

Review Article

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Abstract

Objective. China is home to one-fifth of the world's population. In the setting of a growing and aging population as well as the designation of palliative care access as a human right in 2013, the implementation of palliative care in China gains special importance. Palliative care education is an important precondition to ensure a nationwide access to palliative care. This systematic review details the status of under- and postgraduate palliative care education in China, examining both the students' and physicians' perception, knowledge, and skills in palliative care, and the available educational interventions and programs.

Method. Four databases were searched in September 2018, using considered search terms. Titles, abstracts, and, if necessary, full texts were scanned to identify publications matching the inclusion criteria.

Results. Nine publications were included. They revealed six findings: palliative care education is lacking in both under- and postgraduate medical education, only a few programs exist. Palliative care as a concept is well known, detailed knowledge, and practical skills are less developed. Chinese physicians consider palliative care an important field to be developed in cancer care, yet the majority of healthcare professionals are not willing to work in palliative care services. Communication should be a main emphasis in palliative care education, especially in undergraduate training. Finally, there is no highly qualified research on under- or postgraduate palliative care education in Mainland China.

Significance of results. These findings suggest that palliative care education in China is in demand and should be systematically integrated into medical education. Further research on the topic is urgently needed.

Introduction

As a consequence of demographic changes, in form of aging populations worldwide and improved health and social care, the prevalence of chronic life-limiting illnesses such as cardiovascular diseases and cancer is increasing (EIU, 2015; Fitzmaurice et al., 2015). Accordingly, the number of patients suffering from distressing symptoms that could be alleviated by palliative care (PC) also increases proportionally.

In 2013, access to PC was designated a human right (Radbruch et al., 2013) as advocated by the European Association for Palliative Care (EAPC), the International Association for Hospice and Palliative Care (IAHPC), the Worldwide Palliative Care Alliance (WPCA), and Human Rights Watch (HRW). In 2014, the World Health Organization published a resolution at the 67th session of the World Health Assembly stating that access to PC is an exclusive part of “the right to the enjoyment of the highest attainable standard of health and well-being” (WHO, 2014). Consequently, governments are requested to actively support the implementation of PC through adopting healthcare policies, ensuring access to essential medication, integrating PC into all levels of the healthcare system, and setting up adequate training for healthcare workers. In Europe, the EAPC promotes PC education and related research in multiple European countries (Elsner et al., 2016), stating that PC education has been developing rapidly in multiple countries over the last years (Ilse et al., 2015; Walker et al., 2016).

China is home to one-fifth of the world's population and faces a rapidly aging demographic (Lynch et al., 2013; EIU, 2015). It is ranked a country of preliminary integration of PC by the WPCA (Lynch et al., 2013), a rank that includes countries where a variety of PC providers and types of services are in development and an awareness of health professionals of PC and supporting educational measures exists. Still, PC has not yet been fully integrated into mainstream service provision. The ratio of hospice–palliative care services to population in China equates as 1:8.5 million, compared with e.g., 1:49,000 in Germany or 1:48,000 in the United States (Lynch et al., 2013). The Quality of Death Index 2015 ranks China 71st of 80 ranked countries. PC in China is described as slowly developing and barely accessible outside the approximately

400 specialized cancer hospitals, with curative approaches still predominating healthcare (EIU, 2015).

Description of the condition

PC education for medical students and qualified physicians is crucial to ensure wider, nationwide access for patients to PC. As PC education is a standard component of general medical education in countries ranked high in The Quality of Death Index 2015 (United Kingdom, Germany, and United States), it seems reasonable to suggest that a transfer of existing approaches to skills and knowledge development could support the PC educational development in low ranked countries. As such, this review is part of a larger project aiming to get a deeper insight into the status of PC education in China. The long-term objective to which this study itself is only a very first step would be contributing to the provision of adequate international support.

Until now, there has only been one systematic review conducted that takes into account PC education in China (Wang *et al.*, 2018). This review aims to depict the current status over several domains related to PC, rather than giving an overview in terms of structure, content, or effects of PC education.

Objectives

To determine the status of both under- and postgraduate PC education in Mainland China through examining

1. Medical students' and physicians' perception, knowledge, and skills in PC and
2. Educational interventions and programs in PC in any under- or postgraduate context.

Methods

Search methods for the identification of studies

For this review, the databases Medline, Embase, Web of Science, and the Cochrane Library were searched in September 2018. Search terms used can be found in Table 1, and search history details are depicted in Figure 1. No filter was used. All references of selected articles were reviewed, yet some were not found within the databases used. Due to the low number of studies matching our inclusion criteria, we additionally searched the grey literature databases OPEN GREY and NTIS.

All titles and abstracts were scanned, and potentially relevant publications were read full text. The inclusion process adhered to the following criteria:

Inclusion criteria

- All study types with clear study design;
- Presenting own study data or referring to data of underlying studies with clear study design;
- Having medical students or physicians as participants;
- Conducted in Mainland China (structure of medical education in other regions can deviate);
- Containing relevant data matching one of the two categories: "perception, knowledge or skills related to palliative care or palliative care education" or "educational interventions dealing with palliative care conducted in an under- or postgraduate context"; and
- Published after 2000.

Exclusion criteria

- Duplications,
- Articles or reviews depicting collected information without referring to underlying studies,
- Protocols,
- Published before 2000, and
- Full text not accessible through the databases used.

Data collection and analysis

As this review was conducted by one single author, the selection of studies could not be assisted or assessed in collaboration with a second member of staff. The data extraction form can be found in Table 2. We analyzed the status of PC education considering the two categories displayed in the inclusion criteria.

Assessment of risk of bias in included studies

As there is no standardized, valid tool to assess risk of bias in descriptive, cross-sectional studies (the study type of most studies included), bias assessment was conducted analogous to the Cochrane Collaboration's tool for assessing risk of bias, as described in the Cochrane Handbook for Systematic Reviews of Interventions 5.1.0. (Higgins and Green, 2011); it was originally built to assess randomized controlled trials, so we changed the biases judged to biases relevant as follows:

- Selection bias
- Information bias
- Other bias

Results

Originally, 28 abstracts were considered for inclusion. After full text reading, 19 publications were excluded, and 9 publications could be included: 7 descriptive cross-sectional surveys, 1 systematic review, and 1 letter to the editor. The letter to the editor was included even though no full article was published because it reported a study conducted with clear design and presented own study data relevant to the topic of this review. Unfortunately, full text of the publication of Ge *et al.* (2018) could not be accessed, as the journal website and DOI indicated in our databases did not work. Still, the abstract's information was included. The search of grey literature databases revealed no additional findings.

Description of studies

Potentially relevant studies were divided into two subgroups: studies ($n = 8$) that examined the educational status of a target population in PC (Wang *et al.*, 2004, 2018; Bai *et al.*, 2010; Jiang *et al.*, 2011; Lyerly *et al.*, 2015; Gu and Cheng, 2016; Ge *et al.*, 2018; Lio *et al.*, 2018) and studies ($n = 1$) that examined educational interventions covering PC (Yin *et al.*, 2017). Details on the study design, samples, sample generation, response rates, methods, and method development can be found in the data extraction form in Table 2.

Bias assessment

A graphical summary on the risk of bias of all included studies is depicted in Table 3.

Table 1. Search details

Database	Search	Search term category	Fields
Medline	(((("education") OR "medical school") OR "teaching hospital") AND "China" AND (((("palliative care") OR "palliative medicine") OR "terminal care"))	MeSH-Terms	All Fields
Embase	#1: "palliative therapy" OR "terminal care" #2: china #3: education OR training OR "teaching hospital" #4: #1 AND #2 AND #3	EmTree-Terms	All Fields
Web of Science	#1: TS = (palliative care* OR palliative medicine* OR terminal care) #2: TS = (China) #3: TS = (education* OR medical school* OR teaching hospital* OR training) #4: #1 AND #2 AND #3		Topic
Cochrane Library	#1: (Palliative Care) OR (palliative medicine) OR (terminal care) (<i>Word variations have been searched</i>) #2: (China) (<i>Word variations have been searched</i>) #3: (education) OR (medical school) OR (teaching hospital) OR (training) (<i>Word variations have been searched</i>) #4: #1 AND #2 AND #3		

Selection bias

Several studies included are at risk of selection bias, for example through possibly unrepresentative samples (Wang et al., 2004; Jiang et al., 2011; Lysterly et al., 2015; Ge et al., 2018) or strict inclusion criteria (Wang et al., 2018). The risk of selection bias in these studies appears to be high. In two of the publications, the risk of selection bias remains unclear due to insufficient information on sampling methods (Bai et al., 2010; Lio et al., 2018). Gu and Cheng (2016) provide clear information on their high-quality sample generation. The risk of selection bias seems to be low.

Information bias

In the included study of Wang et al. (2004), information on the questionnaire used is insufficient and the validation incomplete. Therefore, the risk of information bias appears to be high. In several of the included studies, the risk of information bias remains unclear due to missing information on language, validation process, and item generation of questionnaires or on other data generation (Bai et al., 2010; Yin et al., 2017; Ge et al., 2018; Lio et al., 2018). Four of nine included studies provide enough information to judge the risk of information bias as low (Jiang et al., 2011; Lysterly et al., 2015; Gu and Cheng, 2016; Wang et al., 2018) establish validity for their review through two review authors searching independently numerous databases, including Chinese ones. The risk of information bias seems low.

Other potential sources of bias

As mentioned above, detailed information on the methodology of Lio et al. (2018) and Ge et al. (2018) is missing. Other potential sources of bias cannot be estimated, and the risk remains unclear.

Findings

Finding I: palliative care education is lacking in both under- and postgraduate medical education, only a few programs exist

Both medical students and working physicians stated in various studies that PC education in China is missing or insufficient. For example, Jiang et al. (2011) reported that 84.5% of the medical students surveyed felt PC should be included more in the curriculum. Only 31.2% of Chinese oncologists and 48% of physicians treating stage IV cancer patients in general have received any PC education (Bai et al., 2010; Gu and Cheng, 2016).

Only a few education programs on PC are identified by research. Three programs get reported in the case studies by Yin et al. (2017) taking place in Sichuan, Kunming, and Beijing. At the Sichuan University, masters and doctoral education programs began in 2005. In Kunming, there existed an elective undergraduate course from 1999 to 2004, and in 2010 postgraduate education courses were started. Finally, in Beijing, a postgraduate education course began in 2014, supported by the Asia Pacific Hospice palliative care Network (APHN), with over 100 students progressing on this program. Within the Chinese Association Geriatric Research Palliative Care Branch, PC training has been intensified and an Online Course System has been introduced (Ubiquitous Massive Open Online Course system) to reach more students and healthcare providers (Yin et al., 2017). Educational programs build the setting for two included cross-sectional surveys. Wang et al. (2004) surveyed participants of a national PC training seminar held in Beijing in 1999, and the study conducted by Ge et al. (2018) took place at a National Hospice and Palliative Medicine Training Program held in Beijing 2016 by Peking Union Medical College Hospital.

Finding II: palliative care as a concept is well known, although detailed knowledge and practical skills are less developed

In four of our included studies, we find indications that there exists a common idea of PC as a concept among medical students

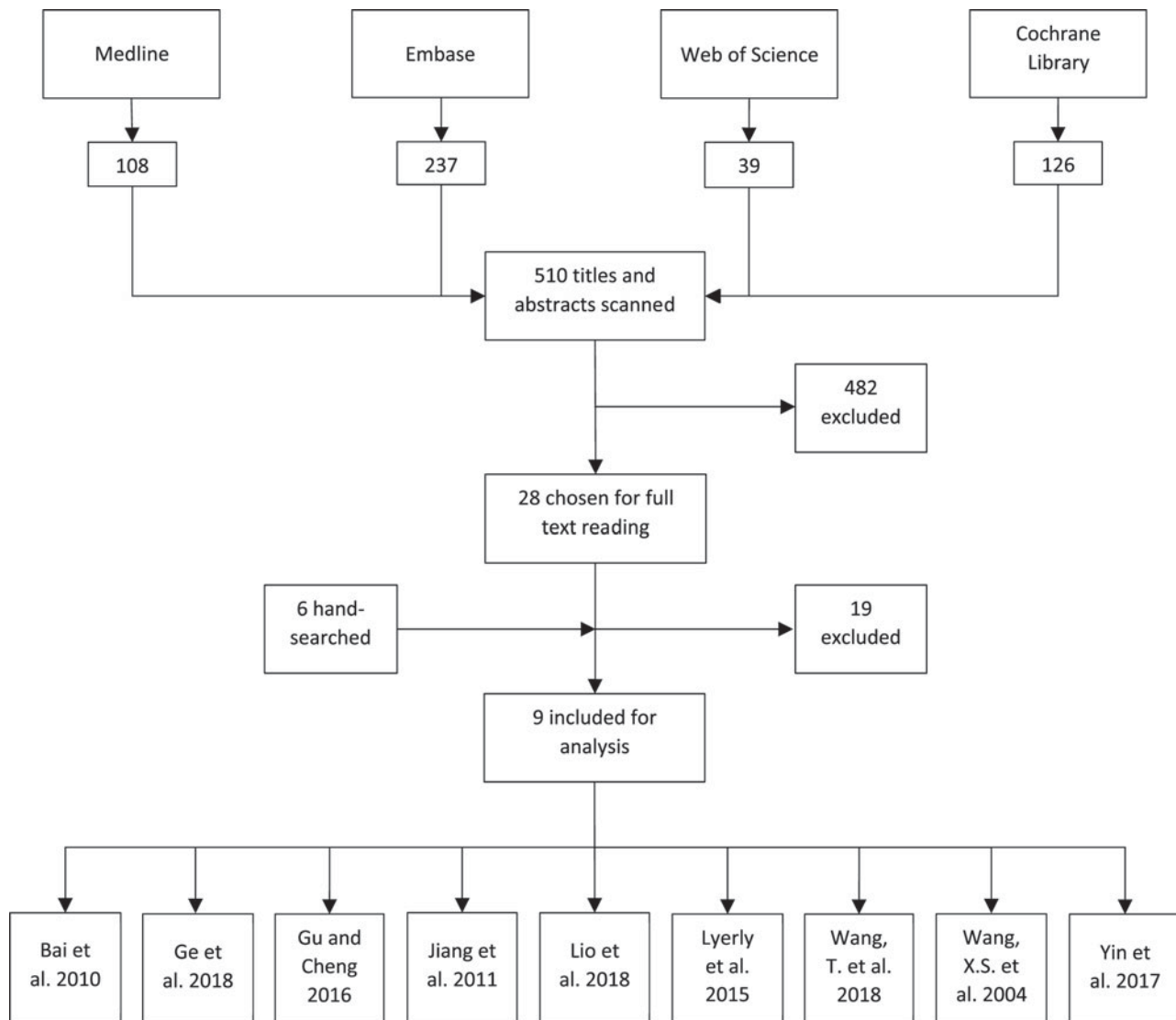


Fig. 1. Search history.

and physicians. Yet, more detailed knowledge or practical skills are less evident.

For example, 77% of Chinese medical students and interns state that they are familiar with concepts of PC, yet in their self-evaluation, only a small proportion report knowledge of the theoretical concept of pain management (31%) and practical skills in basic pain management (7.5%), symptom management of the dying patient (13%), communication about death (27.5%), and delivering bad news (21%) (Jiang *et al.*, 2011). At the time of survey, no educational PC course was offered. Both Chinese and Austrian students feel similarly familiar with the concepts of PC, and knowledge on how to deliver bad news is equally low (Pohl *et al.*, 2008; Jiang *et al.*, 2011). Yet, Chinese students' self-evaluation shows markedly lower level in all other PC skills and knowledge compared with Austrian students (in order of the categories outlined above: 80%, 96%, 50%, 25%, 40%, and 19%). Only 54% of Chinese interns reported being involved in the care of dying patients at all, compared with 93% involvement of Austrian interns (Pohl *et al.*, 2008; Jiang *et al.*, 2011).

Among Chinese physicians, the situation is similar. For example, 95% of healthcare professionals (among them 66% physicians) attending a Hospice and Palliative medicine training program in Beijing were aware of PC, still 92.9% of them needed help from others when taking care of palliative patients (Ge *et al.*, 2018). Only 39.9% of Chinese oncologists gave all correct answers on questions covering the concept and philosophy of PC in the survey of Gu and Cheng (2016). More than 50% had no knowledge about advance directives (ADs) and do not resuscitate (DNRs), 14.5% gave all correct answers on a field called euthanasia, dealing with physician-assisted death. Wang *et al.* (2004) show that clinicians (67% physicians) who attended a national PC training seminar in 1999 felt quite confident in managing death-related symptoms like pain, constipation, nausea, and vomiting. Yet, they evaluated as insufficient in skills addressing other symptoms like shortness of breath, anorexia, or depression. Interestingly, only a minority would have used a pain scale or start prophylactic measures for pain management side effects.

Table 2. Data extraction form

Author, journal, year	Status or intervention	Study design	Aims/Objectives	Participants	Participant acquisition	Response rate	Method design	Method development	Hospitals/ University	Relevant results
Bai et al. (2010) Prog Palliat Care	Status	Cross-sectional questionnaire survey	To find out attitudes of health professionals (and terminally ill patients) toward the newly implemented PC approach	66 frontline doctors (plus 106 nurses and 146 patients, not considered) treating patients with stage IV cancer	Recruitment through research assistant, all frontline doctors of stage IV cancer patients were asked	/	Two questionnaires (language not specified), one for terminally ill patients (not further considered) and the other for health professionals. 17 items on knowledge, attitudes, experiences, and readiness of providing PC. Options for answering dichotomous or 3–5 multiple choice	Two newly developed questionnaires based on literature research and palliative care experts' opinions	Five hospitals of different status in Henan, one provincial oncology hospital, one municipal oncology hospital, and three community healthcare centers	None of the participants had previous experiences in palliative care 86.4% felt comfortable in talking about death and palliative care; 87.9% put main emphasis on symptom control and pain management in the care for terminally ill patients. 87.9% affirmed importance of palliative care for terminally ill patients. Only 48% received palliative care education, and additional information for adequate treatment were acquired by self-administered education. 40.9% were not willing to serve in palliative care services, and 32.6% were uncertain. 50% of physicians having had received palliative care education were willing to work in palliative care services
Ge et al. (2018) Zhongguo Yi Xue Ke Xue Yuan Xue Bao	Status	Cross-sectional questionnaire survey	Analyzing the current situations and needs of the continuing education on hospice and palliative care in China	141 participants (geriatrician, oncologists, other doctors, nurses, physical therapists, psychologists, social workers, volunteers, and hospital managers) of a National Hospice and Palliative Medicine Training Program held 2016 in Beijing, 66% physicians	All participants asked for participation	/	Items covered awareness and knowledge of HPC, learning objectives, learning gain, and future plans	/	Peking Union Medical College Hospital	22.3% participants took part in a PC training program before, 95% were aware of PC, 92.9% needed help from other when performing PC. The median score for symptom control skills was 3.0 (2.0, 4.0), the one for communication skills 1.0 (0.0, 2.0). After the training, trainees had a final examination score (covering a case analysis and knowledge in symptom control) of 59.1 (standard deviation 18.0), centesimal system
Gu and Cheng (2016) BMC Med Educ	Status	Cross-sectional questionnaire survey	To detect oncologists' knowledge and attitudes toward PC in order to build up effective education	145 Chinese oncologists including palliative care specialists either attending one of two national oncologic meetings (Pain Management Education meeting; Oncologic Nutrition Meeting) or working in one of three hospitals surveyed	No selection obvious	95.20%	24 items on received PC education, the concept and philosophy of PC, the issue of disease information disclosure and breaking bad news, end-of-life decision-making and Euthanasia and related topics. Some questions testing knowledge, some detecting opinions	Items rated by an expert panel (six members) and consecutive concentration of items. Pilot study conducted. Cohen's Kappa calculated (0.85)	Fudan University Shanghai Cancer Center, 6th people's hospital, Shanghai Jiaotong University, medical oncology, Kangjian Community Health Center, general medical department	31.2% have received PC education; 73.9% believe that PC should be considered when patients are not suitable for curative treatment; 72.5% believe that early PC integration can improve the quality of life in patients; 39.9% gave all correct answers on concept and philosophy of PC; >50% have no knowledge about ADs and DNRs; 14.5% gave

(Continued)

Table 2. (Continued.)

Author, journal, year	Status or intervention	Study design	Aims/Objectives	Participants	Participant acquisition	Response rate	Method design	Method development	Hospitals/ University	Relevant results
							(various options). Questionnaire in Chinese			all correct answers on Euthanasia
Jiang et al. (2011) J Pain Symptom Manag	Status	Cross-sectional questionnaire survey	To evaluate Chinese interns' awareness and knowledge of palliative care concepts	402 final year medical students (whole class) of the Third Military Medical University (TMMU) in Chongqing	Addressing of the whole class	99.50%	A previously published questionnaire including 12 items on concepts of PC, pain management, care of the dying patient, communication, and PC education (options: yes/no). Questions posed in simple English	Questionnaire developed by an expert panel, reused in multiple studies	TMMU in Chongqing	77% of medical students and interns state they are familiar with concepts of PC, yet in their self-evaluation they describe a lack of knowledge of the theoretical concept of pain management (31%) and practical skills in basic pain management (7.5%), symptom management of the dying patient (13%) and communication about death (27.5%) or delivering bad news (21%). Except the general knowledge of the concept of PC and delivering bad news, Chinese students' self-evaluation shows markedly lower level in PC skills and knowledge compared with Austrian students (80%; 96%; 50%; 25%; 40%; 19%). 54% are involved in the care of dying patients (93% of Austrian interns); 84.5% feel PC should be more included in the curriculum. No course in PC was offered at that time at TMMU
Lio et al. (2018) J Palliat Med	Status	Cross-sectional questionnaire survey	To explore potential competencies in palliative care for the education of medical students and residents in China	58 physicians working in palliative care	Identified by authors through China's National Hospice Service Program (NHSP)	69%	Participants rate importance of PC competencies for either medical students or residents in internal medicine or general practice; 18 competencies in each instance to rate	/	/	All competencies were rated "necessary" by more than 50% of the participants. Competencies with highest percentage of "necessary" ratings: (1) Medical students: demonstrates basic approaches to handling emotions in patients and families facing serious illness; recognizes that patient and family understanding of illness and their treatment goals are essential to patient-doctor communication; demonstrates patient-centered communication techniques; (2) Residents: demonstrates effective patient-centered communication techniques and helps patients and families face the process of dying; assesses and

										manages non-pain symptoms and conditions; diagnoses anxiety, depression, and delirium, and provides appropriate initial treatment and referral
Lyerly et al. (2015) Oncologist	Status	Cross-sectional questionnaire survey	To gain oncologists' assessments on the evolving cancer burden in China, Pakistan and India	Early career oncologists attending a clinical trial concept development workshop held at major hospitals in Beijing, Lahore, Karachi, and Mumbai, here only the 25 Chinese oncologists considered	All participants asked for participation	96%	Participants choose one of various given answers to questions on general needs of their country, actual health problems, the impact of cancer, lacking resources needed to address cancer, possible domestic and foreign improvements in cancer care, and informational resources of the participants. Questionnaire in English	Developed by the Asia Pacific Clinical Oncology Research Development (ACORD) workshop faculty	Peking University School of Oncology	56% (rank 2) of the participants stated that PC would be one of the best ways of improving outcomes for cancer patients in China; 56% (rank 5) ranked PC under the top five opportunities there are for foreigners to help improve cancer outcomes in China
Wang et al. (2018) J Palliat Care	Status	Systematic review	To give an overview of the currently existing research on palliative care in China	Original articles matching one of the categories with a clear study design, conducted in Mainland China, published in Chinese or English peer-reviewed core journals. 54 studies in total, 3 matching the "Palliative care education and training"-category	Literature research within 10 databases		Studies were classified into seven groups, one of them being palliative care education and training. No bias assessment, contents get reported and discussed. Articles or publications without any clear study design were excluded	Through two review authors searching independently, disagreement settled by including a third party		All three studies matching the "Palliative care education and training"-category by one research group in Shanghai, all about nurses' education. No studies on under- or postgraduate medical PC education matching the inclusion criteria
Wang et al. (2004) J Pain Symptom Manag	Status	Cross-sectional questionnaire survey	To find out about practices and attitudes of urban oncologists in EOL care	60 fellows/residents/ associate professors/ professors/nurses attending a national palliative care training seminar in Beijing 1999	All participants asked for participation	77% (including nurses)	40-items questionnaire assessing impressions on issues relating to EOL care, competence in pain and symptom management, communication about terminal illness, treatment of decision making and barriers to EOL care	Two items taken from Edmonton End of Life Survey, six from the 1998 American Society for Clinical Oncology (ASCO) survey of oncologists regarding palliative care and end-of-life management practices	/	43% reported PC availability at their current place of work, 13% reported home hospice service. More cancer hospitals than general hospitals offered a consultation service with PC teams and psychological support services. Skill in addressing death-related symptom management was ranked good for pain, constipation, nausea, and vomiting and rather poor for shortness of breath, anorexia, and depression. Only a minority uses pain scales or prophylactic measures for pain management side effects. 80% would continue providing anti-cancer treatment, 15% would stop at Stage IV diseases, and 5% would stop at Stage III-IV

(Continued)

Table 2. (Continued.)

Author, journal, year	Status or intervention	Study design	Aims/Objectives	Participants	Participant acquisition	Response rate	Method design	Method development	Hospitals/University	Relevant results
Yin et al. (2017) Oncologist	Interventions	Case study	Describing the examples of three palliative care programs in China in order to inform on possible ways to introduce further PC programs and accelerate the access to palliative care in China	West China Fourth Hospital of Sichuan University, Third People's Hospital of Kunming City, Peking Union Medical College Hospital	/	/	Three case studies: description of extent, leaders, leaders' education, history, support, education programs. No further methods described.	/	See "participants"	Palliative education programs set up by the leaders of the palliative care programs in all three cities existent. Sichuan: master's and doctoral education programs since 2005; Kunming: undergraduate elective course from 1999 to 2004, postgraduate education courses with participants from all over the country since 2010; Beijing: postgraduate education course since 2014 supported by APHN, courses within the Chinese Association Geriatric Research Palliative Care Branch, introduction of an Online Course system (Ubiquitous Massive Open Online Course System)

Finding III: Chinese physicians consider palliative care an important field to be developed in cancer care

Of those surveyed, 73.9% of Chinese oncologists believed that PC should be considered when patients are not suitable for curative treatment, and 72.5% believed that early PC integration can improve quality of life in patients (Gu and Cheng, 2016). 87.9% of physicians treating stage IV cancer patients affirm the importance of PC (Bai et al., 2010). 56% of early career Chinese oncologists stated that PC would be one of the best ways of improving outcomes for cancer patients in China. Another 56% ranked PC under the top five opportunities for foreigners to help improve cancer outcomes in China (Lyerly et al., 2015).

Finding IV: the majority of healthcare professionals are not willing to work in palliative care services

Even though 87.9% of doctors treating stage IV cancer patients in Henan considered PC an important specialty, 40.9% were not willing to practice within a PC service, with another one-third of healthcare professionals doubtful (Bai et al., 2010). Health professionals having received education in PC were significantly more willing to work in PC services ($P < 0.01$) (Bai et al., 2010).

Finding V: communication should be a key focus in palliative care education, especially when an undergraduate

As presented by Lio et al. (2018), Chinese physicians most frequently rated the following three PC competencies for medical students as "necessary" for graduation:

- Demonstrates basic approaches to handling emotions in patients and families facing serious illness (88%);
- Recognizes that patient and family understanding of illness and their treatment goals are essential to patient–doctor communication (85%);
- Demonstrates patient-centered communication techniques (83%).

The competencies rated most frequently necessary for residents for graduation, extended to four (as both competencies on the 3rd rank have the same percentage of voting), were as follows:

- Demonstrates effective patient-centered communication techniques and helps patients and families face the process of dying (90%);
- Assesses and manages non-pain symptoms and conditions (90%);
- Diagnoses anxiety, depression, and delirium, and provides appropriate initial treatment and referral (88%);
- Provides basic palliative care, recognizes difficult cases, and consults palliative care specialist (88%).

Finding VI: there is no highly qualified research on under- or postgraduate palliative care education in Mainland China

No study examining academic PC education in Mainland China matched the inclusion criteria within the review conducted by Wang et al. (2018): having a clear study design and being published in peer-reviewed Chinese or English core journal. The authors draw the conclusion that more structured research evaluation of current PC education and training programs need to be developed.

Table 3. Bias assessment

	Bai et al. (2010)	Ge et al. (2018)	Gu and Cheng (2016)	Jiang et al. (2011)	Lio et al. (2018)	Lyerly et al. (2015)	Wang et al. (2004)	Wang et al. (2018)	Yin et al. (2017)
Selection bias	?	+	–	+	?	+	+	+	
Information bias	?	?	–	–	?	–	+	–	?
Other bias	?	?	–	–	?	–	–	–	

Discussion

Summary

Chinese medical students and physicians think that PC education in China is lacking and should be more integrated in medical education, only a few programs exist so far. PC is considered an important field to be developed in cancer care by Chinese physicians. Students and physicians have knowledge on the broad concept of PC, but further knowledge or practical skills are missing. Most physicians treating terminally ill patients would not work in PC services, but those who had received PC education were significantly more willing to do so. Concerning the content of PC education, Chinese physicians emphasize the role of communication skills, particularly in the undergraduate context, and high-quality research in the field is lacking.

Other reviews on the topic

There is already one review existing that takes PC education into account, included in the systematic review by Wang et al. (2018). It depicts the current research status on PC in Mainland China and covers seven categories, one of them being “Palliative care education and training.” All of the included studies refer to nursing education. The authors’ conclusion that more PC education and training programs in China are needed is completely compatible with the findings of this review. The inclusion criteria concerning PC education and training were not elucidated explicitly, but it appears that only studies focusing on educational interventions and their structure, rather than studies on the educational capability of healthcare professionals, were included. This could explain the disparity between the number of included studies in our review and in Wang et al. (2018).

The findings of Wang et al.’s (2018) systematic review, as well as the fact that the number of studies included in this review is relatively small, evidence that research on PC education for medical students and physicians in Mainland China and is still very limited.

Status of PC education in other regions of China or neighbor countries

This review examines exclusively the status of PC education in Mainland China, as educational structures in other regions can deviate.

Hong Kong

In Hong Kong for example, specialist training for physicians in clinical oncology and palliative medicine is existent (Lam et al., 2018). PC is still not very well accepted among medical students, even if the acceptance increased with years of medical education, whereas the majority of physicians considered PC methods (Gruber et al., 2008). Most physicians suggest more PC training for junior doctors (Lam et al., 2015).

Taiwan

In Taiwan, knowledge on PC among physicians is limited to philosophy and principles (Liu et al., 2005). This result matches with the status of PC education in Mainland China, especially Finding II. Still, the majority of physicians in Taiwan have positive beliefs toward providing PC and are willing to engage PC into their practice (Liu et al., 2005); interns showed the same readiness (Shih et al., 2010). Similar to students in Mainland China (Finding I), Taiwanese physicians expressed further need of education (Liu et al., 2005).

Concerning educational interventions, many Taiwanese medical schools offer lectures on PC or formal curricula (Tsai et al., 2008). However, there is no formal internship PC training program (Shih et al., 2010). Multiple other educational interventions on PC are reported (Tsai et al., 2008; Chang et al., 2009; Shih et al., 2013), among them a training program in the provision of spiritual care (Bridge and Lai, 2009).

Japan

Looking at other countries, for example Japan, it is apparent that both under- and postgraduate education in PC is more widely engaged, as compared with Mainland China. The need for PC education is recognized in policy (Nakamura et al., 2017; Nakazawa et al., 2018), and multiple educational interventions exist. Most faculties provide PC education in some way (Kizawa et al., 2012; Nakamura et al., 2017). For physicians, there is a basic education program on primary PC established by the Japanese Society for Palliative Medicine (JSPM) (Yamaguchi et al., 2012; Nakazawa et al., 2018). Multiple other PC workshops and programs are conducted (Morita et al., 2013; Oya et al., 2013; Nakazawa et al., 2014; Kizawa et al., 2015). Still, physicians other than PC specialists report (just as students in Mainland China — Finding I) further need for intensifying education (Hirooka et al., 2014).

Korea

As in Japan, in Korea, more PC education is offered to medical students and physicians than in Mainland China. PC is existent in the curriculum of undergraduate medical students (Kim et al., 2019). There is a standard hospice and PC program for all types of professionals involved in end-of-life care, and a National Train-the-Trainer-Program for Hospice and Palliative Care Experts was established (Kang et al., 2010, 2015).

The great majority of Korean physicians support PC measures (Yun et al., 2018). Most physicians are unsatisfied with existent PC, and the great majority have no experience with hospice and palliative care education (Shim et al., 2017), which matches with the present status of Mainland China represented in Finding I.

Limitations

By nature, the limited number of studies also limits the quality of evidence. Among the reasons for the limited number of studies could be that palliative medicine is still a new field in Mainland China and that research on education is not yet well developed and integrated. Even if educational interventions and assessments take place, they might not get published and listed in the databases searched. As no Chinese databases were searched, articles only published in Chinese journals could not be considered.

The evidence of each finding is represented through the number of studies supporting them. Detailed information can be found in [Table 3](#).

Most studies reviewed in this paper are judged to have a high risk of selection bias. Accordingly, the findings of this review cannot be assumed to be transferrable to a highly general context. Still, they do give an idea of the status of PC education in China and can help to stimulate and draft approaches for further development in the future.

This review has a number of potential biases. As it was conducted by one author alone, subjectivity may have influenced inclusion and exclusion, data extraction, and bias assessment. Inclusion criteria, a data extraction form, and a clear structure for bias assessment were established to counter this. Bias assessment itself is endangered to be biased, as no standardized, valid assessment tool exists. The structure of bias assessment was constructed adapting existing accepted strategies. Finally, Chinese databases have not been searched, and articles exclusively listed in these databases have not been considered.

Given the fact that this review does not deal with qualitative research, reflexivity plays a minor role. Nevertheless, it should be mentioned that this review was conducted as a preliminary step to conducting further research on PC education in China. Despite all efforts to be objective, this circumstance could have influenced the findings and conclusions.

Conclusions

Implications for practice

Although the supporting evidence within our findings is limited, it does suggest that PC education in China is underdeveloped. More palliative care education is needed to increase both the ability and the willingness of physicians to deliver end-of-life care. First steps in a political setting should be taken to enable and support PC implementation officially.

Implications for research

Since this review shows that PC education in China is underdeveloped, further research is needed to contextualize these findings. The next steps could include exploring how PC education could be implemented best at Chinese universities or in fellowship programs and what obstacles must be overcome. This requires more detailed information on the structure of medical teaching and on the awareness of medical teachers concerning end-of-life care. Additionally, already conducted PC educational interventions should be scientifically evaluated and published.

Conflict of interest

None.

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