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Palliative and end-of-life care and junior doctors: a systematic review and narrative synthesis

Aamena Bharmal ^{1,2}, Tessa Morgan,¹ Isla Kuhn,³ Bee Wee,^{4,5} Stephen Barclay ¹

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¹Primary Care Unit, University of Cambridge, Cambridge, UK

²Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK

³Medical Library, University of Cambridge, Cambridge, UK

⁴Sir Michael Sobell House Hospice, Oxford, UK

⁵University of Oxford Harris Manchester College, Oxford, UK

Correspondence to

Dr Aamena Bharmal, University of Cambridge Primary Care Unit, Cambridge CB2 0SR, UK; aamena.bharmal@gmail.com

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ABSTRACT

Background Palliative and end-of-life care is a core competency for doctors and is increasingly recognised as a key clinical skill for junior doctors. There is a growing international movement to embed palliative care education in medical student and junior doctor education. To date there has been no review of the literature concerning the views and experiences of junior doctors delivering this care.

Aim To review the published literature between 2000 and 2019 concerning junior doctors' experience of palliative and end-of-life care.

Methods Systematic literature review and narrative synthesis.

Results A search of six databases identified 7191 titles; 34 papers met the inclusion criteria, with a further 5 identified from reference searching. Data were extracted into a review-specific extraction sheet and a narrative synthesis undertaken. Three key themes were identified: (1) 'Significance of death and dying': all papers found that junior doctors care for many patients approaching the end of life, and this often causes emotional distress and can leave persisting memories for many years afterwards; (2) 'Thrown in at the deep end': junior doctors feel unprepared and unsupported in providing palliative and end-of-life care; and (3) 'Addressing the gaps': junior doctors often experience a medical culture of disengagement towards dying patients and varying attitudes of senior doctors. Subsequently they have to learn the skills needed through seeking their own opportunities.

Conclusion Medical education needs to change in order to better prepare and support junior doctors for their role in caring for dying patients. This education needs to focus on their knowledge, skills and attitudes.

INTRODUCTION

Acute hospital wards are the most prevalent place of death across the world: 47.4% of deaths in England and Wales in 2016¹

and 58% globally.² Most hospital palliative and end-of-life care is provided by patients' normal clinical teams rather than palliative care specialists,³ where junior doctors mainly work and are at the front line of end-of-life care provision.⁴

Palliative and end-of-life care has therefore been recently described as 'a core competency' for all doctors because of the need to have excellent skills in clinical assessment, communication, multidisciplinary teamwork and prescribing to provide this care for patients.⁵ Across the globe there is an increasing emphasis on embedding palliative care in the education of all medical students and doctors.^{5,6} However the literature suggests that medical student education in this subject area is patchy and frequently inadequate.⁷ There is limited understanding of how this affects recent graduates' provision and experience of palliative and end-of-life care.

We therefore undertook a systematic review of the literature concerning junior doctors' experience and views of providing palliative and end-of-life care. To our knowledge no such review has been previously undertaken.

Aim

The aim was to undertake a systematic review and narrative synthesis of the international literature concerning junior doctors and end-of-life care focusing on the following:

- What is their experience of providing care?
- What are their attitudes towards providing care?
- How adequately prepared do they feel?
- How supported do they feel?

METHODS

Search strategy

A search strategy was devised in collaboration with a professional medical librarian

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((exp Palliative Care) or palliat*) or (exp Death/ or death) or (exp Terminal Care/ or
"end of life") or (terminal* adj3 (care or ill*) or (dying) or (dnr or "do not resuscitate"
or dnr) or (resuscitat*) or (Resuscitation/ or exp Resuscitation Orders) or (exp
Advance Directives/ or exp Withholding Treatment).ti,ab.
AND
((junior* or trainee* or training) adj2 (doctor* or physician* or clinician*)) or (exp
"Internship and Residency") or (fy1 or fy2) or (foundation adj year*) or "house
officer".ti,ab. (1824)
(sho or cmt or cst or rmo).ti,ab.
AND
((perception*) or (perceiv*) or (experie*) or (view* or opinion*) or (coping) or (exp
Attitude/ or exp "Attitude of Health Personnel"/ or exp Attitude to Death/ or attitud*)
or (exp Attitude to Health) or (train or trained) or (confidence) or (need) or (exp
Health Knowledge, Attitudes, Practice/) or (exp Education Department, Hospital/ or
exp Education, Medical/ or exp Education, Professional, Retraining/ or exp
Education, Graduate/) or (exp Learning/ or learn*) or (cope) or (strategy) or
(support*) or (exp Inservice Training/) or (exp Interview/ or interview*) or (exp
"Surveys and Questionnaires"/) or (exp Clinical Competence/ or exp Professional
Competence) (competenc*).ti,ab.

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Figure 1 Medline search strategy.

(IK). An initial scoping search strategy was reviewed against the inclusion and exclusion criteria, following which the definitive search strategy was developed (figure 1).

The inclusion and exclusion criteria are summarised in figure 2. Due to a review published in 2000 demonstrating widespread palliative and end-of-life care education in medical undergraduate curricula, we sought to review the effect of this undergraduate teaching on junior doctors' experience.⁸ For the purpose of the review, we define 'junior doctors' as those who had graduated from medical school but had not yet entered a specialty training programme; for example in the UK, this would be the foundation programme, core medical or core surgical training years (previously known as junior and senior house officers). Junior doctors predominately work in adult inpatient settings during the early years of their careers; therefore, only hospital or inpatient hospice settings were included. Care of children and young people under 18 years of age as well as bereavement care were excluded as they are considered specialist areas.

Inclusion criteria:	
•	Published papers presenting empirical research on the experience of junior doctors and palliative care in inpatient hospital or hospice settings
•	Junior doctors were defined as those graduated from medical school prior to starting specialist registrar or single-stem training
•	Peer-reviewed quantitative and qualitative studies, case studies, audit and published conference abstracts
•	Studies published between 01.01.2000 until 19.08.2019
•	English language full-text
•	Study setting in UK, Ireland, Australia, Canada and New Zealand
Exclusion criteria:	
•	Children (under the age of 18 years)
•	Palliative care outside the inpatient hospital or hospice setting
•	Papers with no new empirical data for example editorials, opinion papers or review papers
•	Grey literature
•	Research examining assisted dying or euthanasia
•	Research examining Do Not Attempt Cardio-Pulmonary Resuscitation (DNACPR)
•	Research examining bereavement care
•	Research examining advanced care planning

Figure 2 Inclusion and exclusion criteria.

The literature was restricted to countries with broadly similar healthcare services, medical training programmes and cultural contexts: the USA was excluded as doctors enter specialty training very early in their careers. Opinion pieces, literature reviews and editorials were excluded unless they contained original empirical data.

Conducting the search

We searched six electronic databases (Medline, Embase, PsycINFO, Web of Science, Scopus and Cochrane) for papers published between January 2000 and August 2019. The search was initially run until January 2018 and then subsequently updated in August 2019 to ensure that any additional papers were captured within this review.

The search results were downloaded into EndNote and duplicates were removed. All titles, abstracts and full-text papers were screened by the first reviewer (AB), with a sample of abstracts and full-text papers screened by the second reviewer (TM). Any disagreements were resolved by review team discussion (AB, TM and SB).

Data analysis

A narrative thematic analysis was used to synthesise the heterogeneous literature, which enabled an empirical 'data-driven' approach to identify themes.⁹ Included papers were weighted by AB, with a sample independently weighted by TM, for their contribution towards answering the review questions, using the Gough's weight of evidence framework, which measures each paper against rigour of study design, appropriateness to the review question and relevance to answering the question.¹⁰

RESULTS

Search results are summarised in the adapted Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow chart (figure 3). Thirty-four papers were included from the database search, with a further five from reference searching of included papers. Of these 39 papers, 23 were from the UK and 7 from Canada, with 9 from across the globe; 17 used quantitative methods, 18 qualitative methods and 4 mixed methods. The quality of the papers varied on the Gough's weight of evidence: 11 weighted high, 16 medium and 12 low quality (7 of which were conference abstracts). The included papers are summarised in online supplementary file 1.

All the papers provided evidence that the majority of junior doctors provide palliative and end-of-life care for many patients early in their careers.^{11–49} An average of 40% (range: 36%–46%) of junior doctors cared for 1–10 patients, while 51% (range: 40%–61%) of junior doctors cared for more than 10 patients.^{16 26 38 44}

Three major themes were identified: (1) 'Significance of death and dying'; (2) 'Thrown in at the deep end'; and (3) 'Addressing the gap'.

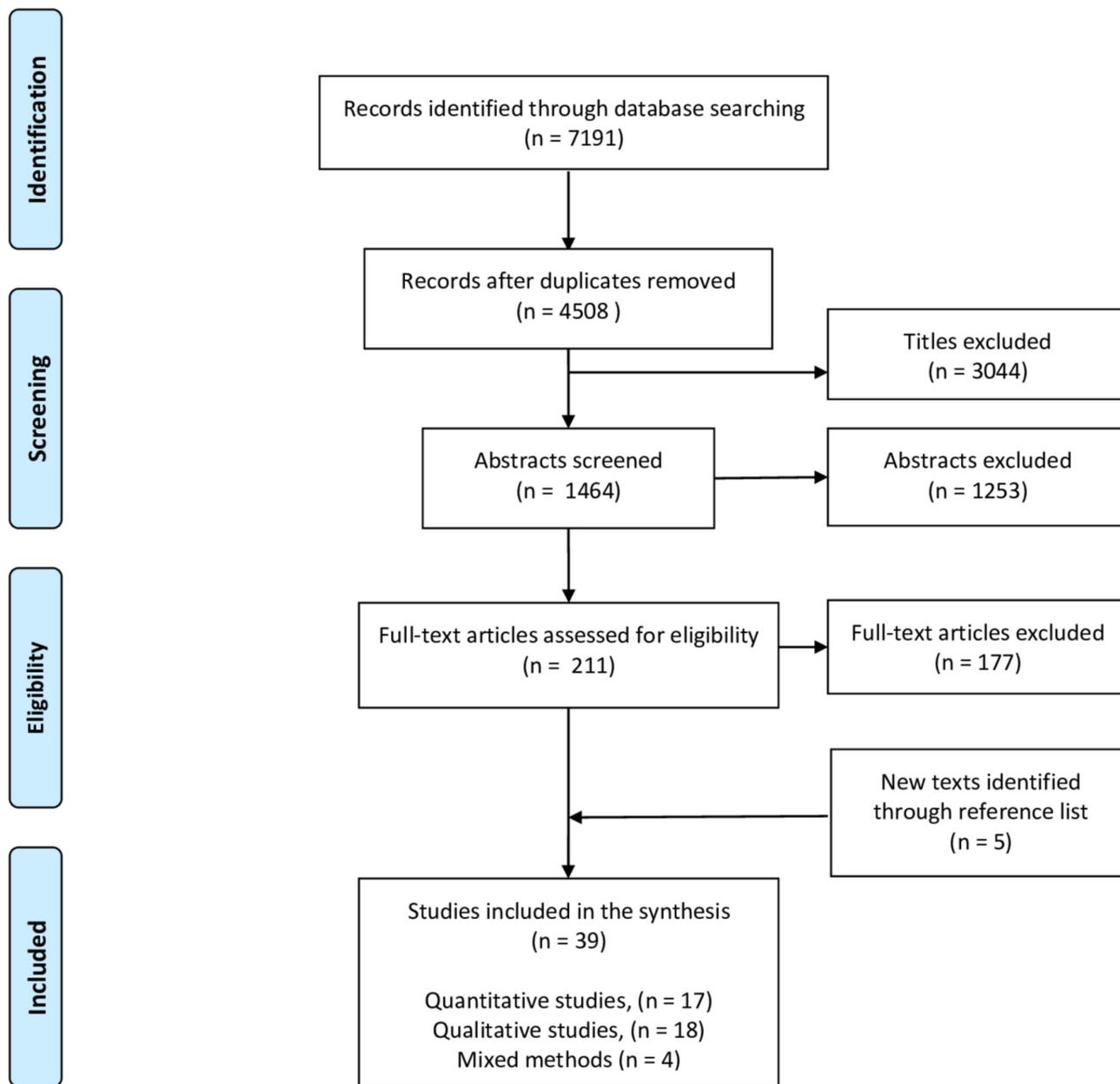


Figure 3 PRISMA diagram. PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

Significance of death and dying

Providing palliative and end-of-life care has a significant effect on junior doctors' emotional well-being and professional attitudes. Their first few patient deaths are memorable and powerful experiences.^{13 17 24 26–30 36}

Junior doctors report an emotional impact, describing themselves to feel 'sad' and 'depressed',^{13 23 26 44} 'anxious' and 'stressed',^{12 15 16 28 39} and 'guilty', 'dread', 'helplessness' and a 'sense of failure'.^{14 26 44 45} Two studies revealed that 12% of junior doctors are scoring for identifiable post-traumatic stress disorder and 25% for psychological distress from caring for dying patients, as per the Post-Traumatic Stress Disorder Checklist-Civilian Version (PCL-C) scale and the 12item General Health Questionnaire (GHQ-12) measure, respectively.^{26 28} There was one exception,

with a low Gough's weight of evidence study, which reported working in an inpatient hospice was not emotionally draining.²⁰ Overall early career experiences of death and dying are significant and memorable for doctors throughout their careers.^{29 36 39}

Junior doctors' personal attitudes towards palliative and end-of-life care varied. Many report a belief in the importance of palliation,^{14 17 20 21 24 34 37 41 44 45 47 48} some describing it as a privilege to care for patients at the end of their life.^{30 45} Some view palliative care as similar to other aspects of medicine, describing it as problem-solving patients' symptoms.^{25 39 45} Junior doctors describe a 'taboo hospital culture' towards patients approaching the end of their lives^{13 30} and a professional disengagement towards palliative

management,^{22 25 29 30 42} where doctors maintain a distance from their patients^{29 42 45} and inform more junior colleagues, including students, to do the same^{13 19} as well as prioritise other clinical tasks.²⁵ One paper reported that junior doctors who have observed such practice subsequently questioned their careers.¹³

Thrown in at the deep end

Junior doctors feel unprepared and out of their depth when caring for patients approaching and at the end of their lives.^{12–15 18 22 26 29 30 38 40 46 47} Two studies, both with medium Gough's weight of evidence, had contrasting results: in one, 80% of junior doctors reported they 'felt comfortable' caring for dying patients, although only 54% 'felt comfortable' alleviating suffering⁴⁸; in another, 65% of junior doctors reported they were 'well prepared' for palliative and end-of-life care, although this was inversely correlated with their knowledge score in the area.⁴⁹ Palliative and end-of-life care is more challenging for junior doctors out of hours,^{26–28 41 42} due to frequent lack of clarity or delays in deciding about goals of care, patients being unfamiliar and having to make independent decisions.

Junior doctors commonly report being unsupported by their hospital teams in managing palliative and end-of-life care,^{13 14 17 18 22 26 27 40 42 45} apart from one paper in which 90% reported being able to discuss these patients with their team.³⁶ Support is sought and received from other junior doctors as well as senior medical colleagues.^{35 42} Senior support is variable and specialty-dependent,^{12 17 22 38 42} with most support being practical advice rather than emotional.¹⁷ Senior support is particularly lacking when senior doctors had limited experience of caring for frail older patients or greater experience in medical or surgical interventions.^{37 38 40 41}

Junior doctors report receiving support outside the medical team, from nursing colleagues,^{22 27 35 40 41 47} palliative care specialists,^{12 18 22 25 40} friends and family,^{17 39} and online advice.³⁵

Addressing the gap

Junior doctors perceive that palliative and end-of-life care is not optimally provided in inpatient hospital settings,^{14 27 38 41 47} and frequently express strong requests for further training in the area.^{12 14 15 22 25 26 28 32 34 38 40 41 45 46 48} Junior doctors consider active participation and experiential learning as the most effective way to bridge their knowledge gap in palliative and end-of-life care.^{12 15 17 20–22 25 29 31 37 40 41} Palliative care rotations, at postgraduate or undergraduate level, are seen as the best way to achieve this^{12 15 20–22 25 28} because the rotations or placements are valued as opportunities to address the unmet needs from medical school, which included specific and transferable skills in symptom control, professionalism, teamwork, communication, reflective practice^{17 20 21 25 37 44} and in ethical-legal

framework.¹⁷ There was one exception where junior doctors reported hospice placements as medically deskilling experiences, but this had a low weight of evidence.²⁰

Other learning methods valued by junior doctors include observation of senior colleagues^{14 17 21 31 37 40 43 49} and reflection in clinical contexts^{14 17 24 40 41} or social settings.^{17 39} There is a preference for practical and case-based teaching^{12 15 22 40 41 46 49} particularly addressing symptom control,^{15 32 38 40 44 46 48} prescribing²¹ the dying process^{12 20 21} and role-playing difficult conversations.^{21 25 31 48} Written material and guidance were also valued as ways to support junior doctors' prescribing^{21 33 40} and handover out of hours.⁴¹ It was reported that undergraduate and postgraduate assessments were a way to increase the curriculum priority of palliative and end-of-life care, for both educators and junior doctors.

DISCUSSION

The literature reveals that junior doctors are caring for a high number of patients needing palliative and end-of-life care. Providing such care has a significant emotional demand on them, leaving memories that persist for many years. Junior doctors feel ill-prepared and inadequately supported in this role and frequently request further training. Attitudes towards palliative and end-of-life care varied: some view it as a privilege, while others associate it with a culture of disengagement that stigmatises dying patients.

This is the first review to systematically review and synthesise the international literature concerning junior doctors' experience in providing palliative and end-of-life care, which reflects a varied weight of evidence and quality of the literature, with a range of research methods employed. It provides a timely and contemporary review of training and identifies development needs in the area, which has been rising in public interest following the Liverpool Care Pathway for the Dying Patient withdrawal and subsequent independent report.⁵⁰ The report highlighted that there were multifaceted reasons for the poor care that some patients in hospitals received towards the end of their life, one of which being lack of appropriate training and support.

Limitations

We recognise that the use of the term junior doctors varies between countries, with the transition into a single-stem specialty training occurring at different time points in junior doctors' careers. The review is limited to the UK, Ireland, Canada, New Zealand and Australia, where there is greater commonality in postgraduate medical training and healthcare systems, permitting synthesis of the data. However all the themes were identified from studies in all of these countries, suggesting they are of generalisable relevance. The grey literature was not searched and

publications were limited to the English language. The database search was augmented by reference searching to minimise the risk of relevant information being omitted; that this only identified a further five papers suggests that the database searches were robust.

Interpretation of the findings

The wider literature identifies that junior doctors worldwide feel unprepared for many areas of clinical practice, lack senior support which increases their stress in the workplace and that this experience is worse out of hours.⁵¹ The review has identified that junior doctors face these same challenges when caring for palliative and end-of-life care patients, which reflects the broader pressures junior doctors face.

However, the additional impact of palliative and end-of-life care is that there is only one chance to get it right and the significance of the associated emotional burden. Therefore greater attention is needed to junior doctors' well-being, since caring for these patients is a significant source of stress for them.^{13 39} This review reveals that such support is commonly not forthcoming, and instead the 'taboo culture' of a death in a hospital⁵² continues to prevail, with senior doctors distancing and avoiding dying patients and thus contributing to poor palliative and end-of-life care.

Implications for future practice

This review has identified a pressing need for further development of medical education in palliative and end-of-life care; this will improve the quality of patient care, equip doctors with transferrable skills, and provide them with support and resilience to deal with an emotionally demanding aspect of medicine.

The recommendations that arise are highlighted under Bloom *et al's*⁵³ domains of knowledge, skills and attitudes.

Knowledge

Despite recent increases in undergraduate palliative and end-of-life care education,⁸ junior doctors remain frequently unprepared to care for these patients. They perceive palliative care as receiving a lower curricular priority than other aspects of medicine at both undergraduate and postgraduate levels, with specific knowledge gaps identified in symptom control, communication and the dying process. A greater focus on palliative and end-of-life care is urgently needed.

Skills

Palliative and end-of-life care is holistic and needs doctors to use a wide range of skills. Junior doctors learn and gain skills in palliative care through their personal experience and active participation. They express strong requests for further experiential learning through palliative care attachments, apprenticeship and shadowing, approaches known to improve preparedness for medical practice more generally.^{8 51}

Attitudes

Palliative and end-of-life care places a particular emotional demand on healthcare professionals, which for some junior doctors makes palliative care unique and special, while others find it a negative emotional experience. Junior doctors need to be supported in understanding their experiences and emotional reactions when caring for the dying. Junior doctors benefit from reflection with their professional or personal colleagues; this only frequently occurs in unstructured and ad-hoc ways. Balint groups and similar structured reflection could be an effective way for junior doctors to receive emotional support,⁵⁴ facilitating confidential and safe spaces to share experiences.¹⁹ The roles of senior doctors as mentors and supervisors may greatly influence their junior colleagues' attitudes towards patients who are towards the end of life.

CONCLUSION

The review has demonstrated that junior doctors frequently feel unprepared and unsupported to provide palliative and end-of-life care, with greater emotional demands than other areas of medicine. There is a pressing need for changes in undergraduate and postgraduate medical education to focus on the development of knowledge, skills and attitudes of junior doctors in this area of patient care. This can be achieved through increased curriculum content, experiential learning opportunities, and supportive and reflective practice. This will go a long way to enable future generations of junior doctors to be empowered and able to care for palliative and end-of-life care patients.

Correction notice This article has been updated since it was first published. The article type has been changed to Systematic review.

Twitter Isla Kuhn @ilk21

Contributors AB designed and had the concept of the work. AB and SB planned the study. AB and IK designed the literature search terms, with AB conducting the literature search from January 2000 to January 2018 and IK conducting the database search from January 2018 to August 2019. AB screened the titles, abstracts and full texts, and weighted the papers, with TM completing a sample selection at each stage. AB, TM and SB achieved consensus on any discrepancies in screening decisions. AB, SB and TM analysed and identified the themes. AB wrote the draft of the article. AB, SB and BW contributed to interpretation and critical revision of the article. All the authors approved the final version. AB is guarantor of the paper.

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ORCID iDs

Aamena Bharmal <http://orcid.org/0000-0002-5023-3027>
Stephen Barclay <http://orcid.org/0000-0002-4505-7743>

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SUMMARY OF INCLUDED PAPERS (36)

Authors	Participants	Aims	Methods	Key Findings	Weighting
Bowden, Dempsey, Boyd et al. 2013	60/176 FYs in Southeast Scotland deanery, UK	Preparation to deliver PC	Questionnaire and semi-structured interviews	65% find it distressing 79% felt out of their depth 67% were not well prepared to manage EOL Learn by doing 91% who felt out depth stated they had someone to approach, often seniors or PC team. Recommend further training that is: practical, case-based, increase clinical exposure with a specific placement.	M, H, H – H
Charlton & Smith 2000	1637/7694 PRHO, UK	Perceived PC skills	Questionnaire (Likert scale)	Mean 2.9 score out of 5 in anxiety in caring for dying. Mean 2.25 score out 5 in preparation. Skills gained by life experience and hands-on experience, higher scores in graduate-entry medics. Want more training in practical experience/exposure, hospice rotation and teaching on symptom control.	M, H, H – H
Gibbins, McCoubrie & Forbes 2011	21/39 FY1s in University Hospital Bristol, UK	Experience of caring for dying patients	Semi-structured interviews	FY1s described death and dying as a 'taboo' and that patients do not receive comprehensive assessments. All felt 'thrown in the deep end' and 'left to do it' alone. They learnt from their personal experience and received variable senior doctor support alongside guidance from nursing staff and PC team. Report that at medical school they do not receive enough exposure to PC, lack formal exams and do not have enough practical teaching.	H, H, H – H
Kawaguchi, Mirza, Nissim et al. 2017	10 internal medicine residents out of 60 who agreed in Toronto, Canada	Explore understanding of PC and challenges in providing it	Semi-structured interviews	All understood that PC is not limited to EOLC and that it can have a positive impact in QOL. Report a societal stigma against PC and that it is perceived as "abandoning a patient". JD prioritise other clinical presentations and do not have enough time to provide PC. Find it more challenging OOH and lacking community support information. Request: communication teaching, PC rotation, access to PC team OOH, feedback on their performance, case-based informal teaching and increased curriculum content.	H, H, H – H
Linane, Connolly, McVicker et al. 2018	110 questionnaires and 31 interviews across 2 hospitals, Galway, Ireland	Determine the frequency that JD deal with EOL and the impact on their psychological well-being	Questionnaire and interviews	All had been involved, 40% of SHOs had done so more than 10 times. 86% feel distressed from a patient death, 42% have disturbing memories and 48% are upset by a patient death. 12% scored for PTSD through the PCL-C scale. Feel unprepared and lack knowledge. 80% would like more PC training.	H, H, H, - H
Linklater 2010	79/132 FY1s in North Scotland deanery, UK	Educational needs of doctors caring for dying patients	Questionnaire	61% felt that it had a strong negative emotional impact, found it memorable experience. 2/5 felt that PC was not optimally provided. Worse OOH. 55% felt adequately supported. Sources of support: other FYs (72%), nursing colleagues (49%) and consultants/ supervisors (11%).	H, H, H – H
Morrison & Forbes 2012	7/10 FY1s who have PC rotation in Southwest and Wales deaneries, UK	Experience of PC rotation	Semi-structured interviews	PC rotation was a positive experience which increased FY1s confidence in symptom control, professionalism and BBN. Learnt by active participation and observation from doctors and PC nurses. Received support from PC seniors and MDT, which is not available on other acute hospital setting.	H, L, H – H
Murray-Brown, Curtis & Gibbins 2015	94/208 FY1s at Devon and Cornwall hospitals, UK	Experience of caring for the dying	Questionnaire	All FY1s had cared for dying patients, a ¼ had cared for more than 20 patients. 53% of FY1s do not feel prepared. 41% feel that they care for the patients by themselves, and 59% would like more support. Senior support was specialty dependent with less available in surgery. Seniors described as distancing themselves. All want more teaching on symptom control.	M, H, H – H
Price & Schofield 2015	11 CMTs in 15 hospitals in	How do junior doctors learn to provide EOLC	Semi-structured interviews	Felt daunted, scared and left alone to care for dying patients. Still recall deaths that occurred early in their career. Learnt PC by doing it.	M, H, H – H

	Wessex deanery, UK			Report support varying according to specialities, but consistently receive PC team and nursing support. Informally benefit from reflective practice and direct/indirect observation from seniors. All want further teaching, noted that PC was a low curriculum priority with lack of assessments and teaching sessions.	
Redman, Pearce, Gajebasia et al. 2017	47/355 FY1s in North Yorkshire, UK	Experience of 'Priorities for Care of the Dying person' to improve education and clinical practice	8 semi-structured group interviews 21 individual telephone/video interviews	Recognise the significance of caring for the dying and find it a valuable/ rewarding work. But some FY1S question their role/ responsibility, find it challenging and 'feel out of depth.' Experience varied according to specialities and is worse OOH. Received support from SHOs, nurses and PC staff. Benefit from reflection and debrief sessions, want a specific PC handover for OOH, practical teaching sessions and access to prescribing guidelines	H, H, H – H
Schroder, Heyland, Jiang et al. 2009	185/318 internal medicine residents at 5 sites, Canada	Attitudes, knowledge, competency and learning priorities in EOLC	Survey	2/3 of residents have cared for more than 10 patients. ¼ of residents were often/ always depressed and ½ felt guilty. Preparedness rated 6.1/ 10, higher scores were associated with previous PC rotation.	H, H, H – H
Barclay, Wyatt, Shore et al. 2003	399/590 GPs in Wales, UK	PC training that GPs received in Wales during different career stages	Questionnaire	As junior doctors, 26% did not receive any training on PC and training is static except for in syringe drivers.	H, M, L – M
Brennan, Corrigan, Archer et al. 2010	31/186 FYs in 5 hospitals in Devon and Cornwall, UK	Understand transition from student to doctor	Semi-structured interviews 17 FYs interviewed twice 10 audio diaries	Describe emotionally challenging and memorable experiences at the start of their career. All felt unprepared to deal with death and dying, felt that you gain the skills through experience on the job. Lack emotional support and question their career choice.	M, H, L – M
Centofanti, Swinton, Barefah et al. 2016	33 residents in ITU, Canada	Reflections on end-of-life education: 3 wishes project	Semi-structured interviews after death of patient	ITU dehumanises the patient. Residents feel helpless, inadequate and alone when palliating patients. The do not feel prepared and lack the knowledge, skill or experience. Useful to have framework. Benefit from intentional role modelling and reflection. Keen to improve their skills and have further training.	M, M, H – M
Crawford & Zambrano 2015	12 doctors (9 = JD) from University of Adelaide who were awarded prize for excellence in PC, Australia	Use of PC clinical elective on medical practice as a JD	Semi-structured interviews	Enjoyed the PC elective rotation, it changed from being apprehensive to gaining a sense of control. Hospice rotation prepared them by giving them practical skills and experience. Learnt transferrable skills that have improved them as doctors. Describe hospital culture of "fixing" patients. After a hospice rotation, learnt that palliation is valuable and not a failure. As a JD left to deal with PC, without any supervision. Senior doctors' support is often practical guidance, not emotional.	L, H, H – M
Ewing, Farquhar & Booth 2008	18 healthcare professionals (5 = JD), Addenbrooke's hospital, UK	Healthcare professionals perspective of PC service (both refers and providers)	Semi-structured interviews Focus groups	Junior doctors do not feel they have the skills in PC, especially in prescribing. Limited senior support during the ward round. Benefit from informal education, advice and out of hour access.	M, H, L – M
Feld & Heyse-Moore 2006	25/37 doctors who were junior doctors working at St Joesph's Hospice, UK 62 hospices UK-wide with inpatient beds	Review effectiveness of Balint model in a hospice and other support systems for JD	Semi-structured interviews of doctors at St Joesph's hospice Questionnaire to UK-wide hospices	Balint group was positive because it facilitated sharing of experiences, increase in confidence and ability to offload/ reduce sense of isolation. Challenges were in fearing judgement from others.	M, M, L – M
Gajebasia, Pearce, Redman et al. 2019	47/355 in a in one Foundation school, UK	Understand and explore FYs' experience of training and training needs in care of dying	Semi-structured group or individual interviews	Variable teaching throughout their medical education. Learnt from observation, reflection, written guidance and hospice placements. Would like further training in prescribing, communication, recognising the dying, societal perspectives and emotional resilience.	M, H, M – M

Lloyd-Williams 2002	23 SHOs in inpatient hospice, UK	Experience of SHOs working in hospices and their perception of the learning opportunities available	Questionnaire sent to all hospices that have accredited SHO training posts	22% of SHOs experience psychological distress (scored by GHQ12) Described it as a positive experience and recommend other SHOs to have a rotation in a hospice. Learnt from observing seniors, nursing staff and from their personal experience. Well supported throughout the rotation by nursing staff and had approachable seniors.	H, M, M – M
Macleod 2001	10 doctors at different career stages reflecting on death and dying, New Zealand	Doctors experience in learning to care for the dying	Phenomenological interview	Recall having strong emotional reactions after the death of a patient. However trained to high behind technical procedures, focus on curative model and distance themselves from intimate encounters. Learnt how to care for dying through experience not from medical training.	H, H, L – M
Moore, Castle, Shaw et al. 2007	All grades – 49 JHO and 63 SHOs at 3 hospitals, Leeds, UK	Doctors experience following a death of a memorable patient	Questionnaire	Moderate to severe intensity to a patient death's. Junior doctors found it the least professionally satisfying. Irrespective of grade, strategies to dealing with a disturbing death were: talking to others (90% felt able to talk to their team), socialising and seeking religious support. Some required counselling and increased team support.	M, M, L – M
Paice, Rutter, Wetherell et al. 2002	1445/2456 PRHOs 8 weeks prior to the end of their year, UK	Understanding the cause of stress in newly qualified doctors, how they cope and what interventions make it less traumatic	Postal questionnaire	All stressful incidents took place in the context of death and disease. Cope with death and dying by approaching it as problem solving and having a social support network.	H, M, L – M
Reid, Gibbins, Bloor et al. 2013	2 consultants, 4 SpRs, 6 junior doctors in University Hospital Bristol, UK	Healthcare professionals perspective on EOLC	Focus groups	Describes a hospital culture of providing active treatment and having minimal engagement with dying patients. Anxiety in prescribing and reviewing led to delays Different ward cultures and support varied according to specialties/ consultants. Challenging OOH especially without clarification of treatment goals in the documentation.	M, H, M – M
Tait & Hodges 2013	12 residents during the PC rotation, Canada	Address trainee gaps in EOLC	Semi-structured interview 1 week after a resident interviews a dying patient for an hour.	Goals of medicine do not align with PC and there is a culture to only refer to PC when there is "nothing left" at the very end. Observe from seniors that they should not get too close with their EOL patients and that there is "nothing to do" for PC patients. Junior doctors do not receive any emotional support from seniors. Request further role-modelling, observation, debriefing and feedback.	H, H, M – M
Vivekananda-Schmitt & Vernon 2013	FY1s at 2 hospitals in Sheffield, UK. Site A – integrative course (9 FY1s) Site B – lecture-based (9 FY1s)	Ethical issues that FY1s encounter during clinical practice	1-1 semi-structured interviews	PC is a key ethical issue for FY1s where they struggle with treatment dilemmas. Felt ill-prepared and unsupported by senior members of the team. Want more training that includes: junior doctors providing case-based teaching and medical students have greater experiential learning.	H, L, M – M
Weil, McIvert, Rotstein et al. 2011	52/133 residents at St Vincent's hospital, Australia	Learning needs, attitudes and confidence in practicing PC	Survey	80% of residents feel comfortable in PC. 98% would like advice on symptom management.	M, M, H – M
Wheatley – Price, Massey, Panzarella et al. 2009	71/153 residents at 5 hospitals in Canada	Preparedness of residents to discuss poor prognosis	Question survey	69% felt comfortable discussing poor prognosis, this increased with years of training. 75% felt well prepared for these consultations, this was not associated with training and was inversely related to knowledge score.	M, M, L, - M
Clayton, Butow, Waters et al. 2012	21 residents, Sydney, Australia	Evaluation of EOL communication skill training intervention	Pre and post teaching intervention questionnaire	Stress and burnout (measured via MBI scale): personal satisfaction improved compared to pre and post (36.9 to 33.9); no change in emotional exhaustion or depersonalisation. Found the training useful and would recommend further training.	L, L, L – L
Hayes, Eimear, Miptah et al. 2016	36/75 FY1s in Galway University Hospital, Ireland	New doctors views towards EOL	Questionnaire (FATCOD scale)	25% feel uncomfortable when a dying patient cries and 28% prefer to not to be present. 44% feel uncomfortable discussing death and dying.	L, M, L – L

Hohenberg & Gonski 2017	22/32 interns at St Vincent's hospital, Australia	Geriatric learning needs and learning preference	Semi-structured interviews about 3 educationally significant experiences	27% felt that PC was key area in geriatric medicine. 50% lacked senior support which limited their learning. Learnt effectively through: reflective practice, pro-activity in the workplace.	M, L, L - L
Frearson 2019	6/8 FY1s on an 8 week hospice placement, London, UK	Understand FY1s experience of a hospice placement	1-1 interviews with an interpretivist approach	Gained transferrable skills that addressed learning gaps from medical school in communication and recognising the dying. 50% reported concerns of medically de-skilling.	L, M, L - L
Malthouse 2012	12 junior doctors, Dorothy House hospice, UK	Experience of death and dying. Medical education, culture, preparation and support for PC.	Narrative inquiry about memories of death and dying	Deaths are significant memorable experiences for doctors. Some report it to be a positive experience, others describe it as important to "hide emotions" and others say that their workplace culture marginalises death. Feel unprepared for their work.	L, L, M - L
Mathew, Weil, Sleeman et al. 2019	11 junior doctors who participated in "Second conversation" teaching intervention	Develop a workplace-based intervention to practice EOLC skills	Interviews using framework analysis	JDs benefited from real-life experience, feedback and simulation. It increased their confidence and preparation for future conversations. Report varying quality depending on seniors background in EOLC and it not being prioritised.	M, L, L - L
McCullough & McGatter 2016	10/13 junior doctors, Ninewells Hospital, Scotland	If Scottish PC guidelines improved competency and confidence in prescribing in palliative care	Quality Improvement Project questionnaire pre and post teaching session	All had cared for patients with PC needs. Before teaching intervention the doctors were most confident in prescribing anticipatory medication and least confident in prescribing syringe driver.	L, L, L - L
Mikhael, Baker & Downar 2008	1 intervention hospital with pocket card and lectures (51 residents) and 2 control hospitals with lectures only (30 and 31 residents) in Toronto, Canada	Effectiveness of pocket card to improve residents' knowledge in symptom control at EOL	10 question survey at start and end of rotation Focus interview group with intervention group	Comfort level increased in both groups but a greater increase observed in intervention arm. Found it convenient to have the information readily available.	L, L, L - L
Minor, Schroder & Heyland 2009	17/19 residents rotating through 6-month ITU rotation at Kingston General Hospital, Canada	Effectiveness and perceived value of a EOLC curriculum during ITU	Question survey pre and post curriculum survey	Observed an increase in competency in: pain management, psychological knowledge, communication and professional skills. 54% rated that PC training was very variable.	L, L, L - L
Miptah, Nawwar, Hayes et al. 2016	36/76 interns at Galway University Hospital, Ireland	New doctors feel prepared to pronounce death	Questionnaire	66% pronounced a death within working for 4 months, with 62% not feeling prepared to do this. The accessed support from: senior doctors (70%), nursing staff (25%), other junior doctors (21%) and online resources (17%).	L, M, L - L
Robinson, Danils, Jalal et al. 2016	29 FY1s at Sheffield Teaching Hospital, UK	Foundation doctor experience with EOL	Questionnaire and retrospective audit of EOL patients on HPB ward	97% cared for dying patients	L, L, L - L
Tiernan, Kearney, Lynch et al. 2001	34 newly qualified doctors at St Vincent's University Hospital, Dublin	Assess knowledge of EOL patients and evaluate teaching programme	Questionnaire at the start and end of the 6 session teaching programme	Predominately doctors are not confident in the medical management of terminally ill. Confidence and knowledge in EOLC increased after the teaching programme. Case-orientated cases and symptom control were reported as most useful.	L, L, L - L
<p>PC = Palliative Care EOL = End of Life EOLC = End of life care QOL = Quality of life JD = Junior doctors FY = Foundation Years PRHO = Pre-registration House Officer JHO = Junior house officer SHOs = Senior house officers CMMT = Core medical trainee OOH = Out of hours BBN = Breaking bad news</p>					

ITU = Intensive treatment unit
HPB = Hepatobiliary
MDT = Multi-disciplinary team