

Developing Implementation Strategies to Normalise Unaccompanied-Care Model Using the CFIR-ERIC Approach: A Qualitative Study

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Abstract

Background

With the accelerating process of population aging and shrinking family size, the traditional family-centered inpatient caregiving model in China is becoming increasingly unsustainable, which has promoted the piloting of an unaccompanied-care model, where professionally trained nursing assistants provide bedside care in collaboration with healthcare teams, thereby reducing reliance on family caregivers. Although this model has shown potential advantages in improving ward management and reducing caregiving burdens, its implementation still faces many obstacles. At present, empirical evidence on how this model can be successfully implemented and normalized in China's healthcare environment remains relatively scarce.

Aim

To explore facilitators and barriers to implementing the unaccompanied-care model in China and develop strategies.

Methods

Interviews were conducted with 80 stakeholders in three tertiary hospitals in Jinan, China. Data were mapped to CFIR and NPT constructs. Strategies were developed using the CFIR-ERIC tool.

Results

Nine facilitators and eleven barriers were identified. While recognized for its advantages, implementation faces challenges regarding payment misalignment, legal liability, and adaptation within the context of care culture. Five strategies were developed: Economic & Incentive Support, Risk & Liability Management, Infrastructure & Process Optimization, Training & Capacity Building and Culture & Public Trust Shaping.

Conclusion

By integrating the Consolidated Framework for Implementation Research (CFIR) with Normalization Process Theory (NPT) and applying the CFIR-ERIC matching tool, this study systematically elucidates the implementation mechanisms of the unaccompanied-care model within China's healthcare context. The study reveals that the normalization process of this model not only requires addressing the objective challenges of financial investment and staffing, but is, in essence, a profound process of adapting a modern nursing system to local economic realities and traditional caregiving culture.

Introduction

In the face of an aging population and a surge in caregiving demands, optimizing inpatient care models has become a priority in global health policy[1, 2]. In mainstream international healthcare systems, inpatient care is typically carried out through structured "Nursing Care Delivery Models" (NCDMs), where professional medical teams oversee both clinical interventions and basic daily care for patients[3]. In contrast, bedside care for hospitalized patients in China has traditionally been led by family members, who undertake a large amount of non-professional daily caregiving responsibilities[4]. However, with the widespread trend of one-child families, smaller family sizes, and the conflict between the career responsibilities of the middle-aged and young population, this traditional model, which heavily relies on the physical strength of family members, has become unsustainable[5].

To address this, China's healthcare system is actively exploring a localized unaccompanied-care model[6]. This model refers to a system where hospitalized patients do not need family accompaniment or hire private caregivers. Instead, standardized and professionally trained nursing assistants provide inpatient care services in coordination with medical teams[7]. This transformation not only alleviates the burden of family caregiving but also, by standardizing nursing teams, reduces unnecessary personnel movement, thus effectively reducing the risk of cross-infection within the hospital, optimizing ward environments, and improving management efficiency[8]. It represents a significant attempt in China's healthcare system to restructure nursing services and professionalize care. However, in real-world clinical environments, the implementation of the unaccompanied-care model faces unprecedented challenges[7]. These challenges include insufficient professional trust in medical caregivers, difficulties in information sharing, limitations in ward safety management, weak logistical support, and the suppression of patients' emotional needs[7].

How to normalize the implementation of the unaccompanied-care model in China and make this nursing service reform better serve patients and the public has become a pressing social issue. An in-depth exploration of the facilitating and hindering factors in the implementation of the unaccompanied-care model is key to solving this issue[9]. In recent years, scholars have conducted preliminary studies on the factors affecting the implementation of the unaccompanied-care model, but most of these studies are limited to case analyses or experience summaries, lacking specific empirical support, making it difficult to form universally applicable conclusions[10].

To systematically analyze this complex implementation process, this study plans to adopt the Consolidated Framework for Implementation Research (CFIR) and the Normalization Process Theory (NPT). CFIR is a determinant framework that draws from various theories to categorize and describe contextual factors across five domains, providing strong support for exploring the facilitating and hindering factors related to implementation projects[11, 12]. NPT, on the other hand, focuses on how new technologies are normalized, shedding light on the internal mechanisms by which people understand, engage with, and continuously adjust to the use of new technologies in daily work[13]. While their core focuses are different, these two frameworks complement each other. By combining NPT and CFIR, it helps to capture and explain how the dynamic implementation process interacts with static characteristics, changing people's understanding, use, and integration of innovations into everyday practice[14].

To further promote the translation of research findings into practice, this study will also use the CFIR-ERIC mapping tool, systematically matching the identified key facilitating and hindering factors to specific intervention measures in the Expert Recommendations for Implementing Change (ERIC) database[15]. The goal of this study is to use this integrated methodology not only to reveal the facilitating and hindering factors and their mechanisms in the implementation of unaccompanied wards in the Chinese healthcare context but also to provide practical strategy recommendations. These strategies will serve as a scientific basis for policymakers, hospital managers, and clinical teams.

Methods

Study Design

This study adopts a descriptive qualitative research design, guided by constructivist epistemology[16]. Constructivism posits that reality is constructed through the interactions and experiences of individuals within specific social contexts. This perspective helps guide us in exploring the subjective perceptions and experiences of different stakeholders regarding the unaccompanied-care model, as well as their dynamic adjustment processes within a complex healthcare environment. The reporting of this study strictly follows the Consolidated Criteria for Reporting Qualitative Research (COREQ).

Study Setting

This study uses purposive sampling and is conducted in three tertiary general hospitals in Jinan, Shandong Province, China. These hospitals have comprehensive clinical departments and experience in piloting innovative nursing models. The research sites primarily focus on general inpatient wards that have previously trialed unaccompanied care-related management models. The research team established collaborative relationships with the nursing management departments of each hospital to ensure the research process aligns with clinical practice and receives the necessary support. Participants included physicians, nurse managers, nurses, nursing aides, patients, and family members, covering the main stakeholder groups involved in the implementation of unaccompanied-care model. The inclusion and exclusion criteria are presented in Table 1.

Table 1
Inclusion and Exclusion Criteria

Study population	Inclusion criteria	Exclusion criteria
Doctors	(1) Holds a physician practice license; (2) Has engaged in clinical medical work for ≥ 3 years.	(1) Not on duty for any reason; (2) Refuses to participate or is unable to complete data collection.
nurse managers	(1) Holds an intermediate professional title or above; (2)Has engaged in clinical nursing management for ≥ 5 years.	(1) Not on duty for any reason; (2) Refuses to participate or is unable to complete data collection.
Nurses	(1) Holds a nurse practice qualification certificate; (2) Has engaged in clinical nursing work for ≥ 3 years.	(1) Not on duty for any reason; (2) Refuses to participate or is unable to complete data collection.
Nursing aides	(1) Holds a nursing aide practice qualification certificate; (2) Has engaged in clinical caregiving work for ≥ 1 year.	(1) Not on duty for any reason; (2) Refuses to participate or is unable to complete data collection.
Patients	(1) Age ≥ 18 years; (2) Voluntarily participates and signs informed consent.	(1) With severe sequelae of cerebrovascular disease, severe physical diseases such as malignant tumors, or mental illness; (2) Unable to communicate normally.
Patients' family members	(1) Age ≥ 18 years; (2) Voluntarily participates and signs informed consent; (3) Provides the main care for the patient; (4) Is a relative of the patient and does not receive remuneration.	(1) With severe sequelae of cerebrovascular disease, severe physical diseases such as malignant tumors, or mental illness; (2) Unable to communicate normally.

Data Collection

Data were collected through face-to-face semi-structured interviews conducted from December 2023 to June 2024. The interview outline was developed based on the core domains of CFIR and NPT, and before the official start of the study, two individuals from each stakeholder group were selected for pre-interviews. Based on the results, the interview outline was revised and finalized [16].

The interviews were conducted in quiet, private settings. Each interview lasted between 20 to 60 minutes and was audio-recorded with participant consent. The decision to end participant recruitment was based on subjective judgment, aiming to balance practical feasibility with informational richness [17].

Data Analysis

Two members of the research team (L.T. and Z.L.) conducted content analysis of the interview transcripts using the Framework Approach [18]. Two analysts (L.T. and L.J.) coded the data deductively [16, 19] and mapped the codes onto the domains and constructs of the CFIR and NPT frameworks. Any disagreements or discrepancies arising during the coding process were resolved through consensus meetings involving the wider research team [16]. The interview transcripts were organized and managed using NVivo 11.0 software developed by QSR International.

Ethical Considerations

This study was approved by the Ethics Committee of the School of Nursing and Rehabilitation, Shandong University (Approval No. 2023-R-20). All participants provided written informed consent after receiving a full explanation of the study's purpose and significance. Participants' privacy and confidentiality were strictly protected throughout the study; all audio recordings and interview transcripts were used solely for this research and were not disclosed or used for any other purposes without explicit consent.

Results

Demographics of Respondents

A total of 80 stakeholders were included in this study, comprising 49 from the provider group and 31 from the recipient group.

Provider group

Among the 49 provider-side stakeholders interviewed in this study, there were 12 nurse managers, 14 physicians, 11 nurses, and 12 nursing aides.

All nurse managers were female, with an average of more than 15 years of work experience. Among physicians, approximately 57.1% were female and 42.9% were male, with 21.43% having more than 15 years of work experience. All nurses were female, of whom 54.55% had more than 15 years of work experience. Among nursing aides, 50% were female and 50% were male, with 41.67% having more than 5 years of work experience. Detailed demographic characteristics are presented in Table 2.

Table 2
General Demographic Characteristics of Providers

Role	Code	Gender	Years of Work	Title
nurse managers	A1	Female	>20	Associate Chief Nurse
	A2	Female	15–20	Senior Nurse
	A3	Female	>20	Senior Nurse
	A4	Female	15–20	Associate Chief Nurse
	A5	Female	>20	Senior Nurse
	A6	Female	>20	Senior Nurse
	A7	Female	15–20	Senior Nurse
	A8	Female	>20	Senior Nurse
	A9	Female	>20	Associate Chief Nurse
	A10	Female	15–20	Senior Nurse
	A11	Female	>20	Associate Chief Nurse
	A12	Female	>20	Associate Chief Nurse
Doctors	D1	Female	5–10	Attending Physician
	D2	Female	5–10	Associate Chief Physician
	D3	Female	>15	Associate Chief Physician
	D4	Female	10–15	Associate Chief Physician
	D5	Male	10–15	Associate Chief Physician
	D6	Male	10–15	Associate Chief Physician
	D7	Female	5–10	Associate Chief Physician
	D8	Male	5–10	Attending Physician
	D9	Male	10–15	Associate Chief Physician
	D10	Female	>15	Associate Chief Physician
	D11	Female	5–10	Associate Chief Physician
	D12	Female	5–10	Attending Physician
	D13	Male	3–5	Attending Physician
	D14	Male	>15	Associate Chief Physician
Nurses	N1	Female	>15	Senior Nurse
	N2	Female	>15	Senior Nurse
	N3	Female	>15	Senior Nurse
	N4	Female	10–15	Senior Nurse

Role	Code	Gender	Years of Work	Title
	N5	Female	10–15	Junior Nurse
	N6	Female	>15	Senior Nurse
	N7	Female	3–5	Junior Nurse
	N8	Female	>15	Senior Nurse
	N9	Female	3–5	Junior Nurse
	N10	Female	10–15	Junior Nurse
	N11	Female	>15	Senior Nurse
Nursing Aides	C1	Female	5–10	/
	C2	Male	3–5	/
	C3	Male	3–5	/
	C4	Female	5–10	/
	C5	Female	5–10	/
	C6	Female	1–3	/
	C7	Male	3–5	/
	C8	Male	>10	/
	C9	Female	5–10	/
	C10	Male	3–5	/
	C11	Male	1–3	/
	C12	Female	3–5	/

Recipient group

Among the 31 recipient-side stakeholders interviewed in this study, there were 15 patients and 16 family members. Among patients, 53.3% were female and 46.7% were male, with 53.3% reporting a monthly income below 5,000 RMB. Among family caregivers, 62.5% were female and 37.5% were male, with 43.75% reporting a monthly income below 5,000 RMB. Detailed demographic characteristics are presented in Table 3.

Table 3
General demographic characteristics of Recipients

Role	Code	Gender	Children	Household Type	Monthly Income (CNY)	Payment Source	Relationship to Patient
Patients	P1	Male	2	Urban	5000–10000	City Insurance	/
	P2	Female	2	Urban	<3000	City Insurance	/
	P3	Female	1	Rural	<3000	Self-pay	/
	P4	Male	1	Urban	3000–5000	City + Commercial Insurance	/
	P5	Female	/	Rural	3000–5000	Urban-Rural Resident Insurance	/
	P6	Female	1	Urban	5000–10000	City Insurance	/
	P7	Male	3	Rural	<3000	Urban-Rural Resident Insurance	/
	P8	Female	1	Urban	3000–5000	City Insurance	/
	P9	Male	1	Rural	5000–10000	Urban-Rural Resident Insurance	/
	P10	Female	1	City	5000–10000	City + Commercial Insurance	/
	P11	Male	1	City	>10000	City + Commercial Insurance	/
	P12	Male	1	Rural	3000–5000	Urban-Rural Resident Insurance	/
	P13	Male	2	Rural	<3000	Urban-Rural Resident Insurance	/
	P14	Female	1	City	5000–10000	City Insurance	/
	P15	Female	1	Urban	5000–10000	City Insurance	/
Family	F1	Female	1	Rural	<3000	Urban-Rural Resident Insurance	Spouse
	F2	Female	1	Rural	<3000	Urban-Rural Resident Insurance	Spouse
	F3	Male	2	Urban	>10000	City + Commercial Insurance	Spouse
	F4	Female	2	Rural	5000–10000	Urban-Rural Resident + Commercial Insurance	Daughter
	F5	Female	2	Rural	<3000	Urban-Rural Resident Insurance	Daughter

Role	Code	Gender	Children	Household Type	Monthly Income (CNY)	Payment Source	Relationship to Patient
	F6	Female	/	Rural	3000–5000	Urban-Rural Resident Insurance	Daughter
	F7	Male	1	Urban	3000–5000	City Insurance	Son
	F8	Female	1	Urban	>10000	Provincial Insurance	Sister
	F9	Female	1	Urban	>10000	City Insurance	Spouse
	F10	Female	1	Urban	3000–5000	City + Commercial Insurance	Spouse
	F11	Male	1	Urban	>10000	City + Commercial Insurance	Spouse
	F12	Female	2	Urban	5000–10000	City Insurance	Daughter
	F13	Male	1	Rural	3000–5000	Urban-Rural Resident Insurance	Son
	F14	Female	3	Rural	>10000	Urban-Rural Resident + Commercial Insurance	Daughter
	F15	Male	1	Rural	5000–10000	Urban-Rural Resident Insurance	Spouse
	F16	Male	1	Urban	5000–10000	City Insurance	Son

CFIR domains and facilitators constructs

Based on the interview data, we identified nine constructs as facilitators within four CFIR domains (Individuals Domain, Innovation Domain, Inner Setting Domain, Outer Setting Domain). These were prioritized and mapped, and their mechanisms of action were analyzed in conjunction with NPT. Table 4 summarised the facilitator coding results.

Table 4
Facilitator coding results from survey

CFIR Enabler Domain	Constructs (n = Participants)	Enabler Statement Theme	NPT Domain	The interaction mechanism between CFIR and NPT	Exemplar Quotes
Individuals Domain	Motivation (n = 15)	•Multi-party benefits	Coherence  Cognitive Participation	In advancing the unaccompanied-care model, providers' motivation stems from a deeply internalized ideological endorsement of its value in responding to population ageing, creating employment, and delivering benefits to multiple stakeholders, which in turn drives their cognitive engagement and proactive investment of effort in clinical practice. Meanwhile, recipients' motivation arises from trust in the hospital's professional care, positive firsthand experiences, and the practical need to alleviate the burden of family caregiving. This endogenous impetus-jointly sustained by value internalization and the desire for burden reduction shifts both providers and recipients from understanding "why it should be done" to being "willing to do it," providing core support for the model's normalization	"Meeting the needs of patients without family care, and the needs of family members without caregiving ability. The needs of family members who don't know how to care for patients, such as young people or the elderly." (Nursing Manager)
		•Providing employment			"I lost my job during the epidemic. I heard from a friend that there was such an industry where I could learn a skill and know how to take care of my own elderly parents when they get old. I thought it was good so I came to do this." (Nursing Aide)
		•Coping with social status quo			"I am the only son in my family, and my partner is an only daughter. If the elderly in the family get sick, we can't handle it, we definitely need help! I think our generation can best understand this feeling! Hospitals need nursing aides who reassure patients." (Nursing Aide)
		•Trust in the hospital			"As long as the hospital has this regulation, I can accept it. I think it is all for the good of the patient." (Patient Family Member)
		•Empathy			"The caregivers are doing a great job with their nursing care, and they are very thorough in looking after the patients. They are more professional than our family members would be, especially since they are knowledgeable in these areas. Their assistance has been incredibly valuable, particularly after surgery, providing tremendous help to the patients." (Patient Family Member)

CFIR Enabler Domain	Constructs (n = Participants)	Enabler Statement Theme	NPT Domain	The interaction mechanism between CFIR and NPT	Exemplar Quotes
		•Positive feedback		into routine practice.	"We often receive some letters of commendation saying that we are doing a good job, and sometimes we receive silk banners, which makes us work more energetically." (Nursing Aide)
	Capability (n = 11)	•Strong execution and supervision ability •Strong psychological quality •Strong teamwork consciousness •Strong communication and coping ability	Collective Action	In implementing the unaccompanied-care model, providers' individual capabilities - including managers' capacity for execution and oversight, healthcare professionals' psychological adjustment, and nursing aides' communication and coping skills-form the cornerstone that sustains the model's operation. Driven by a strong sense of teamwork, these diverse professional competencies are effectively translated into collective action. By clarifying interactive workflows that specify "how to do it," close coordination is achieved across roles-from overall management and supervision to bedside care-thereby ensuring smooth implementation and efficient functioning of the model in	"We can't say that after starting the unaccompanied ward, we don't care about anything, and the patient's daily care is handed over to the nursing aides. We have to see how the nursing aides' basic care is done, are the patients satisfied? Is there such vigilance for patient safety?" (Nursing Manager) "In this working environment, our work pressure is also quite high. We can't just hold on all the time! We have to adjust our mentality at any time, communicate more with these senior colleagues in the ward, and learn more from their experience!" (Nurse) "We have to cooperate well with the nursing aides, otherwise the work cannot proceed." (Nurse) "Some patients have severe pain in the surgical site after surgery. When we are nursing, we teach the patients how to cough, but many patients do not cooperate. We patiently talk to the patients and practice with them repeatedly until they can cough up sputum." (Nursing Aide)

CFIR Enabler Domain	Constructs (n = Participants)	Enabler Statement Theme	NPT Domain	The interaction mechanism between CFIR and NPT	Exemplar Quotes
Innovation Domain	Innovation Relative Advantage (n = 14)	•Providing high-quality nursing	Coherence	complex clinical settings. The unaccompanied-care model's clear relative advantages-delivering high-standard professional nursing, effectively interrupting nosocomial infection transmission, optimizing the environment for diagnosis, treatment, and rehabilitation, and alleviating the burden of family caregiving-constitute the core driver of stakeholders' ideological identification with the model. Through a deep appreciation of these multidimensional benefits, both providers and recipients not only recognized its clinical value and social necessity, but also reached a shared, group-level value consensus on "why it should be done." This meaning-making process, grounded in a rational appraisal of relative advantages, helps overcome the inertial resistance of traditional care norms and provides a solid cognitive foundation for the model to	"We are thinking that if we can rescue our nurses from this tedious clinical work, let them do more psychological nursing with patients, and do some high-level communication, such as disease assessment, that would definitely be better." (Nursing Manager)
		•Solving accompaniment problems			"If the unaccompanied ward is implemented, being sick won't cause trouble for the family. One person can handle this matter, and work can be arranged. It is definitely good for those who are far from home. How much does it cost for family members to travel back and forth from other places?" (Patient)
		•Creating a good environment			"If it is an unaccompanied ward, I think the management is stricter and more formal. Like in current wards, if there are many family members, it is easy to be chaotic, and family members are also prone to cross-infection!" (Patient Family Member)
		•Providing rehabilitation guidance			"Medical nursing aides are not only doing daily life care, they are also preachers of health knowledge. From the patient's perspective, in fact, the treatment they receive, especially useful medical knowledge such as health education, I think the benefits are stronger than current family accompaniment."(Nursing Manager)
		•Providing effective communication			"Nursing aides stay in the ward for a longer time. They understand our work mode better, so it is easier to communicate with them." (Nurse)

CFIR Enabler Domain	Constructs (n = Participants)	Enabler Statement Theme	NPT Domain	The interaction mechanism between CFIR and NPT	Exemplar Quotes
		•Saving resources		move from institutional introduction to normalization in routine practice.	"Now there are more than 40 patients in our department, but there are more than 100 people including accompanying persons. There are four big bags of garbage every day, and actually three bags are produced by accompanying persons. If these 40 or 50 patients are cared for by a dozen nursing aides, the expenditure brought by these people will definitely be much less."(Nursing Manager)
	Innovation Adaptability (n = 6)	•Can be set up specifically as needed	Reflexive Monitoring	The unaccompanied-care model's adaptability and trialability confer a high degree of flexibility during implementation, allowing managers to make dynamic adjustments in response to differences in disease profiles, patients' economic circumstances, and process feedback. This elasticity creates a practical space for reflexive monitoring, prompting stakeholders to continuously gather feedback, evaluate effects, and refine strategies throughout the pilot phase. By establishing an ongoing improvement mechanism focused on "how to do it better", the model can achieve deep integration with the local context through iterative	"It doesn't need to be one-size-fits-all. Several unaccompanied wards can be specially set up according to the needs of patients and family members." (Doctor)
		•Process adaptability			"Like our workflow! We are also adjusting it to a suitable direction based on the problems actually encountered!" (Nursing Manager)
		•Adaptability of caregiving fees			"The accompaniment fee can be negotiated with the accompaniment company to see how the acceptance of the common people is, and then the price can be adjusted appropriately." (Nursing Manager)

CFIR Enabler Domain	Constructs (n = Participants)	Enabler Statement Theme	NPT Domain	The interaction mechanism between CFIR and NPT	Exemplar Quotes
	Innovation Trialability (n = 4)	•Strong trialability		adaptation, thereby laying a foundation of dynamic fit for its normalization and wider scale-up.	"Our hospital has quite a few pilot wards." (Nursing Manager)
Inner Setting Domain	Relational Connections (n = 9)	•Overall arrangement and strengthening supervision	Collective Action	Within the Inner Setting domain, relational connections serve as the key linkage underpinning the efficient operation of the unaccompanied-care model. Through unified oversight from management, clear communication among healthcare professionals, patients, and families, and close collaboration within the nursing aide team when handling high-acuity care tasks, providers developed a complementary, tightly coordinated mode of collective action. This collaborative mechanism effectively translates institutional plans into concrete frontline workflows that specify "how to do it," ensuring that unaccompanied care can be delivered in an orderly, coordinated	"Introduce the scope of work of nursing aides to colleagues, discuss work processes together, and supervise the work of nursing aides." (Nursing Manager)
		•Clear communication			"Before the patient goes through the admission procedures, clearly state that our ward is an unaccompanied ward. The ward is equipped with nursing aides to take care of patients instead of family members, and the nursing aides are relatively professional." (Nurse)
		•Close cooperation			"For some heavier patients, two or three nursing aides work together to turn them over and change sheets. Besides, there are some tubes on the patient. If several nursing aides do it together, the protection for the patient will be better." (Nursing Aide)

CFIR Enabler Domain	Constructs (n = Participants)	Enabler Statement Theme	NPT Domain	The interaction mechanism between CFIR and NPT	Exemplar Quotes
				manner and implemented smoothly within the complex ward environment.	
	Access to Knowledge & Information (n = 3)	•Unified training and guidance	Collective Action	Within the inner setting, mechanisms for access to knowledge and information provide core support for the standardized implementation of the unaccompanied-care model. Nursing aides not only receive centralized theoretical and skills training from the caregiving company, but also obtain targeted on-ward preceptorship and oversight from nurse managers and senior nurses after joining the unit. This systematic capacity building clarifies operational standards for "how to do it" in real clinical contexts, thereby efficiently enabling collective action and ensuring that aides can rapidly adapt to unit requirements and work in close, standardized coordination with the healthcare team.	"It's all unified training. You can only enter the department to work after getting the induction certificate. After we come to the department, the nurse teacher explains it to us first. Newcomers can't start directly in the department, just watching and assisting. They need the team leader to guide them. Like the patient's most basic defecation and urination, these have been trained in the company, but what should be paid attention to after arriving in the department, the key points will be said again." (Nursing Aide)
Outer Setting Domain	Critical Incidents	•Sudden public health events	Cognitive Participation	Critical incidents in the outer setting-	"The COVID-19 epidemic has promoted

CFIR Enabler Domain	Constructs (n = Participants)	Enabler Statement Theme	NPT Domain	The interaction mechanism between CFIR and NPT	Exemplar Quotes
	(n = 3)			particularly the COVID-19 pandemic as an acute public health emergency-served as a powerful catalyst for implementing the unaccompanied-care model. The stringent infection-prevention and control requirements during the pandemic compelled stakeholders to rapidly develop coherence, fostering a clear understanding of the model's "necessity" and "urgency" in safeguarding healthcare safety. This crisis-triggered value consensus effectively stimulated providers' cognitive participation, prompting them to proactively adjust service mindsets and commit to execution, thereby advancing the unaccompanied-care model as a preferred solution to meet the challenges of extraordinary circumstances.	unaccompanied care." (Doctor)
	Local Conditions (n = 3)	•Adapted to medical level	Coherence	Local conditions in the outer setting-namely, the mature medical technologies and well-established nursing systems of tertiary	"It is completely possible to promote unaccompanied care with the medical level of our tertiary Grade A hospital." (Nurse)

CFIR Enabler Domain	Constructs (n = Participants)	Enabler Statement Theme	NPT Domain	The interaction mechanism between CFIR and NPT	Exemplar Quotes
				hospitals- provided crucial contextual fit for the implementation of the unaccompanied- care model. These high-level healthcare resources not only fostered strong professional confidence among stakeholders, but also substantially strengthened coherence. Grounded in trust in their own professional competence, providers were confident that implementing the model in this environment would be highly feasible and safe, thereby cultivating a strong internal consensus on both “why we can do it” and “why we should do it,” and laying an environmental foundation for the model’s normalization into routine practice.	
CFIR: Consolidated Framework for Implementation Research. NPT:Normalization Process Theory.					

CFIR domains and barrier constructs

Based on the interview data, we identified 11 constructs as barriers within four CFIR domains(Individuals Domain, Outer Setting Domain, Inner Setting Domain, Innovation Domain). These were prioritized and mapped, and their mechanisms of action were analyzed in conjunction with NPT. Table 5 summarizes the barrier coding results.

Table 5
Barrier coding results from survey

CFIR Barrier Domain	Constructs (n = Participants)	Barrier Statement Theme	NPT Domain	The interaction mechanism between CFIR and NPT	Exemplar Quotes
Individuals Domain	Need (n = 15)	•Economic constraints	Coherence	Within the Individuals domain, unmet recipient needs represent a deep-seated barrier to implementation. Faced with the financial strain caused by high nursing aide fees, as well as emotional deprivation due to the absence of family members and concerns about privacy and trust, recipients often struggle to perceive tangible benefits from the new model. This misalignment between core needs and the service model substantially undermines stakeholders' coherence. Without psychological conviction about the model's value and necessity, patients and family members find it difficult to reach a shared understanding of "why it should be done," which in turn leads to an instinctive rejection and resistance toward the unaccompanied-care model.	"It's not that we don't want to! We just don't have the money!" (Patient)
		•Emotional void			"No one can replace the emotional bond between family and patients. It's like a married couple; without companionship, there's a sense of loss and worry, which affects the patient's mood and recovery. Nursing aides just come when called, handle the task, and leave—they aren't constantly by your side." (Patient Family Member)
		•Hesitance to ask			"For someone with a personality like mine, I feel a bit embarrassed to order others to do things." (Patient)
		•Privacy concerns			"I just feel it might not be very convenient, especially regarding privacy." (Patient)
		•Uncertainty about quality of care			"It's hard to say. The quality of nursing aides varies; who knows how well they will provide care?" (Patient Family Member)
Outer Setting Domain	Policies & Laws (n = 14)	•Lack of clear accountability policies	Collective Action	Lagging policies and laws in the outer setting domain constitute the most pressing practical challenge to the	"Shouldn't the caregiving company issue a document with clear responsibilities?"

CFIR Barrier Domain	Constructs (n = Participants)	Barrier Statement Theme	NPT Domain	The interaction mechanism between CFIR and NPT	Exemplar Quotes
		•Lack of insurance reimbursement		smooth operation of the unaccompanied-care model. At present, there is no formal national policy directive to support its rollout, and the absence of insurance reimbursement alongside non-standardized fee schedules leaves stakeholders without robust institutional backing as they seek to advance the model. Meanwhile, because caregiving responsibilities remain ambiguously defined and professional practice standards are insufficiently disseminated, both providers and recipients struggle to reach agreement on critical questions such as “who is accountable if something goes wrong.” This lack of supporting safeguards directly weakens the team’s capacity for collective action, preventing stakeholders from establishing a collaborative mechanism for “how to do it” that aligns responsibilities with authority and clarifies workflows, thereby making large-scale implementation difficult.	If something happens, we need to know who is accountable!” (Patient)
		•Absence of standardized fee schedule			“It would be great if it could be included in the medical insurance coverage so it can be reimbursed together.” (Patient)
		•Unfamiliarity with professional care standards			“This industry might be a new thing. Pricing issues can affect its development, but how exactly should the pricing standards be set?” (Nursing Manager)
					“We don’t know if it’s standard or not; anyway, we just do it according to the companys requirements’.” (Nursing Aide)
External Pressure (n = 8)		•Negative or biased media coverage	Coherence	External pressure in the outer setting domain-arising primarily from one-sided media framing and the absence of positive communication-constitutes a substantial source of social resistance to implementing the unaccompanied-care	“From some media reports, it seems they portray nursing aides doing this work not as something based on respect and trust, but rather pushing the idea to the public that families and patients are

CFIR Barrier Domain	Constructs (n = Participants)	Barrier Statement Theme	NPT Domain	The interaction mechanism between CFIR and NPT	Exemplar Quotes
		•Insufficient positive media promotion		model. Negative public commentary and widespread controversy in the media sphere seriously disrupt stakeholders' ability to build appropriate coherence. This imbalance in public discourse makes it difficult for the public to objectively appraise the model's true value and prevents the formation of broad, societal-level consensus on "why it should be done". Instead, it fuels misunderstanding and skepticism, leaving the model to advance in an environment that lacks a foundation of social trust and thus hindering steady implementation.	losing out if nursing aides do the job." (Nursing Manager) "No matter how well we do, I don't feel that the mass media has promoted unaccompanied-care model as a positive hot topic." (Doctor) "Some patients are not very willing to accept unaccompanied-care model, but there are also patients who felt the convenience during their hospitalization and very much approve of the hospital's practice." (Nurse)
	Local Conditions (n = 8)	•Mismatch with local economic levels	Cognitive Participation	Local conditions in the outer setting domain were characterized by a pronounced mismatch between service pricing and local economic capacity. Because many patients came from rural areas with limited income, the high cost of caregiving exceeded their ability to pay. This financial barrier directly undermined recipients' cognitive participation. Confronted with the practical constraint of "being unable to afford it," patients and family members found it difficult to develop the motivation to engage and be "willing to do it," leaving the unaccompanied-care model without a broad economic base	"With the pandemic in recent years, many people lost jobs and can't repay loans. I feel my family is relatively well-off... but some rural patients bring their own food. If they have to pay to hire a nursing aide, the burden is quite heavy!" (Patient Family Member) "We work two shifts. We get paid for the days we work; no days off, just unpaid leave. There are no social security benefits (five insurances and
		•Low level of job benefits and security			

CFIR Barrier Domain	Constructs (n = Participants)	Barrier Statement Theme	NPT Domain	The interaction mechanism between CFIR and NPT	Exemplar Quotes
				for acceptance and, consequently, limiting its uptake and scale-up in routine clinical care.	one fund).” (Nursing Aide)
Inner Setting Domain	Structural Characteristics (n = 11)	•Inadequate physical infrastructure	Collective Action	Shortcomings in structural characteristics constitute a hard barrier to implementing the unaccompanied-care model. Weak ward infrastructure (e.g., lack of remote visitation equipment), breaks in digitalized workflows, non-standardized billing practices, and insufficient staffing of nursing aides mean that existing clinical support systems cannot adequately meet the complex demands of unaccompanied care. These constraints in physical space and managerial mechanisms directly impede the team’s collective action. Without essential tools and workforce safeguards, providers struggle to establish efficient, seamless “how to” collaborative workflows-an issue that not only increases communication costs in clinical practice but also undermines patient trust through poor user experience, leaving the model facing the practical challenge of “not running smoothly” during on-the-ground implementation.	“If the department could be equipped with video call machines for families to see the patient in the ward, it would relieve doubts. This would be especially convenient for elderly patients without smartphones.” (Doctor)
		•Underdeveloped information systems			“Our nursing procedures are electronic... It would be great if the bedside screens automatically updated with nursing content after orders are processed. It would save manpower and reduce errors.” (Nurse)
		•Non-standard collection methods of accompanying care fees			“The way aides collect fees sporadically at the bedside feels messy and irregular. The company should learn from restaurant billing management and manage fees at the hospital level to increase trust.” (Doctor)
		•Inadequate staffing of nursing aides			“There aren’t enough nursing aides; a total of 6 aides are responsible for over 40 patients.” (Nurse)

CFIR Barrier Domain	Constructs (n = Participants)	Barrier Statement Theme	NPT Domain	The interaction mechanism between CFIR and NPT	Exemplar Quotes
	Access to Knowledge & Information (n = 4)	•Lack of mature implementation model	Collective Action	Restricted access to knowledge and information represents a weak link in rolling out the unaccompanied-care model. Because the field has yet to develop mature implementation templates and standardized rules, providers are often left in a passive position, with little prior experience to draw upon. This absence of a standard paradigm forces teams to advance through exploratory trial and error, substantially increasing the coordination and adaptation costs of collective action. In the early stages, stakeholders struggle to establish stable, efficient "how to" collaborative workflows and instead have to move forward through repeated attempts and patchwork fixes, leaving implementation without systematic operational guidance.	"Although work is ongoing regarding this, it hasn't appeared as an industry standard yet. The industry regulations haven't been fully formulated." (Nursing Manager)
	Compatibility (n = 2)	•Incompatibility with existing clinical workflows	Collective Action	Lack of compatibility reflects the practical tension between the new model and established clinical routines. Implementing the model adds extra steps-such as pre-admission information provision, assessment of caregiving needs, and remote communication with family members-thereby markedly increasing the complexity of clinical work. This process	"Procedurally, it's more complex... We must inform patients beforehand, judge if they need an aide, and communicate condition changes to families separately. Overall, our workflow is more complicated." (Doctor)

CFIR Barrier Domain	Constructs (n = Participants)	Barrier Statement Theme	NPT Domain	The interaction mechanism between CFIR and NPT	Exemplar Quotes
				misfit directly disrupts the team's collective action, making it difficult for healthcare staff to rapidly establish smooth and efficient "how to" collaborative pathways amid the added workload and resulting in tangible pressure to reconstruct existing workflows at the point of care.	
	Incentive Systems (n = 2)	•Unclear or absent incentive mechanisms	Cognitive Participation	The absence of incentive systems means that performance appraisal and targeted rewards fail to play their intended role in the unaccompanied-care model. Because hospitals and supervising authorities have not yet established a value-return mechanism commensurate with the high-intensity input required, stakeholders' additional efforts are unlikely to receive tangible recognition. This lack of positive reinforcement directly undermines the team's willingness for cognitive participation: when faced with complex new tasks, providers lack the intrinsic drive to be "willing to do it," making it difficult to sustain enthusiasm and proactive engagement in the change over time.	"There is no performance-based inclination (financial incentive) specifically for this." (Nursing Manager)
Innovation Domain	Innovation Complexity (n = 8)	•Increased risk and pressure for staff	Collective Action	Innovation complexity is starkly reflected in the high-pressure demands of risk control, the challenges of workforce	"Since the family isn't here, we bear huge risk. Patient instability causes dissatisfaction, and we also bear the risk of varying

CFIR Barrier Domain	Constructs (n = Participants)	Barrier Statement Theme	NPT Domain	The interaction mechanism between CFIR and NPT	Exemplar Quotes
		•Complexity in training and management		management, and clashes with entrenched traditional norms. Healthcare professionals must not only shoulder heightened safety risks and public scrutiny in the absence of family caregivers, but also devote substantial effort to managing the nursing aide team. Meanwhile, deeply rooted expectations of family accompaniment are difficult to loosen in the short term. Together, these factors raise the threshold for collective action. As a result, providers struggle to establish simple, efficient “how to” collaborative workflows and instead must rely on extensive communication and explanation alongside stringent oversight, leaving the implementation process fraught with uncertainty.	levels of nursing aide competence.” (Nursing Manager)
		•Difficulty changing traditional mindsets			“Nursing aides have different backgrounds... leading to inconsistent execution. Legally, we must be responsible for patients and ensure their care meets standards.” (Nursing Manager)
					“When first piloting, especially for new patients, we had to spend a long time explaining it before they could slowly accept it.” (Nurse)
Innovation Cost (n = 8)		•Cost of liability for adverse events	Cognitive Participation	Increased implementation costs place a heavy burden on the operation of the unaccompanied-care model. Beyond the potential risk of compensation for adverse events, these costs are more concretely reflected in the time, effort, and psychological accountability borne by clinical and managerial staff. Physicians must spend additional time coordinating communication, managers must continuously invest effort in supervising nursing aides, and	“Since families aren’t present, if accidents like falls occur, we bear great responsibility. Compensation is a cost we consider.” (Nursing Manager)
		•Cost of supervising care workers			“Managing aides requires regular training. It’s not a one-day thing; we also have to instruct them daily during shift handovers.” (Nursing Manager)

CFIR Barrier Domain	Constructs (n = Participants)	Barrier Statement Theme	NPT Domain	The interaction mechanism between CFIR and NPT	Exemplar Quotes
		•Increased time burden		nurses remain under sustained high-pressure responsibility-related anxiety. This extensive consumption of resources directly hampers the team's collective action, meaning that when providers attempt to establish "how to" collaborative workflows, they must shoulder substantial added costs-making it difficult for clinical coordination to achieve the desired level of convenience and efficiency.	"For example... with elderly patients who can't make decisions, we must ask them to contact family, then schedule a separate time to talk to the family... This costs us a lot of time and energy." (Doctor)
		•Cost of heightened responsibility			"Day shifts are okay, but night shift colleagues are very tired. They feel a heavy sense of responsibility and fear something might happen to patient safety." (Nurse)
CFIR: Consolidated Framework for Implementation Research. NPT:Normalization Process Theory.					

ERIC strategy mapping

Following the identification of the 11 barriers, we mapped them to the ERIC tools to guide strategy selection. The results revealed significant overlap in the strategic-level responses to different barriers, implying that the implementation of unaccompanied-care model faces systemic issues. Therefore, we conceptualized them as system-level interventions and consolidated our findings. Ultimately, five core strategic domains were summarized: Economic and Incentive Support, Risk and Liability Management, Infrastructure and Process Optimization, Training and Capacity Building, and Culture and Public Trust Shaping. The strategies shown in Table 6 are ranked in descending order based on the proportion of implementation experts in agreement.

Table 6
CFIR/ERIC Queried Implementation Strategies

CFIR Construct	Specific Barrier	Implementation Strategy Recommendations (% match)
Economic & Incentive	Lack of insurance coverage	• Alter incentive/allowance structures (71%): Restructure the distribution of salaries, allowances, and performance bonuses. • Access new funding (72%): Secure special subsidies, pilot funding, etc. • Place innovation on fee-for-service lists/formularies (24%): Promote the inclusion of unaccompanied-care model related services into standardized fee or reimbursement lists. • Alter patient/consumer fees (20%): Implement tiered pricing or fee adjustments.
	Economic constraints	
	Cost of liability for adverse events	
	Mismatch with local economic levels	
	Low job benefits and security	
	Unclear incentives	
Risk & Liability	Increased risk and pressure	• Make billing easier (32%): Simplify billing processes or establish unified fee standards to regulate caregiving fee management. • Change liability laws (19%): Improve or clarify laws and regulations to define the liability boundaries among hospitals, nursing aides, and third-party agencies under the unaccompanied-care model.
	Absence of standardized fee schedule	
	Unclear caregiving responsibility	
	Irregular fee collection methods	
	Cost of responsibility	
Infrastructure & Process Barriers	Inadequate infrastructure	• Promote adaptability (45%): Allow different departments to flexibly adjust the implementation of unaccompanied-care model based on their specific conditions. • Conduct cyclical small tests of change (38%): Conduct small-scale pilots and regular adjustments to continuously optimize the implementation process of unaccompanied-care model. • Assess for readiness and identify barriers and facilitators (36%): Systematically assess the ward's infrastructure, staffing, and workflow adaptability before implementation to identify key barriers and facilitators.
	Information processes need improvement	
	Lack of mature implementation model	
	Incompatible with workflow	
	Time costs	
Training & Competency Barriers	Unfamiliarity with professional standards	• Conduct educational meetings (79%): Conduct centralized training to enhance the understanding of the unaccompanied-care model and relevant regulations among medical staff and nursing aides. • Develop educational materials (59%): Develop standardized operation manuals and workflow guidelines to address unfamiliarity with professional standards. • Create a learning collaborative (45%): Establish a learning collaborative network to share and exchange experiences in implementing unaccompanied-care model. • Conduct ongoing training (38%): Provide continuous skills training to improve the overall service capability of nursing aides and reduce execution variance.
	Complex training management	
	Insufficient staffing of nursing aides	
	Lack of external communication	
	Cost of supervising nursing aides	

CFIR Construct	Specific Barrier	Implementation Strategy Recommendations (% match)
Culture & Public Trust Barriers	Difficulty changing traditional mindsets	• Obtain and use patient/family feedback (76%): Continuously collect and use feedback to improve service quality and enhance public trust in the unaccompanied-care model.
	Emotional void	
	Biased/insufficient media coverage	• Involve patients/consumers and family members (71%): Involve patients and families in decision-making and service design to alleviate emotional voids and trust issues.
	Public controversy	
	Hesitance to ask	• Prepare patients/consumers to be active participants (48%): Guide patients to understand and actively participate in unaccompanied-care model services, reducing reliance on traditional caregiving models. • Identify and prepare champions (38%): Cultivate champions among medical staff or patients to drive mindset shifts and model acceptance.
	Privacy concerns	
	Uncertainty factors	

Discussion

This study conducted a systematic qualitative investigation into the implementation of unaccompanied-care model in the Chinese healthcare context by integrating CFIR with NPT and utilizing the CFIR-ERIC matching tool. From the dual perspectives of both providers (healthcare professionals and nursing aides) and recipients (patients and family members), the research not only identified facilitators and barriers in the implementation process but also revealed how these static factors influence the normalized operation of the unaccompanied-care model through dynamic socio-cognitive and collaborative processes, as explained by NPT[13]. The findings indicate that promoting the sustainable operation of the unaccompanied-care model requires overcoming systematic barriers related to policy, economy, and culture, and implementing comprehensive change management. Among these, positive motivation at the Individuals Domain, the relative advantages of the solutions at the Innovation Domain, and efficient relational connectivity within the Inner Setting Domain constitute key driving forces. In contrast, the main challenges currently faced include uncertainties in macro-level policies within the Outer Setting Domain, emotional and economic demands at the Individuals Domain, and structural limitations in infrastructure and processes within the Inner Setting Domain.

Analysis of Enablers and Barriers Based on CFIR and NPT

Innovation Domain

This study found that relative advantage, adaptability, and trialability were key drivers of implementing the unaccompanied-care model. Providers perceived that the model could improve care quality through more professionalized care and reduce the risk of hospital-acquired infections, whereas recipients emphasized its potential to alleviate the caregiving burden on family members. This aligns with the findings of Delaforce et al., indicating that when stakeholders clearly perceive a new model as superior to the traditional approach, their coherence is substantially strengthened[20]. Meanwhile, the model demonstrated strong adaptability, as it can be flexibly adjusted to meet the needs of patients across different clinical departments. Its trialability was also evident: piloting the model in selected wards enabled early testing and accumulated experience to support subsequent hospital-wide rollout. As noted in Hatzikiriakidis' review, intervention flexibility is key to reducing implementation resistance [21].

However, complexity and cost emerged as major barriers. A finding specific to this study is that the unaccompanied-care model is not a simple service substitution; rather, it involves a high-risk transfer of responsibility. Interviewees

commonly expressed concerns about legal and financial liability arising from adverse events (e.g., falls), and fear of compensation costs increased the psychological threshold for implementation. This is also reflected in Hyzak et al.'s study on TBI screening, which showed that when an intervention is perceived as overly complex or when risks are viewed as uncontrollable, it can directly hinder its routinization in clinical practice[22].

Outer Setting Domain

Within the outer setting domain, facilitators identified in this study primarily reflected forced environmental change and local adaptation. On the one hand, critical Incidents (e.g., the COVID-19 pandemic) served as a key driver for advancing the model. During the pandemic, infection-control requirements increased public acceptance of contactless management, and this externally imposed change accelerated families' coherence and cognitive participation, helping stakeholders gradually understand and engage in the implementation of unaccompanied-care model. This finding supports Xiong et al., who argue that external crises can act as catalysts-reshaping internal priorities and lowering barriers to entry for new models[23]. On the other hand, alignment with Local Conditions and the local level of healthcare development provided a foundation for implementation. In regions with more advanced healthcare systems, mature medical and nursing techniques offer robust professional support for the unaccompanied-care model; such upgrades that fit local economic and healthcare capacity are more likely to secure managerial resource allocation. This suggests that when an implementation plan achieves contextual fit with a regional healthcare ecosystem, it can effectively enhance providers' and recipients' coherence and reduce "rejection" from the external environment.

At the same time, institutional, economic, and inter-organizational deficits constitute real barriers to normalization, impeding the transition from short-term trials to routine implementation. Policies and Laws lagging behind practice was the most prominent barrier identified. In China, the unaccompanied-care model service system remains at an early exploratory stage; long-term governance mechanisms, such as service standards and pricing frameworks, have not yet been established, making it difficult for stakeholders to align goals and behavioral norms in practice. This strongly mirrors, who found that the absence of state-level directives and reimbursement mechanisms is a fundamental reason why evidence-based practices struggle to scale beyond organizational boundaries[22]. The lack of preferential coverage within health insurance policies further constrains the shift toward routine operation. In addition, external pressure exerted significant negative influence. This study found that intense public and media attention to medical safety incidents places substantial reputational pressure on hospitals implementing unaccompanied care. In the absence of policy-guided compensation mechanisms, media tendencies toward negative reporting of adverse events were translated into profound institutional concerns about implementation risk. Such supervisory pressure from public opinion did not become an enabling force; instead, it suppressed clinicians' and managers' willingness for cognitive participation. Economic factors represent a deeper cause of uneven development. For rural families with unstable incomes, financial burden directly reduces willingness to participate in paid unaccompanied-care services. Meanwhile, low pay and inadequate employment protections for nursing aides directly undermine the stability and motivation of service providers. The coexistence of "difficulty paying" on the recipient side and "difficulty retaining staff" on the provider side essentially weakens collective action in real-world settings. Without operationally effective resource allocation and stable staffing collaboration, stakeholders struggle to integrate the unaccompanied-care model into existing service systems, limiting normalization in less developed regions.

Inner Setting Domain

Within the inner setting, facilitators primarily stemmed from efficient internal coordination and information sharing. Firstly, relational connections were confirmed as a key enabler. This study found that strengthening

communication and coordination between nursing aides and healthcare professionals, through unified scheduling and supervision, can significantly enhance team cohesion. Such close internal linkages not only optimize care processes but also promote stakeholders' collective action, enabling different professional roles to collaborate efficiently within complex operational environments[24, 25]. Secondly, access to knowledge and information-delivered through standardized training and guidance-equipped staff with the practical skills and shared understanding necessary for implementing unaccompanied-care model, thereby providing capability support for effective collective action. This aligns with prior evidence that transparent information flow and access are essential for translating cognition into coordinated practice and reducing resistance[26–28].

Nevertheless, structural limitations and missing incentives within organizations constituted major barriers. Structural characteristics were a salient obstacle: interviewees frequently reported inadequate ward infrastructure, suboptimal digitalized workflows, and insufficient staffing, all of which directly constrained operational efficiency. Such shortages in hardware and personnel weaken the model's contextual integration during implementation. Limited compatibility was also evident. In the absence of a mature localized model to follow, existing unaccompanied-care arrangements often misalign with established departmental workflows, increasing implementation complexity. Furthermore, the absence of incentive systems undermined sustained motivation. Without clear reward-penalty mechanisms and career advancement incentives, staff enthusiasm is difficult to maintain, directly affecting stakeholders' continued investment and role commitment during cognitive participation[29]. When internal structures are mismatched with a new intervention and supporting incentives are lacking, even strong coherence at the individual level may not translate innovation into durable organizational routines[30]. Therefore, optimizing the inner setting requires not only improvements in infrastructure but also an incentive-compatible institutional environment to support the transition from fragmented trials to systematic normalization.

Individuals Domain

Within the individuals domain, this study found that implementation outcomes depend on individuals' recognition of intervention value and whether the intervention meets core needs. Facilitators identified in this domain mainly reflected providers' capability and motivation, whereas barriers centered on unmet need among patients and family members.

Capability and Motivation constituted intrinsic drivers of implementation. First, healthcare professionals demonstrated high capability to implement the model, largely rooted in their strong knowledge and beliefs about the intervention. Interviews showed that they clearly understood the scientific value of unaccompanied-care model in reducing hospital-acquired infections and supporting patient recovery; this professional knowledge-based psychological capability provided the cognitive foundation for coherence, enabling them to fully accept the model from a clinical and scientific standpoint. Next, strong motivation was critical in moving from cognition to action. This motivation was closely linked to experienced nurses' self-efficacy. When facing complex care scenarios under the unaccompanied-care model, they demonstrated high confidence; this "I can do it" internal drive directly strengthened their willingness for cognitive participation, prompting them to proactively take on key roles and sustain effort over time [31, 32]

At the same time, unmet or misaligned needs formed a significant barrier. The study found that while the unaccompanied-care model may satisfy therapeutic needs, it often neglects strong psychological and emotional needs among patients and families. Influenced by traditional Chinese culture, families regard bedside caregiving as a central expression of love and fulfillment of filial piety, and patients' reliance on familial companionship increases during illness. This demand for emotional presence directly conflicts with restrictive ward rules that limit family accompaniment. Such misalignment of needs seriously undermined stakeholders' coherence. When individuals feel

that their core needs (e.g., security and emotional comfort) are suppressed by the model, families struggle to understand and accept its rationale, leading to distrust of professional care and even resistant behaviors such as “hidden caregiving.” This indicates that when an intervention does not respond to individual needs, technical rationality alone cannot earn deep buy-in from recipients, thereby obstructing normalization[33].

Development of Implementation Strategies Based on CFIR-ERIC

In response to the CFIR key barriers identified above, this study used the ERIC matching tool to synthesize five core strategy themes. These strategies aim to facilitate the transition of the unaccompanied-care model from passive trials to routine operation by strengthening outer-setting support, reshaping internal organizational structures, and enhancing individual capability.

Economic & Incentive Support

To address the fundamental barrier of “limited finances” and “lack of insurance coverage,” this study prioritizes alter incentive/allowance structures and access new funding. In the current Chinese healthcare context, the unaccompanied-care model services are often perceived as additional expenditures beyond basic medical care; without insurance support, patients and families-constrained by income-may abandon the service even if they acknowledge its professional value, due to a gap between willingness and ability to pay. Grant et al. clearly pointed that the absence of external policies (e.g., insurance coverage) directly weakens internal adoption motivation, and that adjusting fee-for-service items and establishing a reasonable billing structure are key to resolving this systemic barrier[34]. Accordingly, the strategy recommends multi-level financial support from governments and healthcare institutions: hospital managers should actively seek pilot special funds to offset early-stage construction costs via accessing new funding, while advocating for inclusion of the unaccompanied-care model in health insurance payment schemes or commercial insurance to lower the financial threshold for patients. As emphasized by Zhou et al., sufficient financial support is the foundation for addressing workforce shortages and strengthening sustainability[35]. Only when economic incentive mechanisms are commensurate with the value of the service can the financial pressures on both providers and recipients be fundamentally alleviated, enabling the unaccompanied-care model to move from pilot implementation to routine practice.

Risk & Liability Management

Under the unaccompanied-care model, high perceived risk and unclear caregiving responsibility are deep psychological factors inhibiting providers’ collective action. This study therefore recommends make billing easier to standardize management and calls for Change liability laws/policies to clarify responsibility boundaries. Although Delaforce et al. focused on technical systems and business continuity, their emphasis on establishing contingency plans is equally relevant to unaccompanied-care governance: institutionalized liability attribution procedures can enhance staff self-efficacy and psychological safety when facing potential risks[20]. Specifically, healthcare institutions should develop standardized tripartite responsibility agreements (hospital-nursing aide-family) and simplify unified collection of caregiving fees to prevent trust crises and legal risks caused by private charging. This strategy aims to convert fear of the unknown into standardized governance processes, ensuring that compensation decisions follow clear rules when adverse events occur, thereby reducing providers’ concerns about “what happens if something goes wrong.”

Infrastructure & Process Optimization

To address barriers of “inadequate infrastructure” and “workflow misfit,” this study recommends dynamic improvement strategies grounded in Assess for readiness, alongside promote adaptability and conduct cyclical small

tests of change. Staras et al. argued that systematic readiness assessment is a prerequisite for identifying organization-specific barriers and optimizing resource allocation[36]. In advancing the unaccompanied-care model, weak infrastructure (e.g., lack of family visitation/communication systems) can exacerbate families' anxiety, while rigid workflows can increase nurses' workload. Therefore, hospitals should avoid a one-size-fits-all rollout and instead allow departments (e.g., postoperative surgical wards vs. internal medicine rehabilitation wards) to tailor implementation to clinical realities. Redesigning workflows through interdisciplinary teams and iteratively optimizing via small-scale pilots (e.g., PDSA cycles) can reduce disruption to established working patterns. For example, introducing smart information systems (e.g., electronic boards that automatically update care plans) can replace part of the manual communication burden, compensating for staffing constraints and supporting smooth embedding into routine practice.

Training & Capacity Building

Given workforce challenges such as nursing aides' unfamiliarity with practice standards and inadequate staffing, it is particularly important to create a learning collaborative and conduct ongoing training. In China, mature implementation models for unaccompanied care are still lacking; providers are often exploring through trial-and-error, and nursing aides vary widely in educational background, leading to inconsistent execution. Dixon-Ibarra et al. showed that systematic skills training can significantly improve providers' self-efficacy and reduce implementation drift caused by knowledge gaps. Beyond routine onboarding, healthcare institutions should develop standardized operation manuals and process guidelines and assign dedicated leaders for supervision and coaching[26]. Delaforce et al. further demonstrated that blended education (combining digital and face-to-face formats) and dynamically updated training materials can more effectively strengthen teamwork[20]. Establishing cross-department and cross-hospital learning collaboratives to share best practices can fundamentally enhance professionalization of the nursing aide workforce, ensuring that "unaccompanied care" does not mean "no care", but rather more professional care[37].

Culture & Public Trust Shaping

The adaptation to traditional Chinese norms emphasizing filial caregiving, alongside broader public concerns, presents distinct socio-psychological challenges. Recipients may resist due to perceived emotional deprivation or privacy concerns. This study therefore recommends Identify and prepare champions and Involve patients/consumers and family members to rebuild social trust. Aarons et al. noted that early engagement of leaders can effectively shift social pressure within organizations and promote adoption[38, 39]. Similarly, in the Chinese context, cultivating "opinion leaders" or "champions" among patient groups, who share authentic lived experiences, can help correct misunderstandings and reduce stigma surrounding the model. In addition, Jinks et al. highlighted that involving recipients (patients and families) in committees or decision-making not only improves transparency but also eases feelings of deprivation and trust crises by co-designing service processes-for example, shifting families' roles from physical labor to emotional support[40]. Through such multi-stakeholder participation mechanisms, external public opinion pressure can be transformed into societal consensus that supports normalization.

Strengths, Limitations, and Future Research Directions

A key strength of this study lies in its solid theoretical grounding and multi-dimensional perspective. First, by innovatively integrating CFIR and NPT, the study not only systematically identified relatively static barriers to implementing the unaccompanied-care model but also revealed the deeper dynamic mechanism through which this model becomes embedded into routine clinical work via sense-making and collective action. Second, unlike prior research that often centers on managerial perspectives alone, this study incorporated dual viewpoints from providers (healthcare professionals and nursing aides) and recipients (patients and family members). This allowed it to

sensitively capture real-world tensions that are difficult to reconcile, such as the conflict between emotional support needs and willingness/ability to pay, thereby enhancing the comprehensiveness of strategy development.

This study also has limitations. First, the sample was primarily drawn from three tertiary hospitals in Jinan, China; although the sample has certain representativeness, economic levels and cultural norms may differ across regions. Second, as a qualitative study, findings relied mainly on participants' subjective accounts, with limited quantitative corroboration.

Accordingly, future research should focus on empirical testing and quantitative evaluation of the strategy package. Subsequent intervention studies or mixed-methods designs are recommended to test the context-adapted strategy bundle across broader regions and quantify impacts on coverage of the unaccompanied-care model, reductions in family caregiving rates, and improvements in patient satisfaction. Given the central role of economic factors, future work should also conduct cost-benefit and health economic evaluations to provide more direct evidence for insurance policy development and service pricing.

Conclusion

This study innovatively combined CFIR and NPT, and applied the CFIR-ERIC matching tool to provide the first comprehensive analysis of the complex dynamic mechanisms underpinning implementation of the unaccompanied-care model in the Chinese healthcare context. The results suggest that normalization is constrained not only by hard resource gaps in funding and workforce capacity, but also by challenges in adapting modern nursing philosophies within the context of traditional care culture. The five-strategy package proposed-Economic & Incentive Support, Risk & Liability Management, Infrastructure & Process Optimization, Training & Capacity Building, and Culture & Public Trust Shaping-offers highly context-adapted solutions to break the current implementation deadlock. These strategies respond to urgent frontline needs while also providing a theory-informed and practice-oriented blueprint for policymakers seeking to advance high-quality nursing care. As these strategies are implemented and validated, the unaccompanied-care model may move beyond isolated pilots and become a sustainable paradigm for addressing caregiving challenges in an aging society.

Abbreviations

CFIR
Consolidated Framework for Implementation Research
NPT
Normalization Process Theory

Declarations

Ethics approval and consent to participate

This study was approved by the Ethics Committee of the School of Nursing and Rehabilitation, Shandong University (Approval No. 2023-R-20). All procedures were conducted in accordance with the Declaration of Helsinki. Prior to data collection, all participants were fully informed of the study's purpose and significance, and written informed consent was obtained. Participants were assured of strict privacy and confidentiality, and maintained the right to withdraw from the study at any time.

Consent for publication

Not applicable.

Availability of data and materials

The datasets generated and analysed during the course of this study are accessible from the corresponding author upon reasonable request.

Competing interests

The authors declare no competing interests.

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L.J.*(co-author): Writing-review & editing, Writing-original draft, Validation, Supervision, Project administration, Methodology, Investigation, Formal analysis, Conceptualization.

Z..L., H.Y., Z.M., H.T., L.Y.: Writing-review & editing, Formal analysis, Conceptualization.

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