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A Co-occurrence Network Analysis of Multilevel Factors Influencing Palliative Care Implementation: Integrating Individual, Family, Professional, and System Perspectives

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What is already known about the topic?

- Palliative care delivery involves multiple stakeholders, including healthcare professionals, patients, and family caregivers, and encompasses complex processes such as end-of-life decision-making, symptom management, care coordination, and transitions between different care settings.
- Healthcare professionals, patients, and family caregivers may have different understandings, expectations, values, and experiences of palliative care, which can influence communication, treatment decisions, and care processes.
- Effective palliative care requires coordination among multiple stakeholders and integration of clinical practice, family participation, and organizational support.

What this paper adds:

- This study shows that factors influencing palliative care development operate across four interconnected levels — individual, family, professional and system.
- It identifies co-occurrence relationships among factors across levels, offering an empirical basis for prioritizing coordinated, multi-level action in service planning.
- It provides a multi-perspective map of these factors, integrating the experiences of terminally ill patients, family caregivers and palliative care practitioners within a single framework.

Implications for practice

- The findings indicate that improving palliative care development requires coordinated action across individual, family, professional and system levels

rather than single-level efforts. For clinicians and service teams, this means that training and support for palliative care practitioners, structured guidance for family caregivers, and communication tailored to patients' information needs should be planned as complementary components of the same improvement strategy, as factors at one level may reinforce or undermine those at another. For service managers, the interconnected nature of the identified factors suggests that quality improvement initiatives should combine workforce development, family support pathways and organizational arrangements in one coherent plan, with progress monitored against indicators spanning more than one level. Adopting such a multi-level approach is more likely to translate the study's findings into sustained improvements in palliative care delivery.

Abstract

Objective: To analyze the co-occurrence relationships among the factors influencing palliative care implementation.

Methods: An exploratory qualitative study was conducted. Physicians, nurses, terminally ill patients and family caregivers were recruited in Beijing and Shanghai between April and December 2025 using purposive sampling. Semi-structured in-depth interviews and focus-group interviews were performed. Reflexive thematic analysis was applied to code interview data, and four thematic domains were established: individual, family, professional, and system levels. Co-occurrence network analysis was carried out to calculate relationship density and normalized co-occurrence strength. The Jaccard similarity coefficient was used to examine co-occurrence and overlap patterns of factors, and Gephi software was utilized for network visualization.

Results: Challenges to palliative care implementation were interwoven across four domains: individual, family, professional, and system. Within-system factors showed the highest level of co-occurrence (relationship density = 25.45%, normalized co-occurrence strength = 0.509), with tight coupling between constraints of policy-legal protection and hospital-community-family continuous care coordination. Among cross-domain relationships, the professional-system linkage exhibited the strongest association. The individual-family pairs yielded the largest number of actual co-occurring code pairs (47 pairs, with 65 co-occurrence events). Among the identified theme combinations, the individual–family pair of "Assessment of remaining treatment options" and "Conditional treatment planning based on physical tolerance" demonstrated the strongest association (Jaccard similarity = 0.571).

Conclusion: Barriers to palliative care implementation arise from the interplay of multi-dimensional factors rather than discrete, isolated issues. Advancing palliative care practice should not rely solely on interventions targeting single barriers. Priority should be given to strengthening key system-level components and improving

cross-institutional continuous-care mechanisms. Integrated support for both patients and families, enhanced shared decision-making among stakeholders, and multi-level coordinated comprehensive improvement strategies are also required.

Keywords: Palliative care; Implementation barriers; Co-occurrence network analysis; Continuous care

1 Introduction

Hospice and palliative care aim to improve the quality of life of patients and their families facing life-threatening illnesses by preventing and relieving physical, psychosocial, and spiritual suffering [1]. With population aging and the increasing burden of chronic diseases, the demand for palliative care services has increased substantially worldwide [2]. Although palliative care has been increasingly recognized as an essential component of healthcare systems, its implementation remains challenging in many countries [3]. These challenges arise from the complexity of palliative care itself, which involves not only symptom management and clinical decision-making but also communication, caregiving responsibilities, organizational coordination, and multiple contextual factors influencing care delivery [4]. Therefore, understanding the factors underlying palliative care implementation requires consideration of the relationships among diverse contributing elements rather than focusing solely on individual barriers.

Previous studies have identified a broad range of factors influencing palliative care implementation across individual, family, professional, and system levels. At the individual level, patients' preferences, emotional needs, expectations, and illness experiences may shape treatment decisions and care processes [5–7]. Family-related factors, including caregiver burden, family responsibilities, and involvement in decision-making, have also been recognized as important determinants of palliative care delivery [8,9]. Healthcare professionals may encounter challenges related to clinical uncertainty, communication, professional responsibilities, and resource allocation [10,11]. Meanwhile, system-level factors, such as fragmented care pathways, limited service integration, and insufficient organizational support, may further constrain effective implementation [12,13]. Together, these studies have substantially advanced understanding of the multifaceted nature of palliative care implementation challenges.

However, existing evidence has primarily focused on examining specific stakeholder

experiences, or describing particular types of barriers. Less attention has been paid to how these factors are interconnected and whether certain factors tend to emerge together as recurring patterns within palliative care implementation [14]. This knowledge gap limits the ability to identify the underlying relational structures of implementation challenges and may result in overlooking interconnected factors that jointly influence care delivery. Therefore, a systematic examination of the co-occurrence relationships among different thematic factors is needed to clarify how implementation challenges are organized and which factor combinations represent particularly strong associations.

Understanding how different factors are organized and interconnected is essential for revealing the complexity of palliative care implementation. A relational perspective focusing on co-occurrence patterns can provide insights into the structural organization of implementation challenges by examining how different thematic factors appear together within the same contexts [15]. This approach differs from qualitative network analysis and care-network mapping as applied in palliative care research. Qualitative network analysis has been used to explore how clinicians and caregivers make sense of palliative care systems, typically through participant-generated maps of the actors and relationships they consider relevant [16,17]. Care-network mapping studies have likewise focused on actors, reconstructing the networks of professionals, services, and informal caregivers surrounding individual patients or regional service delivery [18-20]. These approaches therefore describe networks of care actors and their interactions, whereas the present study treats thematic factors as network nodes and defines ties as the co-occurrence of coded segments within the same analytical context, examining which implementation challenges tend to cluster together across individual, family, professional, and system levels rather than who is connected to whom in care delivery. Such an approach allows researchers to move beyond isolated factor identification and determine which factors are closely associated, which combinations represent stronger relationships, and which thematic domains occupy central positions within the overall challenge structure. By clarifying these relational patterns, it becomes possible to obtain a more comprehensive understanding of the mechanisms through which multiple

challenges collectively shape palliative care implementation.

This study aims to identify factors influencing palliative care implementation and examine the co-occurrence relationships among these factors. By mapping the associations among implementation-related factors, this study provides a structural perspective for understanding the complexity of palliative care challenges and offers evidence to inform more integrated and coordinated strategies for improving palliative care delivery.

2 Methods

2.1 Research Methods

This study adopted an exploratory qualitative approach to capture the experiences, perceptions, and challenges of key stakeholders involved in palliative care provision, receipt, and caregiving. Through systematic coding and analysis of interview data, thematic domains and relationships among influencing factors were identified and visualized using a thematic network approach.

2.2 Participants

Purposive sampling was employed in this study, with Beijing and Shanghai selected as research sites between April and December 2025. Participants were recruited from hospitals and community health facilities providing hospice and palliative care services in these two cities. Eligible participants included physicians, nurses, terminally ill patients, and family caregivers with direct experience of palliative care provision, receipt, or caregiving.

The inclusion criteria were as follows: (1) healthcare providers: physicians or nurses working in secondary or tertiary hospitals or community health service centers with at least two years of experience in hospice or palliative care; (2) terminally ill patients and family caregivers: patients receiving hospice or palliative care services in secondary or tertiary hospitals or community health service centers, and family

members directly involved in daily caregiving or end-of-life decision-making; and (3) participants were required to have sufficient communication abilities to describe their experiences and perspectives and provide voluntary informed consent. Exclusion criteria included acute disease exacerbation or unstable physical conditions preventing safe interview participation, severe cognitive impairment, consciousness disorders, or mental illnesses affecting communication, refusal of audio recording, early withdrawal from the study, and lack of direct experience related to palliative care provision, receipt, or management. Patients with limited communication abilities were not interviewed; their primary family caregivers were instead recruited as proxies after eligibility confirmation and informed consent.

The sample size was determined based on data saturation [21], considered achieved when additional interviews no longer generated substantially new concepts, themes, or perspectives. All institutional and personal identifying information was anonymized throughout the research process.

2.3 Data Collection

Data were collected through individual in-depth semi-structured interviews and focus group interviews with participants who had direct palliative care experience. Separate interview guides were developed for healthcare providers, patients, and family caregivers to ensure relevance to each group while maintaining consistency across core research topics.

The guides covered key areas of palliative care implementation, including experiences with palliative care services, end-of-life decision-making, perceptions of comfort and quality of life, caregiving responsibilities, coordination among healthcare providers and families, perceived barriers and challenges, and recommendations for service improvement (Supplementary 1). Although wording and emphasis were adapted to participants' roles and experiences, all interviews addressed these common thematic domains.

All interviews were conducted after written informed consent and audio-recorded with participants' permission, by trained researchers following the semi-structured framework while allowing flexibility to explore emerging topics. Each focus group comprised no more than ten participants to facilitate adequate interaction and individual expression.

Audio recordings were transcribed verbatim within 48 hours after each interview to preserve the completeness and authenticity of participants' narratives. Transcripts were reviewed against the original recordings to ensure accuracy before coding and thematic analysis.

2.4 Data Analysis

2.4.1 Reflexive thematic analysis

Interview transcripts were analyzed using Braun and Clarke's reflexive thematic analysis approach [22], through an iterative process of familiarization with the data, initial coding, development and refinement of themes, and interpretation of relationships among identified factors. Two researchers independently reviewed all transcripts multiple times to achieve data familiarity and identify meaningful segments related to palliative care implementation. Text segments describing participants' experiences, perceived barriers, decision-making processes, caregiving experiences, care coordination, and service delivery challenges were inductively coded. Initial codes were continuously compared, discussed, and refined through regular research team meetings, with coding differences resolved through discussion until consensus. The finalized codes subsequently served as the basis for further thematic categorization and network analysis.

2.4.2 Development of thematic domains and coding framework

Following the initial coding process, related codes were reviewed and grouped into broader thematic categories according to their conceptual characteristics and contextual meanings. Through iterative comparison and synthesis, the identified

influencing factors were organized into four overarching thematic domains: individual-level factors, family-level factors, professional-level factors, and system-level factors. A hierarchical coding framework was established, consisting of individual codes and their corresponding thematic domains. This framework was repeatedly reviewed against the original transcripts to ensure conceptual consistency and accurately represent participants' experiences.

2.4.3 Co-occurrence network analysis

Following the establishment of the thematic coding framework, co-occurrence network analysis was conducted to examine relationships among identified factors. The analytical unit was the coded segment, defined as a contiguous text passage (typically one to several consecutive sentences) within a single interview or focus-group transcript that expressed one coherent meaning and was assigned one or more codes. Two factors were considered to co-occur when they were both assigned to the same coded segment; that is, the analytical context for co-occurrence was the individual coded segment rather than a whole interview, focus group, or transcript. A co-occurrence matrix was generated based on the frequency of joint appearances between codes. Network nodes represented identified codes, edges represented co-occurrence relationships, and edge weights were determined by co-occurrence frequency.

To characterize relationships within and between thematic domains, relationship density and normalized co-occurrence strength were calculated. For a given thematic relationship R (a single domain i for within-theme relationships, or two domains i and j for between-theme relationships), the number of theoretically possible code pairs was $P = n_i(n_i - 1)/2$ for within-theme relationships and $P = n_i \times n_j$ for between-theme relationships, where n_i and n_j denotes the numbers of codes in the respective domains. Relationship density was defined as the proportion of observed co-occurring code pairs among all theoretically possible code pairs, $RD = O/P$, where O is the number of observed co-occurring code pairs in R. Normalized co-occurrence strength

was calculated as NCS = F/P, where F is the total co-occurrence frequency of all observed pairs in R, thereby standardizing co-occurrence intensity by the number of possible pairs and enabling comparisons across different thematic relationships. Network visualization was performed using Gephi, with different colors representing the four thematic domains, and network structures interpreted based on the connectivity patterns among coded factors.

2.4.4 Similarity analysis

To evaluate the similarity and proportional overlap between frequently co-occurring factor pairs, the Jaccard similarity coefficient was calculated. For two factors A and B, $J(A, B) = |U_A \cap U_B| / |U_A \cup U_B|$, where U_A and U_B denote the sets of analytical units containing factor A and factor B, respectively, and $|\cdot|$ denotes the number of elements in a set [23,24]. Higher Jaccard coefficients indicated greater similarity and stronger overlap between two factors across participants' narratives [23,24]. This analysis complemented frequency-based co-occurrence analysis by identifying factor combinations with strong structural similarity. A worked example illustrating the calculation of co-occurrence frequency, relationship density, normalized co-occurrence strength, and the Jaccard similarity coefficient is provided in Supplementary 4.

2.5 Quality Control

To ensure the rigor and credibility of the qualitative analysis, multiple strategies were implemented throughout the research process. Two researchers independently conducted transcript coding and thematic analysis. Coding results, thematic interpretations, and analytical decisions were regularly reviewed and discussed within the research team. Any discrepancies in coding interpretation were resolved through discussion until consensus was achieved. Throughout the analytical process, identified themes and factor relationships were repeatedly compared against the original interview transcripts to ensure that the generated coding framework accurately reflected participants’ experiences and perspectives. The research team maintained

systematic documentation of coding procedures, theme development, and analytical decisions to enhance transparency and reproducibility. In addition, researchers continuously distinguished participants' original narratives from subsequent analytical interpretations and critically reflected on potential researcher biases during the analysis process.

2.6 Ethics

The study was approved by the local regional Ethics Committee of the School of Nursing, Peking Union Medical College (reference number PUMCSON-2025-07) on 6th March 2025. All participants provided written informed consent before the interviews. The study was conducted in accordance with the Declaration of Helsinki and relevant institutional guidelines and regulations.

3 Results

Data were collected from 72 participants, including 14 terminally ill patients, 32 family caregivers, and 26 palliative care practitioners (6 physicians and 20 nurses). Among them, 55 participants completed one-on-one interviews, and 17 participated in focus group interviews. Detailed demographic information of all participants is provided in Supplementary 2.

3.1 Thematic Domains and Their Network

A total of 326 coded segments were identified, and 75 initial codes were generated through open coding. Following the coding process, the initial codes were grouped according to their conceptual similarities and relationships, resulting in four thematic domains: individual, family, professional, and system levels. A thematic network was constructed based on the coded nodes and their co-occurrence relationships and visualized using Gephi (Figure 1). The network included all 75 initial codes, which were represented as nodes, while the co-occurrence relationships between codes were represented as edges. The four thematic domains were displayed using different colours, showing the distribution and connections of codes across the four levels.

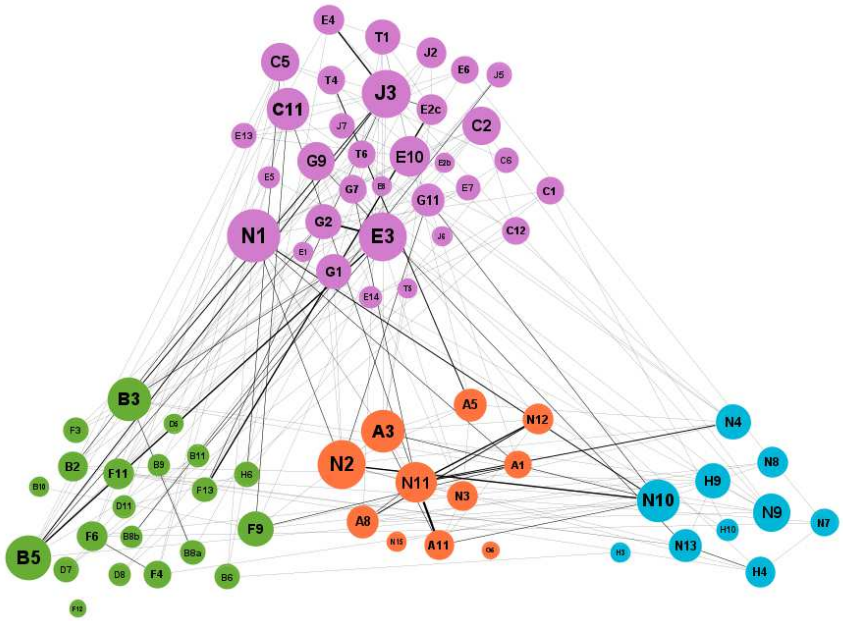


Figure 1 ***Thematic network of factors influencing palliative care development.***

Note. Each node represents an identified code, and node labels indicate code identifiers. Different colours represent the four thematic domains (individual, family, professional, and system levels), and edges represent co-occurrence relationships between codes. Nodes are labelled with code identifiers rather than full code names for visual clarity; full descriptions and definitions of all codes are provided in Supplementary 3.

3.2 Co-occurrence characteristics within and between thematic domains

The co-occurrence structures varied across thematic domains, with the relationship density and normalized co-occurrence strength summarized in Table 1. System–system relationships exhibited the highest relationship density (25.45%) and normalized co-occurrence strength (0.509), indicating the most pronounced concentration of within-theme code co-occurrence. Among the cross-theme relationships, professional–system relationships showed the highest relationship density (12.73%) and normalized co-occurrence strength (0.191). In contrast, individual–family relationships demonstrated a different pattern: although their relationship density was relatively low (6.78%), they had the largest number of observed cross-theme code pairs (n = 47) and the highest total co-occurrence

frequency (n = 65).

Table 1. Within- and between-theme code co-occurrence characteristics

Theme-pair	Co-occurring Code Pairs	Total Co-occurrence Count	Relationship density (%)	Normalized co-occurrence strength	Mean co-occurrence frequency
Individual-Individual	45	53	8.52	0.100	1.178
Individual-Family	47	65	6.78	0.094	1.383
Individual-Professional	15	19	4.55	0.058	1.267
Individual-System	19	26	5.23	0.072	1.368
Family-Family	7	9	3.33	0.043	1.286
Family-Professional	14	14	6.67	0.067	1.000
Family-System	2	3	0.87	0.013	1.500
Professional-Professional	6	7	13.33	0.156	1.167
Professional-System	14	21	12.73	0.191	1.500
System-System	14	28	25.45	0.509	2.000

3.3 Key code pairs with strong co-occurrence relationships

High-frequency code pairs were concentrated mainly within system–system and individual–family relationships (Table 2). The system-domain pair of "Limitations of policies, regulations, and legal protection" and "Continuity and coordination of hospital-community-home care" had the highest co-occurrence frequency (six), followed by the individual-domain pair of "Symptom relief and physical comfort" and "Fear, anxiety, and anticipatory grief" (five). The individual–family pair of "Assessment of remaining treatment options" and "Conditional treatment planning based on physical tolerance" showed the highest Jaccard coefficient (0.571), indicating the greatest proportional overlap among the high-frequency code pairs.

Table 2 High-frequency and strongly associated code pairs

(Co-occurrence frequency ⩾3)

Rank	Code pair	Theme pair	Co-occurrence frequency	Jaccard similarity
1	Limitations of policies, regulations, and legal protection ↔ Continuity and coordination of hospital-community-home care	System–System	6	0.182
2	Continuity and coordination of hospital-community-home care ↔ Localization and organizational models of palliative care services	System–System	4	0.160
3	Multidisciplinary team configuration ↔ Localization and organizational models of palliative care services	System–System	3	0.333
4	Referral, waiting lists, and barriers in care pathways ↔ Continuity and coordination of hospital-community-home care	System–System	3	0.075
5	Assessment of remaining treatment options ↔ Conditional treatment planning based on physical tolerance	Individual–Family	4	0.571
6	Symptom monitoring and abnormality recognition ↔ Symptom relief and physical comfort	Individual–Family	4	0.108
7	Intensive physical and daily living care ↔ Multiple symptoms and declining physical tolerance	Individual–Family	3	0.067
8	Symptom monitoring and abnormality recognition ↔ Multiple symptoms and declining physical tolerance	Individual–Family	3	0.061
9	Symptom relief and physical comfort ↔ Fear, anxiety, and anticipatory grief	Individual–Individual	5	0.200
10	Activity, self-care, and basic functioning ↔ Multiple symptoms and declining physical tolerance	Individual–Individual	4	0.121
11	Professional training and palliative care capacity building ↔ Insufficient professional workforce, time, and emotional labor	Professional–System	4	0.143
12	Continuity and coordination of hospital-community-home care ↔ Gaps in community-based home palliative care provision	Professional–System	3	0.079
13	Financial burden, payment issues, and operational cost pressure ↔ Tension between efficiency, cost, and equitable access	Individual–System	3	0.250
14	Public awareness and terminology barriers in palliative care ↔ Professional training and palliative care capacity building	Individual–Professional	3	0.088

4 Discussion

Through co-occurrence analysis of multi-stakeholder interview data, we identified that implementation challenges were organized into interconnected relational patterns involving individual, family, professional, and system domains.

4.1 System-level factors exhibit high connectivity within the overall co-occurrence network

Several studies on palliative care implementation have emphasized that successful implementation relies not only on improvement of individual healthcare processes but also on effective integration among different service providers and care settings [11,25-27]. Through co-occurrence analysis, the present study further demonstrated that implementation challenges across different levels do not exist independently but form an interconnected relational network involving patients, families, healthcare professionals, and system environments (Table 1). System-related theme pairs exhibited the highest relational connectivity, with a relationship density of 25.45% and a normalized co-occurrence strength of 0.509 (Table 1), suggesting that organizational structures, policy contexts, and coordination mechanisms may serve as key connectors linking challenges across multiple levels.

On the one hand, these findings validate and reinforce previous understandings of the critical role of system-level factors in palliative care implementation. On the other hand, by quantitatively analyzing the strength of associations among factors at different levels, this study reveals the relative positions of various factors within the implementation barrier network and their interaction patterns. Compared with studies that primarily describe the presence of different barrier types [28-30], this study provides visualized evidence of the relational structure among these factors, clarifying key connecting components and potential intervention targets in palliative care implementation. These findings suggest that future optimization of palliative care systems should move beyond addressing individual barriers alone and focus on highly connected system components by strengthening organizational coordination, policy

support, and cross-institutional continuity-of-care mechanisms, thereby facilitating more effective collaboration among patients, families, and healthcare professionals.

4.2 Individual–family factors show the strongest co-occurrence relationships in end-of-life decision-making

Table 2 presents high-frequency and strongly associated relationships among factors across different domains of palliative care implementation. Among the identified theme combinations, the individual–family pair of "Assessment of remaining treatment options" and "Conditional treatment planning based on physical tolerance" demonstrated the strongest association (Jaccard similarity coefficient = 0.571, Table 2). This finding indicates that these two aspects are closely linked: the evaluation of treatment options should be closely integrated with patients' current physical condition and treatment tolerance. Even when potential treatment options remain available, their practical feasibility and expected benefits may be limited if patients experience declining physical function, increasing symptom burden, or limited treatment tolerance. Therefore, patients and families need to continuously weigh potential survival benefits, treatment burden, and current physical condition, and decide accordingly whether to continue, adjust, or limit treatment [31,32]. These findings highlight that decision support in palliative care should help patients and families understand the difference between "what treatment options are still available" and "which treatments remain appropriate for the patient," and promote shared decision-making centered on patients' condition and care goals.

4.3 Multilevel coordination is essential for sustainable palliative care implementation

The co-occurrence analysis revealed that high-support relationships were mainly concentrated in two categories: System–System and Individual–Family. The System–System category comprised four relationships with 16 co-occurrences in total, mainly involving policies, norms and legal safeguards, hospital–community–home continuous care and linkage, hospice care service models, multidisciplinary team

configuration, and referral and care pathways, among which hospital–community–home continuous care and linkage recurred across multiple relationships. Previous studies have noted that the continuous delivery of hospice and palliative care requires effective referral and collaboration mechanisms across healthcare institutions at different levels, as well as corresponding professional staff and service resources, with poor referral and insufficient primary-level resources being common barriers [33,34]. The present findings also indicate that these system-related issues are closely interconnected, such that a deficiency in one component of the service system may affect the functioning of other components.

The Individual–Family category similarly comprised four high-support relationships with 14 co-occurrences in total, mainly involving the links between patients' symptoms, physical tolerance, and treatment choices and family symptom monitoring, daily caregiving, and treatment arrangements (see Table 2). Existing studies have shown that terminally ill patients have substantial needs for symptom control and comfort care, while family caregivers also need to undertake tasks such as symptom observation, daily caregiving, and treatment decision-making, and require corresponding information and professional support [13, 35,36]. The present study further indicates that patients' own care needs are closely linked to the caregiving tasks undertaken by their families. Therefore, hospice and palliative care requires not only improved policies, referral, and inter-institutional collaboration, but also attention to the role of families in patient care, providing joint support for both patients and their families.

5 Limitations

This study has several limitations. First, participants were recruited via purposive sampling from palliative-care-providing hospitals and community health service centers in Beijing and Shanghai. Accordingly, the findings mainly represent experiences within these local healthcare settings and require further validation in regions with divergent palliative-care development and resource availability. Second,

stakeholder experiences were analyzed based on individual care roles instead of interconnected patient-family-provider care networks. Hence, this study cannot adequately capture perspective discrepancies, interactive dynamics, and decision-making negotiations among stakeholders in shared care contexts. Third, as a qualitative cross-sectional investigation, this work only records participants' perceptions at a single time point and fails to fully reflect shifts in implementation-related challenges across disease trajectories and care transitions. Longitudinal studies are needed to unpack the dynamic processes of palliative care implementation.

6 Conclusion

Drawing on multi-stakeholder perspectives, this study structurally unpacks palliative-care implementation challenges, which are not discrete barriers but interwoven across individual, family, professional and system domains. Synthesizing experiences of patients, family caregivers and healthcare providers, it shows that implementation difficulties arise from complex interactions among patient needs, family engagement, professional practice and healthcare system support. Accordingly, sustainable integration of palliative care requires coordinated strategies instead of single-level interventions; advancing shared decision-making, enabling meaningful patient-family participation, strengthening professional competencies, and improving cross-setting care continuity can facilitate its effective implementation.

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Declaration of conflicts of interest

The Authors declare that there is no conflict of interest. This study was conducted in accordance with the principles of the Declaration of Helsinki. All participants were fully informed about the purpose, procedures, benefits and risks of this study. Written informed consent was obtained from all participants prior to data collection.

Data sharing

The de-identified interview transcripts, coding framework, and data supporting the findings of this study are available from the corresponding author upon reasonable request. Access to the data may be granted following review of the proposed research purpose, ethical approval where applicable, and confirmation that the intended use is consistent with the participants' informed consent. Original audio recordings are not publicly shared to protect participant confidentiality and privacy.

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