

## Original Article

# Shared-care management standards of palliative care in Chinese adults: A Delphi study

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## ABSTRACT

**Objective:** Shared-care management (SCM) in palliative care is a collaborative model where shared care teams work in partnership with patients' original health care providers, employing multimodal strategies including consultations and coordinated referrals to enhance quality of care for patients. The evidence regarding its implementation remains fragmented and lacks detailed explanations, which impedes its application in clinical practice. This study aimed to develop a SCM standard of palliative care in adults in mainland regions of China.

**Methods:** Initial standard framework identification was achieved via literature evidence summary. From April to August 2024, two rounds of Delphi method was conducted with the purposes of modifying the standard. To establish consensus, items with a mean importance score > 3.50 and the coefficient of variation of item scores < 0.25 were retained.

**Results:** The first round involved 35 experts, with a follow-up participation of 33 in the second round. The Kendall concordance coefficients of the two rounds of experts consultation were 0.128 and 0.134, respectively (all  $P < 0.001$ ), indicating consensus among the experts. At the end of the second round, the average importance score of each item was 4.73–5.00. A total of 8 modules including SCM team, applicable population, process of SCM, contents of SCM, start time, precautions, effectiveness evaluation and quality control, and the corresponding 22 items were finally identified in this standard.

**Conclusions:** The establishment of the standard in this study provides a critical framework that can be adopted by health care institutions to ensure that SCM services are delivered uniformly and effectively in mainland regions of China.

## Introduction

As an integral part of health care, palliative care aims to enhance the quality of life for patients facing life-limiting illnesses, which encompasses a comprehensive range of supportive interventions that address patient's multi-level care needs.<sup>1</sup> According to the latest data from the World Health Organization, an estimated 56.8 million people require palliative care annually.<sup>2</sup> However, only 14% of patients worldwide currently have access to palliative care, and the shortage of palliative care coverage is particularly acute in China due to the huge population.<sup>3</sup>

In 2024, the National Bureau of Statistics of China showed that the population of people aged 65 and above in China reached 220 million in 2023, accounting for about 26.8% of the world's elderly population.<sup>4</sup> It is

estimated that the population of people aged 60 and above in China will reach 483 million by 2050.<sup>4</sup> In addition, the latest data from the National Cancer Center of China also reported that there was 4.8247 million new cancer cases and about 2.5742 million deaths in 2022, making China with the highest incidence and mortality rates globally.<sup>5</sup> With the acceleration of China's population aging and the annual increase in the incidence and mortality of diseases such as cancer, the contradiction between the overall shortage of palliative care services and the continued growth in demand will become increasingly severe. Findings from a previous study have shown that only 10% of the population in China has access to palliative care services.<sup>6</sup> This coverage gap underscores the urgent need to explore a more scalable and sustainable care model to meet the increasing demand for palliative care in China.

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In 2004, Taiwan proposed the concept of shared-care management (SCM) and was the first province in China to develop and implement it.<sup>7</sup> The SCM model can extend palliative care services to non-palliative care wards by establishing a palliative care SCM team to collaborate with the original care team, and can achieve the “flexible flow” of palliative care beds, allow patients to enjoy “de-walled” services, which has improved accessibility and equity of palliative care services.<sup>8</sup> Currently, most hospitals or health care institutions in mainland regions of China use single wards to provide palliative care services. However, this kind of service model is relatively simple, patients respond passively, and the overall effect of palliative care is relatively poor.<sup>9</sup> As one of the existing service models of palliative care, the SCM model has also been gradually introduced into palliative care wards in mainland regions of China in recent years. Several studies have demonstrated the substantial practical significance of the SCM model in addressing the discrepancy between supply and demand for palliative care beds, enhancing the quality of palliative care, and fostering the integration of palliative care principles hospital-wide.<sup>9,10</sup>

Amidst the ongoing development of the SCM model, standardized technical standards play a crucial role in ensuring its successful implementation. In 2011, Taiwan initiated the implementation of the “Hospice Shared Care Pilot Program” standards to enhance the standardization of its clinical management practices.<sup>11</sup> This standard underscores the importance of interdisciplinary collaboration, structured referral pathways, and standardized symptom management in palliative care and provided valuable insights into the design of this study by highlighting key components necessary for developing SCM standards in mainland regions of China. However, the evidence regarding its implementation process remains relatively scattered and lacks comprehensive explanations. This limitation presents challenges for direct application in clinical practice in mainland regions of China, where health care infrastructure and service delivery models differ. Given that palliative care in mainland regions of China is currently undergoing rapid development, there are no established standards for SCM of palliative care in adults. By drawing from Taiwan's model while adapting it to the health care context of mainland regions of China, this study aims to use the Delphi method to develop a more comprehensive standards, so as to standardize the SCM of

palliative care for adult patients in the end-of-life stage and enhance the quality of care in mainland regions of China.

Methods

Research design

The Delphi process systematically combines the views of experts and provides consensus on specific questions and issues through multiple iterations.<sup>12</sup> In addition, it maintains anonymity to mitigate the influence of group conformity on outcomes. Participants' commitment to completing the Delphi process often arose from their keen interest in and involvement with the topic under examination.<sup>13</sup> In this study, we followed a modified guideline for Conducting and Reporting of Delphi Studies (CREDES),<sup>14</sup> the details of the Delphi study procedure are presented in Fig. 1.

Establishment of the research team

We established a research team before developing the standard, including 4 medical specialists engaged in palliative care practice, 4 nursing specialists involved in palliative care management, 2 nursing specialists engaged in palliative care practice, and 2 evidence-based nursing specialists. All of them are members of the Palliative Care Professional Committee of the Chinese Nursing Association or the Palliative Care Professional Committee of the Chinese Anti-Cancer Association. The responsibility of the research team included searching and screening literature, summarizing evidence, developing expert consultation questionnaires, recruiting and contacting experts, and summarizing and analyzing expert opinions.

Sources of literature and method of retrieval

Search strategy

Before developing a preliminary framework for SCM standards of adult palliative care, we systematically searched Chinese and English guideline websites or databases to collect all evidences related to SCM in adult

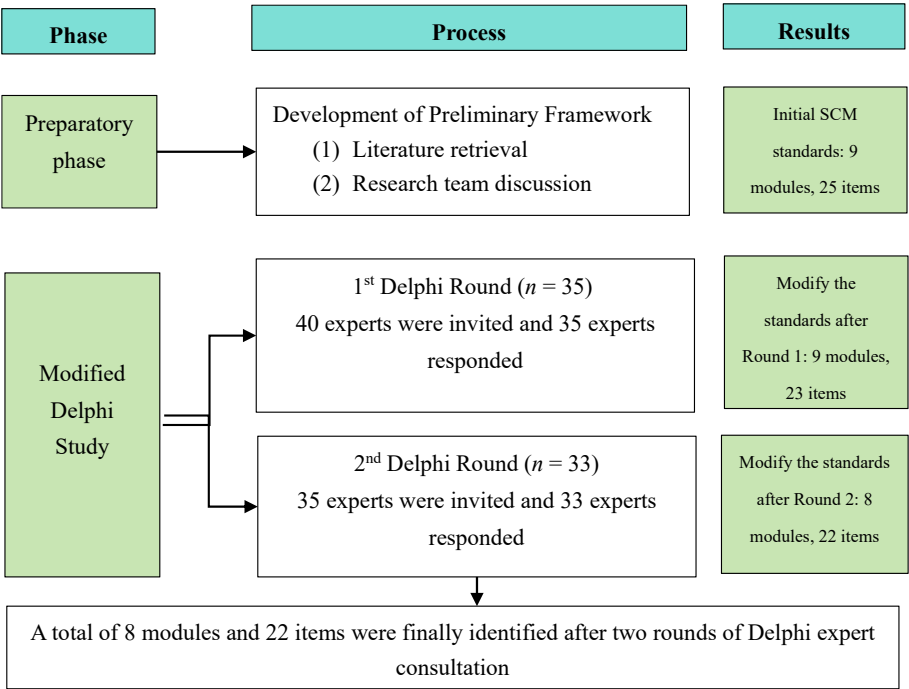


Fig. 1. Process of Delphi study. SCM, shared-care management.

palliative care, which included BMJ Best Practice, UpToDate, Guidelines International Network (GIN), Registered Nurses' Association of Ontario (RNAO), National Comprehensive Cancer Network (NCCN), YIMAITONG Network, Clinical Practice Guidelines and Protocols in British Columbia (BC), Institute for Clinical Systems Improvement (ICSI), National Institute for Clinical Excellence (NICE), Scottish Intercollegiate Guidelines Network (SIGN), Joanna Briggs Institute (JBI), European Society for Medical Oncology (ESMO), American Society of Clinical Oncology (ASCO), National Coalition For Hospice And Palliative Care (NCHPC), Taiwan Academy of Hospice Palliative Medicine (TAHPM), Cochrane Library, Embase, PubMed, CINAHL, Web of Science, CNKI, WangFang, VIP, Sinomed and Taiwan Scholar Journal Database (TWS), the search time was limited from the establishment of the databases to November, 2023. The key concepts of "palliative care" and "shared-care" were captured in each database and a snowball method was also employed to search the reference lists of the selected studies for reading and reference for a broader literature review.

#### *Eligibility criteria of studies*

The inclusion criteria for the studies were established based on the PIPOST model, a structured framework designed for systematically extracting and categorizing evidence in health care settings.<sup>15</sup> The criteria were as follows: (1) Participants: adult patients at the end of life; (2) Intervention: patients receiving palliative care through a shared-care model or related measures; (3) Professional: health care professionals involved in palliative care practice; (4) Outcome: patient quality of life, functional improvement, and care satisfaction, etc; (5) Setting: palliative care wards, centers, or institutions capable of providing palliative care; and (6) Type of evidence: published Chinese and English guidelines, expert consensus, clinical decision making, evidence summary, systematic review, randomized controlled experimental studies, and quasi-experimental studies. Studies with low quality assessment, repeated publication and no access to full text were excluded.

#### *Evidence extraction, summary and assessment*

Two researchers (JG and LZ) who had trained in evidence-based nursing read the included literature repeatedly and extracted evidence independently according to the eligibility criteria. The research team translated and discussed the evidence and integrated them. The JBI Levels of Evidence (Version 2014) were used to classify the included evidence into five levels based on the type of research design, with Level 1 being the highest and Level 5 being the lowest.<sup>16</sup> More details and results of the extracted evidence could be found in our previous work.<sup>17</sup>

#### *Recruitment of panel experts*

The research team employed a heterogeneous selection of experts, as recommended for expert selection, to encompass a broad range of perspectives. This approach was intended to enhance the accuracy and validity of the judgments concerning the issues under investigation.

Purposive sampling was utilized to select the experts, who were recruited across China via email or WeChat, adhering to the principle of voluntary participation. The inclusion criteria for participants were as follows: 1) bachelor degree or above; 2) specialists engaged in palliative care practice or management and 3) a minimum palliative care work experience of 10 years or above. To reduce potential selection bias in the recruitment of panel experts, we purposively selected multidisciplinary professionals from diverse health care institutions/organizations across eastern, western, southern, and northern China. The panel encompassed clinical physicians, nurses, educators, psychologists, and other relevant stakeholders, ensuring representation of perspectives in palliative care related practice and management.

#### *Data collection*

From April to August 2024, the questionnaire was distributed to the experts and collected via email or WeChat by researchers (YC and JG)

and consisted of following three parts: (1) The brief introduction of the research program and informed consent; (2) Expert consultation form: experts were asked to assess the importance of each item in SCM standards using a 5-point Likert scale, where 1 represented 'not important' and 5 denoted 'very important'. Additionally, an extra column was included for individual item comments or revisions; (3) The expert background information form: the demographic information of the experts, the judgment basis,<sup>18</sup> and their familiarity with items.

Upon completion of the first round of data collection from expert questionnaires, the research team members held a group meeting and systematically sorted and analyzed the data. Based on the established item screening criteria (items with a mean importance score > 3.50 and the coefficient of variation of item scores < 0.25 were retained)<sup>19</sup> and experts feedback, the items were revised through additions, deletions, or modifications, culminating in the development of the second round of questionnaires. With the aim of ensuring high-quality questionnaire responses, the second round of correspondence was conducted 4 weeks after the first round, and the standard was further refined and enhanced based on expert opinions. The Delphi rounds were conducted interactively as per the CREDES guideline until a consensus was achieved, which, in this study, transpired after the second round.

#### *Data analysis*

The IBM SPSS Statistics (Version 26.0. IBM Corp) was used for data analysis in this study. Categorical data were described by calculating frequencies and percentages, while continuous data were presented as the mean and standard deviation (SD). The rate of effective response questionnaires and the expert opinion responses were used to evaluate the expert positive coefficient; the expert authority coefficient ( $Cr$ ) is expressed as the arithmetic mean of the expert's judgment basis on the items ( $Ca$ ) and the expert's familiarity with the items ( $Cs$ ), that is,  $Cr = (Ca + Cs)/2$ .<sup>19</sup> The  $Ca$  were divided into four categories, including the practical experience, theoretical analysis, references and subjective judgement. For each category, invited experts were asked to assess the degree of influence on their personal completion of the Delphi process, using the terms "large," "medium," or "small" to indicate the level of influence. For the references and subjective judgment categories, experts assigned a value of 0.1 regardless of their assessment. However, the values assigned in the practical experience category were 0.5 for "large," 0.4 for "medium," and 0.3 for "small." Similarly, in the theoretical analysis category, the values assigned were 0.3 for "large," 0.2 for "medium," and 0.1 for "small." The  $Cs$  were classified into five groups (very familiar = 0.9, familiar = 0.7, generally = 0.5, unfamiliar = 0.3 and very unfamiliar = 1.0)<sup>18,20</sup>; The expert opinion coordination coefficient was expressed by the coefficient of variation (CV) of item scores and Kendall concordance coefficient.<sup>20</sup>

#### *Ethical considerations*

The study and consent procedure were approved by the ethics committee affiliated with Hunan Cancer Hospital (Approval No. KY2024522). Informed consent was obtained from all experts before they participated in this study. To ensure data confidentiality, all identifying personal information from experts were removed during data processing. Access to the data was restricted to authorized researchers only, and all electronic records were securely stored on password-protected systems.

#### **Results**

##### *Characteristics of participants*

A total of 40 experts were invited to participate in this study, and 35 experts from 32 different institutions across China completed the first round of the questionnaire, 33 completed the second round. The average age and the years of working experience in palliative care were  $50.43 \pm 6.22$ ,  $28.74 \pm 7.55$ , respectively. More details were presented in Table 1.

**Table 1**  
Characteristics of participants ( $N = 35$ ).

Characteristics	<i>n</i>	%
Sex		
Male	3	8.57
Female	32	91.43
Age (years)		
31-	2	5.71
40-	9	25.71
50-	24	68.57
Education background		
Bachelor	18	51.43
Master	12	34.29
PhD	5	14.29
Job title level		
Senior	26	74.29
Vice-senior	8	22.86
Intermediate	1	2.86
Years of working experience in palliative care		
10-	5	14.29
20-	8	22.86
30-	22	62.86
Career focus field		
Clinical medicine	5	14.29
Nursing practice	7	20.00
Nursing education	3	8.57
Nursing management	18	51.43
Psychology	2	5.71

### Expert positive coefficient

In the first round of expert consultation, a total of 40 questionnaires were distributed, and 35 valid questionnaires were collected, with an effective questionnaire recovery rate of 87.50%; the 35 experts put forward a total of 111 modification suggestions, and the expert opinion rate was 100.00%. In the second round, a total of 35 questionnaires were distributed, and 33 valid questionnaires were collected, with an effective questionnaire recovery rate of 94.29%; the 33 experts put forward a total of 53 modification suggestions, and the expert opinion rate was 81.82%. The questionnaire response rates and expert opinion rates for both rounds were significantly above 70%, indicating that the experts were highly engaged and motivated for the study.<sup>19</sup>

### Expert authority coefficient

In the first round of Delphi consultation, the *Ca* of experts was 0.96, the *Cs* was 0.79, and the *Cr* was 0.87. In the Second round of Delphi consultation, the *Ca* of experts was 0.96, the *Cs* was 0.80, and the *Cr* was 0.88. *Cr* > 0.70 is generally regarded as indicative of an adequate level of reliability.<sup>21</sup>

### Expert opinion coordination coefficient

In the first round of Delphi consultation, the average importance score of each item was 4.54–4.97, and the CV was 0.03–0.20. In the

**Table 2**  
Final version of shared-care management standards of palliative care in Chinese adults.

Modules and items of standards	Mean	Standard deviation	CV
<b>Module 1: Shared-care management team</b>	4.97	0.17	0.04
Item 1: A multidisciplinary team should be established to provide shared-care, including palliative care doctors, specialist nurses (with palliative care specialist nurse training qualification certificates), psychological counselors (therapists), clinical nutritionists, pharmacists, rehabilitation therapists, medical care workers, medical social workers, and appropriate music therapists and volunteers should be assigned according to actual needs.	5.00	0.00	0.00
Item 2: It is recommended to reasonably allocate personnel qualifications according to the hospital level. Each patient should be equipped with at least one physician with the professional and technical qualifications of associate chief physician or above, and one registered nurse with the professional and technical qualifications of head nurse or above.	4.94	0.24	0.05
Item 3: Before implementing SCM, health care institutions should ensure that team members have received professional and systematic palliative care training.	4.88	0.33	0.07
<b>Module 2: Applicable population</b>	4.94	0.24	0.05
Item 4: In principle, patients and their families who are expected to survive $\leq 6$ months and are willing to receive palliative care and have palliative care needs, including patients with terminal cancer, terminal motor neuron disease, end-stage organ failure, frailty, chronic diseases, advanced Alzheimer's disease, rare diseases and other estimated life-limiting patients.	4.94	0.24	0.05
<b>Module 3: Process of shared-care management</b>	4.94	0.24	0.05
Item 5: Assessment of admission criteria: When a patient is admitted to the hospital, the original medical care team should apply for a consultation with the SCM team, which need to assess whether the patient meets the SC admission criteria. For those who meet the admission criteria, the team need to consult with the patient's family and the original medical care team and sign an informed consent for palliative care.	4.94	0.24	0.05
Item 6: Identify the place of care: For patients who meet the admission criteria for SC, various communication methods or family meetings can be used to identify the place of care, and the place of care can be dynamically adjusted according to the care needs of patients and their families, including activating the current SC beds, referring to palliative care beds in medical alliance units, and home based palliative care.	4.77	0.61	0.13
Item 7: Care needs assessment: For patients who meet the admission criteria for SC, it is recommended that the original medical care team and the SCM team jointly start the initial care needs assessment for the patient within 24 hours upon admission.	4.97	0.17	0.04
Item 8: Care plan formulation and implementation: Based on the care needs of the patient and their families, the original medical care team should jointly formulate a care plan with the SCM team, and then the SCM team need to implement it as soon as possible.	4.91	0.38	0.08
Item 9: Case closure: After the patient is discharged from the hospital or dies, the SCM team should assist the original medical care team to organize the case and close it.	4.73	0.45	0.10
<b>Module 4: Contents of shared-care management</b>	4.97	0.17	0.04
Item 10: Physical examination and functional status assessment: Upon admission, the SCM team needs to conduct physical examinations of the patient's head and neck, chest and lungs, abdomen, back, limbs, perineum, etc.; functional risk assessments such as consciousness and communication status, muscle strength, self-care ability, and VTE.	4.84	0.36	0.08
Item 11: Symptom assessment and management: After admission, the SCM team needs to assess the patient's pain, dyspnea, dysphagia, anorexia/cachexia, dry mouth, fatigue, nausea/vomiting, constipation/diarrhea, abdominal distension/ascites/intestinal obstruction, lymphedema, sleep/wakefulness disorders, delirium, spinal cord compression and other symptoms, and regularly record the effective control rate of the patient's physical discomfort symptoms.	5.00	0.00	0.00
Item 12: Comfort care: After admission, the SCM team needs to provide patients with oral care, body cleaning, skin care (malignant tumor ulcers, pressure injuries), assistance with eating and drinking, incontinence care, posture care, etc.	5.00	0.00	0.00
	4.97	0.17	0.04

(continued on next page)

Table 2 (continued)

Modules and items of standards	Mean	Standard deviation	CV
Item 13: Psychological support: After admission, the SCM team can assess the patient's cognition of the disease, emotional distress, suicidal thoughts, anticipatory grief, and readiness for death according to their care needs, and provide relaxation therapy, imagination therapy, game therapy and other psychological therapies.			
Item 14: Spiritual care: After admission, the SCM team can assess the patient's mental distress according to their care needs, and provide dignity therapy, meaning therapy and life education to guide patients to think about the value of life.	4.91	0.38	0.08
Item 15: Social support: After admission, the SCM team can assess the economic status (such as whether they have purchased medical insurance), family support, and interpersonal relationships of patients and their families according to their care needs, and assist the original medical care team to hold family meetings, obtain information, materials, and other social resources.	4.91	0.29	0.06
Item 16: Death preparation: According to the wishes and care needs of the patient and his family, the SCM team can provide funeral-related information to the family after admission and assist them in death preparation.	4.88	0.33	0.07
Item 17: Caregiver support: The SCM team needs to assess the care burden of the patient's family and provide relevant support services when necessary, including respite care, life education, grief counseling, etc.	4.91	0.29	0.06
<b>Module 5: Start time</b>	4.76	0.44	0.09
Item 18: Patients who meet the admission criteria for SC can start shared-care after signing the informed consent form.	4.76	0.44	0.09
<b>Module 6: Precautions</b>	4.88	0.33	0.07
Item 19: The SCM team should pay close attention to changes in the patient's condition, dynamically assess the care needs of the patient and their family, and promptly adjust and record the SCM plan.	4.91	0.29	0.06
Item 20: During the care period, attention should be paid to and records should be kept of the patient and family members' participation, response, and cooperation in care, etc. The medical records should be filled and the care plan should be revised and checked in a timely manner.	4.85	0.36	0.08
<b>Module 7: Effectiveness evaluation</b>	5.00	0.00	0.00
Item 21: After the case is completed, the effect can be evaluated by using indicators such as patient clinical outcomes (degree of psychological distress, degree of control of physical symptoms such as pain, quality of life, satisfaction with care, etc.), caregiver satisfaction, caregiver care burden, and analysis of hospitalization cost composition.	4.85	0.36	0.08
<b>Module 8: Quality control</b>	4.97	0.17	0.04
Item 22: The quality management "structure-process-outcome" model can be used to monitor the quality of SCM services, and the SCM team needs to collect quality assessment data conduct statistics and provide feedback in a timely manner.	4.94	0.24	0.05

SCM, shared-care management; VTE, venous thromboembolism event; CV, Coefficient of variation.

second round, the average importance score of each item was 4.73–5.00, and the CV was 0.00–0.13 (Table 2). The Kendall concordance coefficients of the two rounds of consultation were 0.128 and 0.134, respectively (all  $P < 0.001$ ).

#### Modifications to standards

In the first round of Delphi consultation, we collected a total of 111 suggestions. To better achieve the study purposes, we finally revised 98 suggestions after careful discussion by the research team. Before starting the second round, the revised standard included 9 modules and 23 items. More details could be found in Appendix A.

In the second round, we collected a total of 53 suggestions, and we finally revised 50 suggestions after discussion by the research team. The final version of standards was presented in Table 2.

#### Discussion

As one of the countries with the fastest-growing aging population and the greatest burden of cancer prevention and treatment in the world, how to improve the quality of life and death of end-of-life patients in China remains a critical research focus.<sup>22</sup> The development of SCM of palliative care is expected to become one of the important measures to improve the quality of care and clinical outcomes for end-of-life patients.<sup>9</sup> To the best of our knowledge, this is the first study to develop standards for SCM in the field of palliative care in mainland regions of China, it will provide a critical framework that can be adopted by health care institutions to ensure that SCM services are delivered uniformly and effectively.

In the process of standard revision, a total of 40 experts engaged in palliative care were invited to participate in this study. To mitigate the cognitive effects of geographical bias, we considered the geographical representation of experts and balanced the variations in the professional backgrounds of experts across different faculties of education and culture as much as possible. In the two rounds of expert correspondence, the effective questionnaire recovery rate was 87.50%, 94.29%, respectively; and the expert opinion rate was 100.00%, 81.82%, respectively, which indicated that the experts were highly engaged and motivated for the study.<sup>19</sup> In addition, the  $Cr$  in the two rounds was 0.87, 0.88,

respectively, suggesting that the experts have a higher authority.<sup>21</sup> After the second round, the CV of item scores and Kendall concordance coefficient were 0–0.13, 0.134 ( $P < 0.001$ ), indicating that the judgements of experts tend to be consistent and the results are reliable through Delphi process.<sup>20</sup>

In this study, a total of 8 modules for this standard were identified after literature review and two rounds of Delphi expert consultation, including SCM team, applicable population, process of SCM, contents of SCM, start time, precautions, effectiveness evaluation and quality control. Establishing a multidisciplinary team is frequently a critical prerequisite for ensuring comprehensive SCM.<sup>11</sup> A well-coordinated team that includes professionals from various backgrounds such as physicians, nurses, social workers, psychologists, and clinical nutritionists allows for a holistic approach to patient care.<sup>11,23,24</sup> Each team member brings a unique set of skills and perspectives, enabling the delivery of tailored interventions that address the multidimensional needs of patients and their families.<sup>8</sup> In addition, our standard also suggested that the health care institutions should ensure that team members have received professional and systematic palliative care training before implementing the SCM. Through structured training, health care professionals can gain a deeper understanding of the principles and practices of palliative care, which in turn enhances their competence and confidence in managing patients with life-limiting illnesses.<sup>25</sup> However, the development of the specialist training system for SCM in China is at the initial stage at present. To further improve the care ability and quality of health care providers, the education and management of relevant health care institutions can focus on the establishment of multidisciplinary expert groups and talent pools for SCM, and comprehensively use a variety of teaching methods to carry out specialized training for this field. Moreover, we also identified the applicable population of SCM through Delphi process, that is, patients and their families who are expected to survive less than 6 months and are willing to receive palliative care and have palliative care needs.<sup>7,10,11</sup> One study suggested that the SCM model is more suitable for individuals with "early disease diagnosis concurrent with both palliative care needs and willingness", which is different from our results.<sup>17</sup> The health care system structures may explain this kind of difference. In countries with well-developed health care infrastructures, such as the UK and Australia, early integration of palliative care might be



feasible and beneficial.<sup>26,27</sup> However, in settings where palliative care resources are limited, focusing on those with a prognosis of less than six months ensures that the patients receive immediate attention, so as to optimize the rational allocation of resources.<sup>8</sup> Future research can further explore the impact of health care system structures on the applicable population of SCM across different countries. Comparative studies between regions with varying levels of palliative care resources could provide insights into how system capacity shapes eligibility criteria.

One crucial step for the successful implementation of SCM is the development of a standardized process.<sup>28</sup> In the module 3, we have clarified five specific processes including assessment of admission criteria, identification of the care place, care needs assessment, care plan formulation and implementation, and case closure. However, the CV value of “identification of the care place” is 0.13, which is larger than the CV values of other items, suggesting that the variance in responses may stem from significant differences in the health care infrastructure across various regions in China. Urban areas typically have better-equipped health care facilities with dedicated palliative care units or hospices, whereas rural areas might rely more on home-based care,<sup>22</sup> these disparities may lead to inconsistencies in the identification and interpretation of appropriate care settings for palliative patients by some experts. Moreover, grasping the content is also an important guarantee to improve the SCM system. In this study, We proposed eight items of SCM contents based on multiple guidelines and clinical decisions, including physical examination and functional status assessment, symptom assessment and management, comfort care, psychological support, spiritual care, social support, death preparation and caregiver support. The symptoms experienced by patients at the end of life are often complex and severe due to disease progression and multiple organ failure.<sup>8</sup> Research indicated that approximately most patients will encounter varying degrees of pain, dyspnea and other symptoms.<sup>29</sup> Furthermore, studies by Moghaddam et al. showed that 18%–42% of patients at the end of life have unmet psychological and spiritual needs, and prolonged social isolation will further exacerbate their negative emotions.<sup>30</sup> Therefore, the SCM team need to focus on assessing the severity of symptoms of the patients, conduct psychological assessments and screening, promptly addressing symptoms and providing psychological interventions, as well as establishing a social support system to aid in their adjustment to life. There was a consensus on the inclusion of death preparation as a key component of the SCM. In Western societies, where discussions about death are more openly encouraged and rationally, it remains a sensitive and often taboo topic in China due to deep-rooted Confucian and traditional beliefs.<sup>31</sup> Many families actively avoid conversations about death, fearing that acknowledging death might hasten its arrival. Integrating death preparation into the SCM ensures that patients and their families receive structured guidance on end-of-life decision-making, advance care planning, and emotional coping strategies.<sup>32</sup> This approach not only facilitates a more dignified transition but also respects traditional values while aligning with palliative care principles.

In the module five of this standard, we defined the start time of SCM. However, there is still controversy about the start timing of SCM. Evidence indicates that patients who receive SCM in the 8–90 days before death can effectively improve their quality of life, reduce the frequency of emergency visits, and lower medical expenses.<sup>7</sup> Tailoring interventions to individual patient conditions and disease trajectories may provide a balanced solution. Future research should investigate personalized timing strategies to enhance patient outcomes and optimize resource utilization. Moreover, emphasizing the evaluation of effectiveness and enhancing quality control mechanisms are crucial measures for advancing the high-quality development of SCM. According to the 2021 Quality of Death Index, China ranked 53rd out of 81 countries or regions,<sup>33</sup> lagging far behind other countries, reflecting the poor quality of palliative care. How to provide high-quality care for patients at the end of life has become an urgent problem to be solved in SCM practice at this stage. Implementing the evaluation frameworks and quality control may be the one of keys to measuring the effectiveness of SCM interventions, which involves the

systematic collection of data on patient and family outcomes, the data can provide valuable insights into the efficacy of different SCM approaches and identify areas for improvement.<sup>10</sup> In addition, one key component of quality control is the regular monitoring and evaluation of SCM practices. By systematically tracking these data, health care institutions can identify areas for improvement, make data-driven decisions, and implement corrective actions.<sup>34</sup> This ongoing evaluation ensures that SCM remain dynamic and responsive to patient needs.

### Limitations

This study has several limitations that need to be acknowledged. Firstly, the reliance on the Delphi method, while beneficial for achieving consensus among experts, may introduce bias due to the subjective nature of expert opinions. The composition and selection of the expert panel may not fully represent the diversity of perspectives across different regions and health care settings in China. Additionally, the study primarily focused on adult palliative care, potentially overlooking specific needs and considerations for adolescent populations or others. The transferability of these standards to other demographic groups remains uncertain. Finally, the evolving nature of health care practices and policies means that the standards identified in this study might require regular updates to remain relevant. As new evidence and technologies emerge, continuous review and adaptation of the SCM standards will be essential.

### Conclusions

The establishment of the standard in this study provides a critical framework that can be adopted by health care institutions to ensure that SCM services are delivered uniformly and effectively. Future research should focus on the longitudinal assessment of this standard in clinical settings to determine its impact on patient outcomes and care quality, and to continually optimize and enhance it.

### CRediT authorship contribution statement

**Junchen Guo:** conceptualization, data curation, formal analysis, writing – original draft; **Linghao Zeng:** methodology, resources, data curation; **Yunyun Dai:** validation, visualization; **Xianghua Xu:** methodology, validation; **Yonghong Hu:** project administration, writing – review & editing, supervision; **Yongyi Chen:** project administration, writing – review & editing, supervision. All authors have read and approved the final manuscript.

### Ethics statement

The study was approved by the ethics committee affiliated with Hunan Cancer Hospital (Approval No. KY2024522) and was conducted in accordance with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. All participants provided written informed consent.

### Data availability statement

The data that support the findings of this study are available from the corresponding author, YC, upon reasonable request.

### Declaration of generative AI and AI-assisted technologies in the writing process

No AI tools/services were used during the preparation of this work.

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## Declaration of competing interest

The authors declare no conflict of interest. The corresponding author, Prof. Yongyi Chen, is an editorial board member of *Asia-Pacific Journal of Oncology Nursing*. The article was subject to the journal's standard procedures, with peer review handled independently of Prof. Chen and their research groups.

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.apjon.2025.100702>.

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