Journal of Clinical and Nursing Research, 2025, Volume 9, Issue 9
http://ojs.bbwpublisher.com/index.php/JCNR
Online ISSN: 2208-3693
Print ISSN: 2208-3685

# Research on the Supply Mechanism of Palliative Care Multidisciplinary Teams from the Perspective of Pluralistic Synergy Theory

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**Abstract:** Objective: To explore the experiences of palliative care multidisciplinary teams from the perspective of pluralistic synergy theory, aiming to enhance team collaboration. Method: Utilizing a qualitative research methodology, we conducted in-depth interviews with 15 palliative care team members to collect data. Results: The operational framework of palliative care multidisciplinary teams under pluralistic synergy theory involves: enhancing collaboration among team members; developing a comprehensive management model for the team; rationalizing the allocation of work tasks and durations; improving team communication and interaction through effective communication mechanisms and platforms; cultivating skilled professionals; and establishing a robust health record management system. Conclusion: The operational mechanism, informed by pluralistic synergy theory, advances the development of palliative care.

**Keywords:** Palliative care; Multidisciplinary teams; Pluralistic synergy theory; Supply mechanism

**Online publication:** Oct 17, 2025

## 1. Introduction

Palliative care is a multidisciplinary collaborative approach providing physiological, psychological, spiritual, and social support to end-of-life patients and their families, aimed at symptom control and quality of life enhancement. The “Healthy China 2030” plan underscores the need to strengthen continuous medical institutions like palliative and long-term care, focusing on the delivery of precise, high-quality services to patients. Palliative care services offer significant benefits to individuals, families, and society and are highly regarded by national and local governments. However, there is a discrepancy between the supply and demand of palliative care services in China.

Pluralistic synergy development theory posits that collaborative and synergistic development across various fields and levels can foster mutual innovation and progress [1]. This theory emphasizes the importance of cooperation between different fields and levels, highlighting how such collaboration can drive innovation and help entities achieve their development objectives. Cooperation is pivotal, requiring joint efforts and resource sharing to

enhance efficiency and foster innovation.

## 2. Materials and methods

### 2.1. Study subjects

This research focused on the palliative care team at Beijing Tsinghua Chang Gung Hospital, comprising clinical doctors, head nurses, clinical nurses, pharmacists, and medical social workers. We employed purposeful sampling with the following inclusion criteria: Membership in the palliative care team at Beijing Tsinghua Chang Gung Hospital. Exclusion criteria: Individuals who did not consent to participate in the study were excluded. Subject selection was based on data saturation, meaning no additional information was gleaned from further data collection and analysis. The final sample included 5 doctors, 5 nurses, 1 head nurse, 1 pharmacist, and 3 medical social workers, totaling 12 females and 3 males, aged 26–42 years old. Participants were required to read and sign an informed consent form, a process that was documented as part of the study's supplementary conditions [2]. The primary responsibility of the researcher was to ensure the privacy of participants during and after the study. The sample size was determined by the saturation of interview data. Fifteen individuals were ultimately selected for the palliative care team and coded from A–O. **Table 1** presents general information about the study subjects.

**Table 1.** General information of the study subjects

| Code | Gender | Date of birth | Education | Position | Marital status | Department/ work unit | Years of work | Years in palliative care |
|---|---|---|---|---|---|---|---|---|
| A | Female | 1997.7.15 | Postgraduate | Social Worker | Single | President's Office Social Service Group | 8 months | 8 months |
| B | Female | 1996.12.28 | Postgraduate | Social Worker | Single | President's Office Social Service Group | 4 months | 3 months |
| C | Male | 1997.2.11 | Bachelor's | Social Worker | Single | President's Office Social Service Group | 2 years 5 months | 1 year 5 months |
| D | Male | 1987.10.26 | Bachelor's | Doctor | Married | Pain Department | 12 years | 3 years |
| E | Female | 1984.8.6 | Postgraduate | Pharmacist | Single | Pharmacy Department | 14 years 3 months | 3 years |
| F | Female | 1987.9.11 | Postgraduate | Doctor | Divorced | Pain Department | 8 years 3 months | 1 year 10 months |
| G | Female | 1995.4.14 | Postgraduate | Doctor | Single | Pain Department | 3 months | 3 months |
| H | Female | 1992.11.11 | PhD | Doctor | Married | Pain Department | 3.5 months | 3.5 months |
| I | Male | 1981.6.23 | Bachelor's | Doctor | Married | Pain Department | 22 years | 3 years |
| J | Female | 1989.09.08 | Bachelor's | Nurse | Married | Hematology Oncology Department | 10 years 9 months | 4 months |
| K | Female | 1995.08.09 | Bachelor's | Nurse | Single | Special Needs Ward | 5 years 3 months | 3 years |
| L | Female | 1989.04.04 | Bachelor's | Nurse | Single | Special Needs Ward | 10 years 10 months | 3 years |
| M | Female | 1989.05.02 | Bachelor's | Head Nurse | Married | Special Needs Ward | 12 years 3 months | 3 years |
| N | Female | 1993.01.04 | Bachelor's | Nurse | Married | Palliative Care Insurance Ward | 8 years 3 months | 3 months |
| O | Female | 1989.06.19 | Bachelor's | Nurse | Married | Palliative Care Insurance Ward | 13 years 4 months | 3 months |

## 2.2. Data collection method

Adopting a phenomenological approach in qualitative research, semi-structured interviews were conducted. The interview guide, developed through core journal literature review and expert evaluations, covered the following topics.

(1) Attitudes towards palliative care.
(2) Unique experiences in palliative care [3].
(3) Challenges in developing palliative care projects and resolution strategies.
(4) Handling patient deaths in palliative care: experiences and emotions.
(5) Needs of terminally ill patients and support provided.
(6) Needs of families of terminally ill patients and assistance offered.
(7) Most impactful experiences in palliative care practice.
(8) Perspectives on the palliative care multidisciplinary team [4].
(9) Suggestions for improving palliative care.

Participants were briefed on the experiment's confidentiality at the outset and asked to sign a confidentiality agreement. The interview setting was chosen for its spaciousness, warmth, and lighting. The study's purpose and significance were explained to participants, who were informed of their right to withdraw at any time. Interviews commenced only with participant consent. In addition to note-taking and audio recording, video was used to capture non-verbal cues such as body language and facial expressions [5].

## 2.3. Data analysis method

To adhere to time constraints, both verbal and non-verbal data recorded were transcribed and analyzed within 24 hours, utilizing Colaizzi's seven-step phenomenological data analysis method. This involved:

(1) Objectively analyzing conversation records
(2) Selecting pertinent content to support subsequent experimental processes
(3) Filtering and coding frequently mentioned points
(4) Systematically compiling these points
(5) Professionally interpreting detailed interview content
(6) Identifying and condensing recurring themes
(7) Presenting the refined viewpoints to participants for validation

## 2.4. Credibility control

### 2.4.1. Selecting of research subjects

Employing purposive sampling, the study selected distinctive individual cases as research subjects.

### 2.4.2. Ensuring interview reliability

Participants, who were not professionally connected but shared close personal relationships, were selected. They were from different departments with no work overlap, ensuring the experiment did not affect the interviewees adversely or interfere with their work. Participants were informed of their right to withdraw at any time. The interview technique included follow-up questions, counter-questions, repetition, and summarization. Researchers maintained an impartial and non-judgmental attitude, using objective language, a sincere approach, and attentive listening. Suitable times were chosen for follow-up questioning.

### 2.4.3. Data analysis reliability

Post-interview, participants were recontacted within 24 hours for verification. In the final analysis phase, a minimum of two individuals were involved, employing methods like cross-checking to minimize subjective bias from any single researcher. This approach ensured a comprehensive and accurate representation of the study subjects, thereby enhancing the reliability of the findings.

## 3. Theoretical foundations and logical construction of research

### 3.1. Foundations of multifaceted synergy theory

#### 3.1.1. Basic viewpoint

Hermann Haken initially formulated the theory of synergy based on social experiments. Its core definition states that a system, when transitioning from a closed to a non-equilibrium state, experiences interactions between its internal and external environments [6]. These interactions lead to significant exchanges of energy and matter. Additionally, the system's internal structure is dynamic, exhibiting mutual synergy that results in an organized configuration in terms of space, time, and function. Synergy theory is predominantly applied to systems of varying types or compositions, where each element is influenced by the collective through interactive effects, and both the system and its components follow universal principles. Synergy theory is encapsulated in three laws: the law of synergistic effect, the servo principle, and the principle of self-organization [7].

#### 3.1.2. Key concepts

Synergistic Effect is the collective impact generated by multiple subsystems within a complex, open system. The internal impetus for creating an orderly structure is the synergistic action itself. The extent of synergy among the subsystems or components within the system determines its overall effectiveness. In a management system, if subsystems such as personnel, environment, and organization work in coordination and cooperation towards a shared objective, a synergistic effect greater than the sum of its parts ($1 + 1 > 2$) is produced. On the contrary, if a management system experiences discord, conflict, and friction, it results in increased internal consumption, hindering the optimal functioning of subsystems, and ultimately leads to chaos and disorder [8].

The Servo Principle is founded on the interaction between unstable and stable elements within a system. It introduces a simplification principle at critical points, where the dynamics and emergent structures of systems near instability are primarily determined by a limited set of collective variables (order parameters). These order parameters govern the behavior of other system variables. A key concept in synergetic, the order parameter, represents the collective synergistic behavior emerging spontaneously during a system's evolution. It influences the transition of system elements between phase states and is pivotal in forming new structures.

The Self-organization Process ensures that, even without external intervention, the system can autonomously and systematically construct its structure and functions, adhering to inherent laws. This process is marked by self-generation and autonomy. It illustrates how the interaction of materials, information, and external movements within the system can synergistically generate new spatiotemporal structures. The theory clarifies how a system transitions from randomness to orderliness internally, without external influence. In this context, synergy is a means and manifestation of self-organization. This principle posits that closed systems, lacking interaction in terms of material, energy, and information exchange, are inclined towards isolation. In such scenarios, the system's original state becomes irrelevant, prompting it to disrupt its old equilibrium and establish a new one, thus

sustaining further development and progress.

Conversely, failure to adapt leads to the system's decline. The expansion of system theory underlines that an organization, as a system, must continually exchange resources with its external environment, moving from disorder to order in the dynamic equilibrium and disequilibrium of inter-organizational relationships. From an energy flow perspective, synergetic elucidates the survival and development process of organizations in cross-border collaborations.

## 3.2. Logical construction of multifaceted synergy theory

### 3.2.1. Integration of multidisciplinary professional knowledge and skills

The essence of multifaceted synergy theory is the integration of professional knowledge and skills from diverse disciplines to achieve a synthesis of knowledge, skills, and concepts. This process requires mutual understanding and the sharing of knowledge among different disciplines and team members.

### 3.2.2. Establishment of clear synergistic goals

It is vital for team members to establish defined synergistic goals, outlining the collective objectives that the team aims to achieve, thus laying the groundwork for their individual contributions.

### 3.2.3. Establishment of a collaborative working mechanism

To ensure that team members align on common goals and effectively complement each other's professional knowledge and skills, it is necessary to create a collaborative working mechanism, encompassing joint decision-making, execution, and monitoring.

### 3.2.4. Development of communication and coordination mechanisms

Effective communication and coordination mechanisms are crucial for facilitating comprehensive exchanges, the adoption of ideas and solutions, and the sharing of knowledge and skills, thereby fostering trust and interaction among team members.

### 3.2.5. Formation of a unified learning community

Establishing a common learning community is beneficial for promoting the sharing of knowledge and skills and enhancing interaction among team members. This community provides opportunities for learning and development, aiding in the more effective application of knowledge and skills.

## 3.3. Palliative care from a multifaceted synergy perspective

### 3.3.1. Interdisciplinary collaboration in palliative care

Team members in palliative care need to develop robust collaboration and communication mechanisms, utilizing each other's professional strengths to form an effective cooperative system [9]. For example, doctors, nurses, and social workers should mutually respect and support each other to accomplish the objectives of palliative care. Nurse M noted, "Effective communication within the team is essential, particularly in nursing, where constant patient interaction occurs. Understanding the perspectives and wishes of both patients and their families is crucial for seamless care". Social Worker A added, "Each role is vital, and timely information exchange is essential for optimal patient care. The lack of system integration often hinders convenient sharing of information".

### 3.3.2. Advancing palliative care through patient-centered innovation

Maintaining a patient-centered approach in practice, continuously improving professional skills and scientific management, is essential to providing superior palliative care services [10]. This approach involves prioritizing humanistic services and nurturing medical culture development, coupled with continuous innovation in line with societal progress. Pharmacist E emphasized, "Beyond medical treatment, it's crucial to focus on the social, psychological, and spiritual aspects, which distinguish our work from general medical practice. Our approach should reflect a deeper humanistic and empathetic understanding".

### 3.3.3. Reducing overlap and improving coordination in palliative care teams

Clear role delineation and responsibility allocation are necessary within the palliative care team. Nurse M stated, "When opinions diverge between families and us, it often calls for further communication and intervention by physicians to explore a consensus. We cannot solely adhere to the family's or the nursing staff's viewpoints without considering each other's intentions". Nurse O observed, "In clinical care, it's important to not only understand the psychological state of the patient but also that of their family members, and to facilitate emotional support for them. This enhances our care effectiveness". A clear understanding and consensus among team members are vital to avoid unnecessary duplication of efforts and reduce communication costs, focusing on the team's collective interests and reducing internal competition for collaborative growth [11].

### 3.3.4. Building interpersonal trust and professional networks

Team members should respect and understand each other, engage in regular interactions, and build personal connections to strengthen overall cooperation and team unity. Doctor F mentioned, "Considering the real-life balance of team members, who are not just abstract entities but individuals with personal lives, the hospital's performance appraisal for palliative care staff should be rethought. Motivating and encouraging everyone to willingly engage in this profession, rather than out of obligation, is crucial". Furthermore, enhancing collaboration with external professional organizations is critical for the advancement of palliative care [12].

### 3.3.5. Standardization and scientific management in palliative care teams

Palliative care teams must enhance their internal management systems for scientific and standardized development. Doctor F noted, "The current collaboration model, hindered by various factors, including institutional policies, lacks tight integration and homogenization of information. More synchronous updating of patient information and enhanced communication among team members are essential for better patient care. This is a key aspect of team collaboration". Establishing standardized palliative care service procedures, safety management systems, work quality control and evaluation, and staff training are necessary steps to improve the team's overall quality and capability [13].

## 4. Role positioning and team collaboration in multidisciplinary palliative care teams

### 4.1. Role positioning in multidisciplinary palliative care teams for diverse subjects

#### 4.1.1. Physicians

Their role includes focusing on the needs of patients and their families, providing information about the disease and its progression. Responsibilities encompass alleviating patient suffering, maintaining dignity for patients

and families, ensuring safe and private spaces, easing fears of death, and conducting psychological, social, and spiritual assessments. High-quality companionship, guidance, and policy consultation are also integral [14]. F noted, "Patients primarily need symptom relief for inner peace and preparation for end-of-life. Families often face depression and anxiety due to prolonged medical journeys, requiring emotional support and companionship". D mentioned, "Symptom management, like physical pain; ensuring a dignified departure at any stage, creating safe spaces for high-quality companionship, and offering opportunities for growth". G emphasized, "Managing end-of-life symptoms, alleviating fears of death, providing verbal support, and active listening are critical forms of assistance". H added, "Efforts should focus on relieving end-stage physical discomfort and psychological needs, with a comprehensive assessment of disease awareness, social support, and religious beliefs". I pointed out, "Patients often wish to see loved ones or indulge in favorite foods or drinks; families need guidance on funeral procedures, costs, and customs".

#### 4.1.2. Nurses

Their primary role is to address the basic physiological needs of terminal patients, ensuring physical comfort, providing psychological support to patients and families, managing care-related disputes, preparing for death, and handling post-mortem care. K stated, "Our focus is on meeting the basic physiological needs of terminal patients, including managing severe anxiety. Families, often distressed, require comforting, timely updates on the patient's condition, and assistance with their needs, including maintaining patient hygiene and managing post-mortem arrangements". L added, "Our aim is to ensure comfortable and pain-free departures". M and N noted, "Psychological support and emotional consolation are crucial. Resolving disagreements with families often requires enhanced communication and family visits". O observed, "End-of-life processes can be rapid; prioritizing the psychological state of the patient's family is essential".

#### 4.1.3. Pharmacists

They provide psychological support tailored to patient and family needs, utilizing pharmaceutical expertise to manage symptoms. E commented, "Our role involves assisting and accompanying patients, listening to their concerns; managing physical symptoms like pain, nausea, and vomiting, addressing holistic needs, and clarifying medication purposes".

#### 4.1.4. Medical social workers

They assist in facilitating disease acceptance, family communication, resource coordination, witnessing wills, family support, and policy consultation [15]. A remarked, "We help patients come to terms with their illness and provide emotional support to families during will witnessing". B said, "Our tasks include addressing psychological needs, smoothing family relations, coordinating resources, and facilitating family meetings and decision-making processes". C added, "We focus on addressing emotional needs, understanding family dynamics, and responding to post-death welfare inquiries, concentrating on the family as a whole".

### 4.2. Modes of collaboration

#### 4.2.1. Formal communication

The Hospital Information System (HIS) enables the exchange of information through electronic medical records authored by doctors and shared assessments, specialty evaluations, and nursing records by the nursing staff.

Social Worker B mentioned, “Family meetings are held for decision-making purposes”. These meetings include discussions among doctors, nurses, pharmacists, social workers, patients, and their families regarding treatment plans, prognoses, and palliative care requirements. “Weekly interdisciplinary rounds involving doctors, nurses, social workers, and pharmacists review the status of both deceased and current patients. Monthly end-of-life quality seminars invite families of deceased patients to the hospital to discuss the quality of end-of-life care”.

#### 4.2.2. Informal communication

The use of new media, such as creating a WeChat group for each patient upon admission, is integral. The attending physician posts consultation information in the group, allowing each team member to tailor their approach based on the patient and family’s situation and then communicating key focus areas back to the team.

## 5. Current status review of the operational mechanisms of multidisciplinary palliative care teams in China

The final structure or state of system evolution is invariably influenced by order parameters, which also play a dominant role in directing the behavior of subsystems. A key condition for the orderly development of a system is the active cooperation and organic connection among its subsystems. An orderly structure emerges in the system only when internal interaction is dominant and subsystems are coordinated. In addition to internal synergy mechanisms, the external environment must provide suitable control parameters to support the formation and orderly evolution of the system’s structure. Feedback mechanisms are crucial for maintaining system order. Synergy denotes the inherent integration and interconnectivity of the system, encompassing collaboration among people, different application systems, data resources, application scenarios, and between humans and machines.

From the perspective of multifaceted synergy theory, optimizing the supply mechanisms of multidisciplinary palliative care teams can be approached as follows.

### 5.1. Strengthen team collaboration

Team members from various professional backgrounds should collaborate based on their individual expertise and skills, sharing knowledge and experiences to improve work efficiency and quality.

### 5.2. Establish a comprehensive palliative care team management model

Refining the leadership and management mechanisms within the care team can provide structured management to foster the positive development of palliative care teams.

### 5.3. Rationalize task allocation and working hours

Tasks and working hours should be allocated rationally, based on clinical needs, the patient’s condition, and the unique aspects of palliative care, to enhance productivity and process efficiency.

### 5.4. Enhance team communication and interaction

Emphasize internal communication and interaction by establishing effective communication mechanisms and platforms, thereby strengthening collaboration and trust among team members.

### 5.5. Cultivating exceptional talent

Implement effective talent development and recruitment strategies to optimize the team's composition, thereby enhancing its overall quality and professional level and continuously innovating palliative care service models.

### 5.6. Establishing a comprehensive health record management system

Building a robust health record management system is dependent on positive interactions and efficient collaboration between departments. Enhancing and refining information systems will enable more rapid and effective work by the multidisciplinary palliative care team.

## 6. Conclusion

This study utilized qualitative research methods, conducting in-depth interviews with 15 palliative care team members. Its objective was to understand the personalized care tailored to each family, considering the needs of patients and their relatives in palliative care practice. The research examined the supply mechanisms and addressed challenges encountered by palliative care teams under the multifaceted synergy theory, laying a foundation for enhancing palliative care services. The supply mechanisms for multidisciplinary palliative care teams, according to this theory, include: enhancing team collaboration; developing a comprehensive management model for palliative care teams; rationalizing the allocation of work tasks and hours; strengthening team communication and interaction; establishing effective communication mechanisms and platforms; cultivating exceptional talent; and implementing a health record management system. Due to resource constraints, the data for this study were obtained from a tertiary hospital in a specific city.

This presents notable differences in hospital levels and regional characteristics compared to other studies, as well as disparities with regions of higher economic development regarding the research population and medical staff. Future research aims to address these limitations, seeking a broader understanding of team collaboration among palliative care team members and furthering the advancement of palliative care practice.

## Disclosure statement

The authors declare no conflict of interest.

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