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Nonspecialists providing perinatal depression services in China: a qualitative study†

Original article

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Abstract: **Objective:** To involve stakeholders in Jiangsu Province, China, to identify barriers for nonspecialist-delivered perinatal depression (PND) management to guide management in maternity and child health care institutions.
Methods: In this qualitative study, semi-structured face-to-face individual interviews were used, guided by the Consolidated Framework for Implementation Research (CFIR). Thematic analysis was done to categorize data using the CFIR framework's domains.
Results: There were a total of 20 interviewees. Barriers coded under the CFIR framework included: needs and resources of those served by the organization, cosmopolitanism, available resources, structural characteristics, access to knowledge and information, and knowledge and beliefs.
Conclusions: Implementing nonspecialist-delivered PND management poses varying obstacles in different situations. Overcoming these barriers can be accomplished by simplifying interventions based on local conditions, changing women's and families' attitudes and help-seeking behaviors toward PND, establishing linkages with psychiatry, strengthening policymakers' capacity and improving mental health care systems, developing detailed intervention manuals, enhancing clinicians' mental health literacy, and improving the operation of psychologically appropriate approaches to build self-efficacy.

Keywords: *perinatal depression • consolidated framework for implementation research • management • barriers • help-seeking behaviors*

1. Introduction

The Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5)[1] has delineated perinatal depression (PND) as a profound depressive episode manifesting during the gestational period or within the initial 4 weeks after childbirth. In 2015, the American College of Obstetricians and Gynecologists (ACOG) redefined this temporal scope, extending it to encompass the entire year postpartum.[2] It is noteworthy that low- and middle-income countries (LMICs) exhibit a prevalence of PND that is nearly double that observed

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in high-income countries (HICs).[3] Empirical evidence gleaned from select meta-analyzes has demonstrated a discernible association between PND and the destabilization of infant attachment, as well as the compromised socio-emotional development of offspring.[4,5] Alarmingly, a substantial proportion, amounting to 20%, of postpartum mortality among women plagued by depression can be attributed to maternal suicide.[6]

During the perinatal period, women engage in regular interactions with perinatal health care providers, presenting a propitious juncture for the meticulous screening, diagnosis, and therapeutic intervention for depression. A lot of available evidence suggests that individuals outside the realm of mental health specialists can adeptly oversee PND and augment the accessibility and utilization of psychological services among maternal cohorts.[7] Nonetheless, it remains a disconcerting reality that a substantial majority of women who return positive screens for depression abstain from seeking the counsel of mental health professionals, and an even more diminutive fraction persist in their therapeutic journey. The question arises: What engenders such formidable impediments for perinatal women in their pursuit of depression management? It becomes imperative to fathom these obstructive factors, to galvanize and capacitate perinatal health care practitioners, thereby enabling them to administer precise depression treatments, facilitate referrals, and ensure rigorous follow-up care.

Surprisingly, there has been little research into service barriers in LMICs with moderately severe PND, particularly in China, where 16.3% of women have PND.[8] Jiangsu Province, in Southeast China, has a much higher rate than the national average, ranging from 21.6% to 24.26%.[9–11] PND management in China, on the other hand, is still in its infancy and has yet to be integrated into everyday services in many areas. Exploring the factors that influence the acceptability and feasibility of PND services in China will aid in a better understanding of the services' acceptability and practicality. Our team has previously developed an evidence-based PND management regimen. Through interviews with a variety of stakeholders, this study aims to uncover the factors that hinder the program's implementation in maternal and child health care institutions, as well as provide a theoretical and practical foundation for program adjustment and the development of implementation strategies.

2. Methods

2.1. Participants and study settings

The research took place at a Maternity and Child Healthcare Center in Jiangsu Province, China. This facility is the first in the region to focus on maternal mental health care, and they have organized nurses to routinely screen prenatal and postnatal women for PND in the last 6 months. However, no management of screening results, such as prevention, treatment, referral, or follow-up, has been implemented. This study selected pregnant and postpartum women managed by the institution's personnel and clinical nurses and those who tested positive for PND screening. Inclusion criteria for patients were as follows: women in the antenatal or postnatal period within 1 year; EPDS score ≥10; local residents; at least a junior high school education level; and voluntary participation. Exclusion criteria for patients were: inability to clearly express their feelings and noncooperation with interviewers. Inclusion criteria for service providers were: management personnel with at least 5 years of experience in obstetrics and gynecology management and clinical nurses with experience in managing PND patients, who voluntarily participated in the research. Exclusion criteria for service providers were: inability to clearly express their feelings and noncooperation with interviewers. The sample size was determined based on information saturation, i.e., when no new themes emerged.

2.2. Theoretical framework

Theories and predefined constructs can be used to find and predict factors that could affect or predict implementation success, guide how to change the plan and customize implementation strategies, and provide a foundation for developing high-order models and theories about implementation.[12] The Consolidated Framework for Implementation Research (CFIR), one of the most widely used influencing factor frameworks, guides the interview outline for stakeholders, which includes 39 factors in 5 domains (intervention characteristics, outer setting, inner setting, individual characteristics, and process).[13] We conducted interviews excluding the domain "process" as part of the exploration before implementation (Supplementary File 1 of the List and Definition of CFIR constructs).

2.3. Interview procedure

The study adhered steadfastly to the ethical precepts enshrined within the Declaration of Helsinki,[14] and its orchestration received the imprimatur of the Hospital Research Ethics Committee. The tapestry of interviews unfurled betwixt the temporal confines of January and March in the annus mirabilis of 2022. Prior to engaging in substantive, semi-structured, and in-depth face-to-face interviews lasting between 20 min and 40 min, participants were kindly beseeched to complete a

comprehensive sociodemographic questionnaire. This formality was enshrined in Supplementary File 2 of the Interview Guide for Nursing Managers and Clinical Nurses, as well as Supplementary File 3 of the Interview Guide designed for women suspected of grappling with despondency. Throughout the labyrinthine voyage of our research endeavor, the sanctity of privacy and the inviolability of confidentiality served as our unwavering lodestar. To immortalize the profound narratives shared by our respondents, we harnessed the capabilities of a digital voice recorder. In instances where the august preferences of our respondents did not align with the utilization of this auditory device, we diligently transcribed their insights by hand. In the spirit of gratitude for their candid participation, participants received modest tokens of appreciation upon the culmination of our interviews.

2.4. Data analysis

The authors analyzed a step-by-step participatory method, with any discrepancies resolved through discussion. The recordings were verbatim transcribed, and the original Chinese transcripts were kept. However, the data coding was done in English. Furthermore, the Chinese quotes we chose were translated into English and evaluated by researchers with foreign educational backgrounds in the research team to ensure language equivalency in terms of reporting and publishing. The transcripts were all entered into the NVivo® program. According to the existing CFIR framework and a codebook adapted from CFIR's website, the transcripts were processed using content analysis technology,[15] and the results were analyzed using a deductive approach.[16] The first phase of the analysis was to create initial coding nodes and subnodes based on the CFIR framework's domains and constructs; the second step was to examine, identify, and deductively code meaning units, such as sentences or longer semantic units, into the nodes and subnodes.[13] Then, to support the findings, the best representative statements from each construct were chosen.

3. Results

3.1. Study participants' characteristics

A total of 20 stakeholders were interviewed. Ten women with an EPDS score of ≥10 were involved in the study, with an average age of 26 ± 3.7 years. The interviews included 5 nursing managers and 5 clinical nurses with an average age of 34 ± 2.4 years and 32 ± 4.6 years, respectively. The socio-demographic characteristics of the subjects are shown in Table 1.

3.2. Perceived barriers to mental health service access

3.2.1. Needs & resources of those served by the organization

Foremost among the formidable impediments impeding the efficacious management of PND stands the specter of social and familial stigmatization. Within the tapestry of prevailing public sentiment and the intricate social milieu ensnaring women grappling with PND, an insidious aura of opprobrium shrouds them, casting them as "mothers beset by mental malaise." This pernicious characterization engenders a formidable citadel of resistance against the malady's confrontation, thereby exacerbating the community's agonizing quandary concerning PND prevention and treatment.

> *"You must not mention the word 'depression', otherwise they can't accept it. You have to change a mild statement so that they can accept it." (Nurse, No.2)*

> *"If I have depression, I will not tell anyone. If others know, what will they think of me and my parents? They live in the countryside. If people know that their daughter has this condition, they will be unable to function in this life." (Mother, No.7)*

PND manifests as an experiential phenomenon among our participants, a presence that often eludes formal tutelage, such as that imparted by the medical profession. A significant cohort of women, when grappling with the enigma of PND, delineate causal links to specific socio-cultural contexts, encompassing the crucible of social adversity and the crucible of strained marital and familial relations. For these women, depression assumes the semblance of a "life conundrum," bereft of the adornments of psychological elucidation.

Conversely, a significant subset of patients ascribes the symptoms of PND to the realm of normal reactions, etched into existence by the inexorable forces of fatigue and hormonal vicissitudes. This intricate web of perspectives and interpretations conspires to erect formidable barriers, rendering access to professional assistance a Sisyphean endeavor for those afflicted by PND.

> *"It's all due to my in-laws. She's driving me crazy, I hate her. We have very different opinions, as long as my mother-in-law isn't around, I'll be ok." (Mother, No. 5)*

> *"Now that I think about it, I think I was depressed during my pregnancy. I just wanted to cry every day, but I had no idea it would be harmful to the fetus. I assumed it was a normal pregnancy reaction." (Mother, No. 9)*

Participants (n)	Categories	Characteristic	Number (%)	Categories	Participants (n)	Number (%)
Suspected depressed women (n = 10)	Age (Mean ± SD)	26 ± 3.7		Annual income per capita (RMB)	≤2000	30
	Marital status	Married/cohabiting	90		2000–5000	50
		Separated	10		>5000	20
	Diploma	Secondary school and below	20	Employment status	Full time	40
		High school	60		Part-time	20
		Undergraduate and above	20		Unemployment	40
	Primipara	Yes	40	Perinatal stage	Pregnancy stage	70
		No	60		Postpartum stage	30
Managers (n = 5)	Age (Mean ± SD)	34 ± 2.4		Working years	≤5	0
	Marital status	Married/cohabiting	100		6–10	20
		Separated	0		>10	80
	Diploma	Secondary school and below	0	Professional title	Primary	0
		High school	0		Medium	60
		Undergraduate and above	100		High	40
	Years in management	≤5	40			
		6–10	40			
		>10	20			
Nurses (n = 5)	Age (Mean ± SD)	32 ± 4.6		Working years	≤5	0
	Marital status	Married/cohabiting	100		6–10	20
		Separated	0		>10	80
	Diploma	Secondary school and below	0	Professional title	Primary	0
		high school	60		Medium	100
		Undergraduate and above	40		High	0

Table 1. Socio-demographic characteristics of the subjects.

Many participants commented that power imbalances and unequal power relations create marital conflicts, whereas childcare and household tasks are largely the responsibility of women, and the grand multipara again increases the burden on women. Participants mentioned that family members rarely understood a woman's psychological stress and emotional difficulties during and after pregnancy.

> *"Housework is not his thing, food must be prepared, and the house must be clean all the time. My husband complains; 'You spend all day at home and don't do anything!'" (Mother, No. 3)*

> *"They knew that I was suffering because I expressed my feelings to them, but they did not understand me, even when I told them I had suicidal thoughts, no one took me seriously." (Mother, No. 1)*

3.2.2. Cosmopolitanism

A lack of collaboration and communication among mental health and perinatal health care providers was also noted by several participants. They also suggested a multidisciplinary approach in which a perinatal psychiatrist provides immediate psychiatric backup via telephone/online/onsite consultation, which would overcome logistical barriers women face when trying to access care.

> *"Perfect world: a building where you had your psychiatrists, your therapist, and your perinatal health care providers" (Manager, No. 3)*

> *"We have nurses who are trained as psychological counselors on staff, but we also require supervision. It will help to standardize our treatment if psychiatrists come to consult regularly and guide our nurses." (Manager, No. 4)*

3.2.3. Structural characteristics

The paramount impediment, unanimously underscored by the preponderance of interviewees, resides in the absence of a coherent infrastructure dedicated to the prevention, remediation, and referral of individuals grappling with PND. Evidently, there exists an exigent

imperative for the formulation of comprehensive protocols and methodologies, meticulously crafted to imbue women with the resolve and resources requisite for the pursuit of treatment. The screening process ought to metamorphose into an entrée to a multifaceted array of mental health interventions, seamlessly accessible through an array of conduits ranging from the virtual realm of online resources to the intimacy of face-to-face consultations, all underpinned by the graceful simplicity of a refined referral system.

"I hope you can give me some practical help, or tell me where to get help, instead of just filling out a form and ending our conversation." (Mother, No. 4)

"Now we are just screening. Our screening program largely covers all women, but we do not yet provide follow-up services such as assessment and treatment. We could improve this service through online and offline resources." (Nurse, No. 1)

3.2.4. Available resources

The availability of resources is the foundation for health service delivery. The current management of PND services is insufficient in terms of human resources, material resources, financial investment, and equipment, which impairs the effective development of PND services.

"We lack space for treatment. At the very least, there should be a table, a chair, and a flower pot so the patient can sit and talk with you. However, we don't have many nurses, and the waiting time for patients may be longer, I think the impact is also quite big. If she waits a long time, especially for the first time, she may not want to wait any longer." (Nurse, No. 4)

Nurses said they were not adequately trained to recognize and/or discuss maternal psychosocial conditions or issues, or to offer available resources. Nurses asked for training that focused on the assessment and treatment of depression, available treatment options, and their efficacy.

"To promote the continuation of mental health services, I think there is still a lot of pressure on our nurses because we are doing almost nothing in this area, so we need training." (Manager, No. 1)

Perinatal care providers discussed factors that contribute to obstetric and mental health professionals working in isolation, including a lack of information communication between these provider groups. They suggested building a PND information system to share information between different parts and assist in decision-making, making it easier to manage patients intelligently.

"Even if we send them to the psychiatrist, we don't know what kind of counseling they got or what they were supposed to do. So, I'm not sure what happened when they come back to us." (Nurse, No. 2)

"We'd be much more comfortable if there were an electronic system that recorded, supervised, and reminded, and psychiatrists and us could have access to it."(Manager No. 4)

3.2.5. Knowledge and beliefs

Owing to a deficit in both mental health acumen and clinical experience, service providers find themselves in an unfamiliar terrain when it comes to the discernment of PND. Consequently, they are ill-equipped to proffer nuanced remedies. Even those practitioners, including physicians, who may possess an awareness of the symptomatic manifestations, often remain bereft of insight into the therapeutic avenues available for these women.

"I am very confident in providing them with professional knowledge and guidance, but if I give them psychological intervention, I am a little uncertain. Although I have received psychological counseling courses, my actual operation is relatively limited." (Nurse, No. 4)

Mothers perceived a conspicuous lacuna in the proficiency of health care professionals when it came to navigating the delicate terrain of depression discourse and management. These professionals seemed ill-equipped to undertake the intricate task of assessing and addressing safety concerns. Consequently, these interactions culminated in a disconcerting emotional landscape for mothers, characterized by feelings of neglect, marginalization, emotional distress, and a palpable sense of unease when seeking access to care.

"I think the reason the doctors didn't talk to me more was that they didn't know how to comfort me themselves, so why should I tell her what I was thinking?" (Mother, No. 8)

"The doctor tells me nothing is wrong with me. She said I was just thinking too much. 'Well, you have a happy, healthy baby. What else do you want?'"(Mother, No. 9)

3.2.6. Access to knowledge and information

Standardization was the process by which clinical work was transformed from a conventional leadership mode

to a scientific safety management style, and it was an effective way to raise the overall quality and degree of management.

> *"I believe that if we are a little more detailed, such as specific to the implementation path, operation specifications, we will be able to operate with a high degree of homogeneity, reduce clinical unnecessary trouble, and facilitate our dissemination." (Manager, No. 5)*

Perinatal health care professionals recommended giving or showing women educational material on PND. Recommendations included informational packets, fact sheets, and self-assessment packets that would be available. Additionally, participants expressed a desire for material diversification and visualization, believing that innovative presentation can increase dissertation efficiency.

> *"It is preferable to have rich content and a variety of materials, such as beautiful booklets and video materials, to facilitate promotion through various channels." (Nurse, No. 2)*

4. Discussion

In this qualitative inquiry, conducted within the hallowed halls of the XX Maternity and Child Healthcare Centre, we embarked on a nuanced exploration of the perspectives held by stakeholders concerning the formidable impediments enshrouding the implementation of nonspecialist-mediated interventions for PND within the intricate tapestry of the Chinese health care milieu. The barriers thus elucidated found their taxonomy nestled within the expansive purview of the Consolidated Framework for Implementation Research (CFIR), spanning domains encompassing the requisites and resources of the clientele, the ethereal nature of cosmopolitanism, the munificence of available resources, the structural attributes of the health care ecosystem, the accessibility to knowledge repositories and information dissemination, as well as the bedrock of knowledge and entrenched belief systems.

4.1. Needs and resources of those served by the organization

"Needs and Resources of Those Served By the Organization" is a commonly reported factor and is categorized under "Outer Setting" and defined as "The extent to which the needs of those served by the organization (e.g., patients) as well as barriers and facilitators to meet those needs are understood and prioritized.[13]" Stigma regarding people with mental illness is an issue in many cultures and ethnicities, mothers with postpartum depression (PPD) do not talk about it or ask for help due to these overwhelming feelings.[17] Understanding how mothers feel about stigma may suggest how to communicate with struggling moms more effectively. Support from the husband, which includes caring for the newborn and providing emotional and material support, has also been linked to service entry.[18] We found that trivial household tasks, heavy life loads, and husbands' lack of understanding and approval limit women's help-seeking behavior as well as escalate their negative emotions. In addition, women with a limited understanding of PPD are at a higher risk for PPD, Heh and Fu[19] found that women with a higher risk for PND and who got formal information about PPD had a lower EPDS than those who did not. In our study, participants had personal experiences with PPD symptoms or had heard about them from friends or family. However, those sources of info were usually wrong, and few had details on PPD from professionals. For service receivers, the following approaches should be utilized: awareness-raising, literacy programs to improve knowledge about mental illnesses, and advocacy through education, training, mutual help, and counseling.[20,21]

4.2. Cosmopolitanism

"Cosmopolitanism" is identified as another frequently reported factor and is categorized under the domain "Outer Setting" and defined as "The degree to which an organization is networked with other external organizations."[13] A lack of multisectoral collaboration models has also been identified as a major barrier to establishing integrated mental health treatment in LMICs.[22] Collaborative care and consultation models improve outcomes in primary care settings by providing mental health support. Consultation models could be adapted for the obstetric setting through structured mental health telephonic or online consultations for perinatal health care professionals. Spedding et al.[22] propose an on-site model, where a psychiatrist provides care at an obstetrics and gynecology hospital, to improve connections with patients, simplify referrals, and keep patients away from stigmas. Improved collaboration and liaison relationships could increase feelings of self-efficacy among perinatal health care professionals, enabling them to manage simple cases and refer to more complex ones, thereby improving access to care.[23]

4.3. Structural characteristics

"Structural characteristics" is identified as another frequently reported factor and are categorized under the

domain "Inner Setting" and defined as "Social architecture, age, maturity, and size of an organization."[13] Obstetricians and perinatal women find screening to be futile without trained providers who can refer them to mental health resources. Although perinatal women have a high acceptance of depression screening, screening for PND remains controversial since many women do not wish to be contacted by a mental health provider.[24] Among women who test positive for depression, fewer than 30%[24,25] attend a first or subsequent mental health visit, and as few as 0%–6%[25,26] attend an entire course of treatment. The lack of adherence is most likely caused by the lack of systems to ensure depression evaluation, treatment, and referral.[27] One systematic review[28] found that broken referral pathways and unclear work structures are important structural barriers to perinatal mental health care. Another study found that perinatal mental health implementation was hindered by complex and unclear pathways, such as unlinked services, lack of continuity, lack of referral resources, and complicated bureaucratic procedures.[28] In order to integrate maternal mental health care into routine maternal health care, the mental health care system must be strengthened and the governance system must produce clear mental health policies, programs, strategies, and structures.

4.4. Available resources

"Available Resources" is identified as another frequently reported factor and is categorized under the construct "Readiness for implementation" (domain "Inner Setting") and defined as "The level of resources organizational dedicated for implementation and ongoing operations including physical space and time."[13] Limited resources affect universal health coverage and the quality of treatment. Long wait times, lack of training, and inadequate resources are caused by a lack of government readiness, capacity, and priority. Other systematic reviews[29,30] have also mentioned them as barriers to identifying and treating perinatal mental disorders. Consequently, perceptions and established barriers associated with service providers should be addressed in order to create an environment conducive to implementing and maintaining mental health continuity of care in health facilities.[31,32] Especially nurses need to be educated about PND since they have the most contact with perinatal women. Improving their mental health literacy and providing supervisory support is crucial to health systems and should be a top priority for administrative health professionals.[33] There should be potential solutions to facilitate quality-assured interventions by fully utilizing information technology, such as regulation through effective digital platforms, or provision of training and supervision.

4.5. Knowledge and beliefs

"Knowledge and beliefs" is identified as another frequently reported factor and is categorized under the domain "Characteristics of individuals" and defined as "Individuals' attitudes toward the innovation, familiarity with facts, truths, and principles related to the innovation."[13] An Israeli study[34] of 224 family practitioners and pediatricians suggests that 98% consider it essential to recognize PND symptoms, with 89.8% declaring that they would be involved in diagnosis and treatment or refer to another professional and 76.5% indicating that they would use a brief questionnaire to identify PND. However, due to limited knowledge, providers were less confident and willing to address PND. According to our study, many health care providers lacked knowledge about PND and avoided discussing the topic, which made perinatal women feel uncomfortable speaking about these sensitive issues and may not disclose the most severe symptoms of mental illness. In Other systematic reviews and meta-synthesis,[35,36] high-income countries identified a lack of mental health knowledge and attitudes among intervention staff as barriers to implementing PND management. It is more efficient and effective for nonpsychiatric professionals to establish good communication with patients to guide and promote mental health behaviors, and a key factor in PND management is improving the mental health literacy and beliefs of service providers.

4.6. Access to knowledge and information

The notion of "Access to Knowledge and Information" surfaces as a recurrently cited determinant, aligning itself within the construct of "Readiness for Implementation" amidst the expansive realm of the "Inner Setting." Its eloquent characterization delineates it as "the ease with which one can acquire comprehensible information and enlightenment regarding the innovation, along with the adeptness to seamlessly integrate it into one's occupational endeavors."[13] Esteemed researchers have extolled the virtues of comprehensive intervention compendiums, replete with meticulous referral flow charts, rigorously standardized operating procedures, and didactic health education manuals. These seminal works assume the role of guiding luminaries, imparting direct guidance to clinical endeavors, upholding the sacrosanct mantle of quality assurance, and inscribing the edicts of best practices.[37,38] The blueprint, hence, beckons for further refinement, as it endeavors

to carve a path toward a standardized and pragmatic trajectory, as perceived from the vantage point of the provider. Additionally, it seeks to bestow upon both online and offline domains a veritable treasure trove of informational promotion manuals, serving as a beacon for consumers in their quest for knowledge and enlightenment.

4.7. Limitations

The study is not devoid of its imperfections, as 3 notable shortcomings come to the fore. Foremost among these is the imperative acknowledgment of the singular socio-cultural milieu in which the research was nestled, thereby underscoring the need for judicious caution when extrapolating the findings to dissimilar geographical and cultural domains. Second, a modicum of meaning inherent in the respondents' experiential narratives and perspectives may have been inadvertently forfeited in the intricate process of transcription, during the delicate transmutation from the vernacular of Chinese to the lyrical tapestry of English. Lastly, the study, as it currently stands, finds itself in its formative stages, rendering the facets linked to the "process" construct within the ambit of the Consolidated Framework for Implementation Research (CFIR) an elusive terrain, yet to be meticulously charted. Despite these acknowledged limitations, it is noteworthy that subsequent investigations, encompassing diverse demographic strata and varying sample sizes, have yielded corroborative outcomes, thus lending credence to the overarching veracity of the research findings.

5. Conclusions

The implementation of PND management by nonspecialists presents a kaleidoscope of distinct challenges, each unique to its contextual tapestry. The navigation of these formidable barriers is an intricate undertaking, replete with multifaceted strategies. It involves the art of distilling interventions, attuned to the idiosyncrasies of local conditions, and orchestrating a transformation in the attitudes and proclivities of women and their families toward PND, thus fostering a culture of proactive help-seeking behavior. Moreover, it necessitates the weaving of robust bridges with the discipline of psychiatry, the fortification of policymakers' acumen, and the enhancement of mental health care systems. Complementing these endeavors is the crafting of meticulous intervention compendiums, meticulous in their detailing. Further, it entails the honing of clinicians' mental health literacy, thus equipping them with the sagacity to navigate the labyrinthine contours of PND. Lastly, it entails the refinement of the deployment of psychologically resonant methodologies, intricately calibrated to bolster self-efficacy, a linchpin in the journey toward holistic well-being.

Ethical approval

The study was approved by IRB of the Affiliated Hospital of Nanjing University of Chinese Medicine (IRB approval number: 2023NL-KS220).

Conflicts of interest

All contributing authors declare no conflicts of interest.

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