Hiraoka, M.: Evaluation of the prevalence of burnout and psychological morbidity among radiation oncologist members of the Kyoto Radiation Oncology Study Group (KROSG). Journal of radiation research. 2017;58(2):217-224.
71. Melo CGO, D.: Can addressing death anxiety reduce health care workers' burnout and improve patient care? J Palliat Care. 2011;27(4):287-295.

72. Moreno-Jimenez B, Rodriguez-Carvajal R, Hernandez EG, et al.: Terminal versus non-terminal care in physician burnout: The role of decision-making processes and attitudes to death. Salud Mental. 2008;31(2):93-101.
73. Morita TM, Hisayuki; Kishi, Emi; Miyashita, Mitsunori; Yamaguchi, Takuhiro; Uchitomi, Yosuke: Meaninglessness in terminally ill cancer patients: A randomized controlled study. Journal of Pain and Symptom Management. 2009;37(4):649-658.
74. O'Mahony SZ, M.; Hoerger, M.; Levine, S.; Baron, A.; Gerhart, J.: Compassion Fatigue Among Palliative Care Clinicians: Findings on Personality Factors and Years of Service. Am J Hosp Palliat Care. 2018;35(2):343-347.
75. Ostacoli LC, Marco; Zuffranieri, Marco; Negro, Manuela; Sguazzotti, Erica; Picci, Rocco Luigi; Tempia, Patrizia; La Ciura, Pietro; Furlan, Pier Maria: Comparison of experienced burnout symptoms in specialist oncology nurses working in hospital oncology units or in hospices. Palliative & Supportive Care. 2010;8(4):427-432.
76. Pavelková H, Bužgová R: BURNOUT AMONG HEALTHCARE WORKERS IN HOSPICE CARE. Central European Journal of Nursing & Midwifery. 2015;6(1):218-223.
77. Pereira SMF, António M.; Carvalho, Ana Sofia: Burnout in nurses working in Portuguese palliative care teams: a mixed methods study. International Journal of Palliative Nursing. 2012;18(8):373-381.
78. Podgurski L, Greco C, Croom A, et al.: A Brief Mindfulness-Based Self-Care Curriculum for an Interprofessional Group of Palliative Care Providers. Journal of Palliative Medicine. 2019;22(5):561-565.
79. S. Potash J; Hy Ho AC, F.; Lu Wang, X.; Cheng, C.: Can art therapy reduce death anxiety and burnout in end-of-life care workers? a quasi-experimental study. Int J Palliat Nurs. 2014;20(5):233-240.
80. Puyat JH, Leclerc A, Song A, et al.: Exposure to deaths and dying and risks of burnout among long-term care staff: A cross-sectional survey. Palliative Medicine. 2019;33(6):717-720.
81. Quinn-Lee L, Olson-McBride L, Unterberger A: Burnout and death anxiety in hospice social workers. J Soc Work End Life Palliat Care. 2014;10(3):219-239.
82. Rizo-Baeza MMI, Susana Virginia; Sepehri, Armina; Palazón-Bru, Antonio; Gil-Guillén, Vicente Francisco; Cortés-Castell, Ernesto: Burnout syndrome in nurses working in palliative care units: An analysis of associated factors. Journal of Nursing Management. 2018;26(1):19-25.
83. Sanso NG, L.; Oliver, A.; Pascual, A.; Sinclair, S.; Benito, E.: Palliative Care Professionals' Inner Life: Exploring the Relationships Among Awareness, Self-

Care, and Compassion Satisfaction and Fatigue, Burnout, and Coping With Death. J Pain Symptom Manage. 2015;50(2):200-207.
84. Turner J, Clavarino A, Butow P, et al.: Enhancing the capacity of oncology nurses to provide supportive care for parents with advanced cancer: evaluation of an educational intervention. European Journal of Cancer. 2009;45(10):1798-1806.
85. Valjee LvD, A. C.: Impact of caring for people living with HIV on the psychosocial well-being of palliative caregivers. Curationis. 2014;37(1):1201.
86. Kamal AHB, Janet H.; Wolf, Steven P.; Swetz, Keith M.; Shanafelt, Tait D.; Ast, Katherine; Kavalieratos, Dio; Sinclair, Christian T.; Abernethy, Amy P.: Prevalence and predictors of burnout among hospice and palliative care clinicians in the U.S. Journal of Pain and Symptom Management. 2016;51(4):690-696.
87. Stamm BH: The Concise ProQOL Manual, 2nd Ed. Pocatello, . 2010.
88. Rotenstein LS, Torre M, Ramos MA, et al.: Prevalence of Burnout Among Physicians: A Systematic Review. JAMA. 2018;320(11):1131-1150.
89. Canadas-De la Fuente GA, Gomez-Urquiza JL, Ortega-Campos EM, et al.: Prevalence of burnout syndrome in oncology nursing: A meta-analytic study. Psychooncology. 2018;27(5):1426-1433.
90. Monsalve-Reyes CS, San Luis-Costas C, Gomez-Urquiza JL, et al.: Burnout syndrome and its prevalence in primary care nursing: a systematic review and meta-analysis. BMC Fam Pract. 2018;19(1):59.
91. Portoghese I, Galletta M, Larkin P, et al.: Compassion fatigue, watching patients suffering and emotional display rules among hospice professionals: a daily diary study. BMC Palliative Care. 2020;19(1):1-7.
92. Müller M PD, Markett S, Jaspers B: How many patient deaths can a team cope with? : a nationwide survey of palliative care units in Germany Schmerz. 2009;23(6):600-608.
93. Hill RC, Dempster M, Donnelly M, et al.: Improving the wellbeing of staff who work in palliative care settings: A systematic review of psychosocial interventions. Palliat Med. 2016;30(9):825-833.
94. Panagioti M, Panagopoulou E, Bower P, et al.: Controlled Interventions to Reduce Burnout in Physicians: A Systematic Review and Meta-analysis. JAMA Intern Med. 2017;177(2):195-205.
95. Maslach C JS, Leiter M. : Maslach Burnout Inventory Manual, 3rd ed. . Palo Alto, CA: Consulting Psychologists Press. 1996.

96. Etkind SN, Bone AE, Gomes B, et al.: How many people will need palliative care in 2040? Past trends, future projections and implications for services. BMC Med. 2017;15(1):102.
97. Schaufeli WB, De Witte, H. & Desart, S. (2019). Manual Burnout Assessment Tool (BAT). KU Leuven, Belgium: Unpublished internal report.
98. Harrison KL, Dzeng E, Ritchie CS, et al.: Addressing Palliative Care Clinician Burnout in Organizations: A Workforce Necessity, an Ethical Imperative. J Pain Symptom Manage. 2017;53(6):1091-1096.
99. Gillman L, Adams J, Kovac R, et al.: Strategies to promote coping and resilience in oncology and palliative care nurses caring for adult patients with malignancy: a comprehensive systematic review. JBI Database System Rev Implement Rep. 2015;13(5):131-204.

SUPPLEMENT 1. Keyword search string

#1	Burnout[tiab] OR emotional exhaustion[tiab] OR mental exhaustion[tiab] OR compassion fatigue[tiab] OR depersonalization[tiab] OR depersonalisation[tiab] OR cynicism[tiab] OR personal accomplishment[tiab] OR mental health[tiab] OR stress[tiab] OR work-related stress[tiab] OR resilience[tiab] OR self management[tiab] OR selfcare[tiab]
#2	"Burnout, Professional"[Mesh] OR "Occupational Stress"[Mesh]
#3	#1 OR #2
#4	Care provider[tiab] OR clinician[tiab] OR health care professional[tiab] OR physician[tiab] OR nurse[tiab] OR doctor[tiab] OR palliative care team[tiab]
# 5	"hospice social workers" [tiab] OR "hospice workers" [tiab]
#6	"Health Personnel"[Mesh]
#7	#4 OR #5 OR #6
#8	Palliative[tiab] OR hospice[tiab] OR end of life[tiab] OR end-of-life[tiab] OR advanced disease[tiab] OR advanced oncology[tiab]
#9	"Palliative Care"[Mesh] OR "Palliative Medicine"[Mesh] OR "Hospice Care"[Mesh] OR "Terminal Care"[Mesh]
#10	"Terminal Care" [mh] OR bereave* OR hospice*[tw] OR "advanced cancer"[tiab] OR "end of life" OR "terminally ill"[tw] OR palliative*[tiab] OR "Palliative Care"[mh]
#11	#8 OR #9 OR #10
#12	#3 AND #7 AND #11