

Exploring pain management training needs of community nurses: a qualitative study

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Abstract

Background

Pain is one of the most common health problems encountered across healthcare settings and requires timely, individualized, and evidence-based management. With the increasing shift of healthcare services from hospitals to community and home settings, community nurses are increasingly involved in the identification, assessment, monitoring, education, and long-term management of people experiencing acute and chronic pain. However, gaps in nurses' knowledge, attitudes, assessment skills, therapeutic decision-making, and use of evidence-based pain management strategies continue to be reported. Compared with hospital-based nurses, community nurses frequently manage patients in less controlled environments with limited access to specialist resources, making context-specific pain management training particularly important. Nevertheless, the training needs of community nurses have not been sufficiently explored from their own perspectives.

Aim

To explore community nurses' experiences and perceived training needs regarding pain management and to provide evidence for the development of a systematic, practice-oriented pain management training programme for community nurses.

Methods

A descriptive qualitative study was conducted using purposive sampling. Community nurses working in primary healthcare institution in Nanchang, were recruited between June 2026 and September 2026. Semi-structured, face-to-face interviews were undertaken to explore participants' experiences of pain management, perceived difficulties, previous training experiences, and expectations regarding future pain management education. Interviews were audio-recorded, transcribed verbatim, and analysed using an inductive thematic analysis approach based on Braun and Clarke's six-phase framework. Data collection continued until thematic saturation was achieved. The study was reported in accordance with the Consolidated Criteria for Reporting Qualitative Research (COREQ).

Results

A total of 12 community nurses participated. Five interrelated themes were identified: (1) establishing systematic and practice-oriented pain management training content; (2) strengthening pain assessment and individualized clinical decision-making; (3) adopting flexible, interactive, and context-based training approaches; (4) developing competent trainers and multidisciplinary learning mechanisms; and (5) establishing organizational, resource, and continuous-learning support for pain management.

Participants particularly emphasized training in pain assessment, pharmacological and non-pharmacological interventions, chronic pain management, special populations, patient and family education, communication, and the management of complex community-based pain scenarios.

Conclusion

Community nurses demonstrate multidimensional training needs in pain management that extend beyond the acquisition of theoretical knowledge. Effective training should integrate standardized pain knowledge with clinical decision-making, real-world community cases, individualized assessment, communication, and multidisciplinary collaboration. Flexible teaching methods, qualified trainers, structured assessment, accessible professional resources, and sustained organizational support are required to facilitate the translation of pain management knowledge into everyday community nursing practice.

Background

Pain is a multidimensional experience that involves sensory, emotional, cognitive, social, and contextual components and is one of the most frequent reasons for seeking healthcare[1, 2]. Effective pain management is therefore a fundamental component of high-quality nursing care. Nurses occupy a central position in pain management because they are frequently responsible for identifying pain, undertaking initial and repeated assessments, implementing prescribed and independent interventions, monitoring treatment responses and adverse effects, educating patients and families, and communicating changes in patients' conditions to other healthcare professionals[3, 4].

Despite the importance of these responsibilities, inadequate pain assessment and management remain persistent challenges in nursing practice[5]. Previous systematic reviews and meta-analyses have demonstrated substantial deficits in nurses' knowledge and attitudes regarding pain[6]. Knowledge gaps are particularly evident in areas involving pain interventions, pharmacological treatment, opioid use, reassessment, and the translation of theoretical principles into clinical decision-making.[7, 8] Importantly, previous pain-related education has been associated with higher levels of nurses' knowledge, suggesting that continuing professional education represents an important strategy for improving pain care[9].

The need for effective pain management education has become increasingly relevant as healthcare systems shift toward primary care, community-based disease management, rehabilitation, long-term care, and home-based services[10, 11]. Population ageing, the growing prevalence of chronic non-communicable diseases, cancer survivorship, musculoskeletal conditions, multimorbidity, postoperative recovery at home, and long-term functional impairment mean that an increasing proportion of pain management occurs outside acute hospital settings[12–14]. Community nurses may consequently encounter individuals experiencing persistent musculoskeletal pain, neuropathic pain, cancer-related

pain, post-procedural pain, pain associated with chronic wounds, and pain among older people with multiple comorbidities.

The nature of community nursing makes pain management particularly challenging[15]. Unlike nurses in specialized hospital departments, community nurses frequently care for heterogeneous patient populations and must make judgments across multiple conditions and levels of severity[16]. Their work may take place in community clinics, patients' homes, long-term care environments, or other primary healthcare settings[17]. Specialist pain teams and immediate medical support may not always be readily available. At the same time, community nurses often need to consider medication adherence, health literacy, family involvement, functional status, cultural beliefs about pain, psychological distress, socioeconomic circumstances, and patients' ability to implement self-management strategies[18].

Accordingly, competence in community pain management requires considerably more than the ability to assign a numerical pain score. Community nurses need to integrate multidimensional pain assessment with knowledge of pain mechanisms, pharmacological and non-pharmacological interventions, risk identification, therapeutic monitoring, patient education, communication, referral, and long-term follow-up. They must also recognize situations requiring escalation or specialist assessment and support patients in developing realistic and sustainable pain self-management strategies. Available evidence nevertheless suggests that nurses continue to experience difficulties in several of these areas[5]. A meta-analysis of nurses' pain knowledge and attitudes reported overall knowledge substantially below recommended levels, while intervention-related knowledge was among the weakest dimensions[6]. Educational interventions can improve nurses' knowledge, attitudes, skills, and practices; however, improvements may diminish over time when education consists primarily of isolated or short-term activities. These findings suggest that effective pain education should be continuous, clinically relevant, and reinforced within practice rather than delivered as a one-time theoretical course[19].

Existing education programmes have frequently focused on predetermined professional knowledge, whereas comparatively less attention has been paid to how nurses themselves perceive their learning needs and how these needs are shaped by particular clinical environments[5, 20–22]. This distinction is particularly important for community nurses. Training developed primarily from specialist or hospital perspectives may not fully reflect the uncertainty, resource limitations, continuity-of-care responsibilities, patient diversity, and family involvement characteristic of community practice.

Furthermore, training needs should not be conceptualized solely as deficits in knowledge. The implementation of evidence-based practice among community nurses is influenced by factors including available time, access to professional resources, managerial support, educational opportunities, and mechanisms for translating evidence into routine practice. Therefore, even well-designed educational content may have limited impact if community nurses lack opportunities, resources, professional consultation, or institutional support to apply newly acquired knowledge.

Qualitative inquiry provides an appropriate approach to understanding these issues because it allows nurses to describe not only what they wish to learn but also why particular competencies are difficult to

apply, how pain management is experienced within everyday community practice, and what forms of training and organizational support are perceived as meaningful. Exploring community nurses' perspectives may therefore identify dimensions of training that are overlooked by standardized knowledge assessments or researcher-defined questionnaires.

Although research has documented deficiencies in nurses' pain-related knowledge and evaluated educational interventions, there remains limited qualitative evidence specifically examining pain management training needs from the perspective of community nurses[5, 7]. A better understanding of these needs is necessary for the development of training programmes that are systematic, clinically relevant, feasible, and sustainable within primary healthcare environments.

Therefore, this study aimed to explore community nurses' experiences and perceived needs regarding pain management training, including desired training content, instructional strategies, assessment methods, educator characteristics, and organizational support. The findings are intended to inform the future development of a structured and context-sensitive pain management training programme for community nurses.

Aim

This study aimed to explore the pain management training needs of community nurses and to identify their expectations regarding training content, educational methods, professional support, and implementation strategies, thereby providing an empirical basis for developing a systematic pain management training programme for community nursing practice.

Methods

Design

A descriptive qualitative design was adopted to obtain an in-depth understanding of community nurses' experiences, perceptions, and training needs regarding pain management.

A qualitative approach was considered appropriate because pain management competence is influenced not only by professional knowledge but also by clinical experience, patient characteristics, organizational environments, resource availability, and interprofessional relationships. Semi-structured interviews enabled participants to describe these contextual experiences and articulate training requirements in their own words.

The study was designed and reported with reference to the Consolidated Criteria for Reporting Qualitative Research (COREQ).

Participants and setting

Purposive sampling was used to recruit registered nurses from 1 primary healthcare institution located in Nanchang, China between June 2026 and September 2026.

Participants were selected to obtain variation in age, educational background, years of nursing experience, professional title, and community nursing experience.

The inclusion criteria were:

1. registered nurses currently working in a community or primary healthcare setting;
2. having at least 3 years of community nursing experience;
3. having experience caring for patients experiencing pain;
4. being able to communicate clearly regarding their clinical experiences; and
5. voluntarily agreeing to participate and providing written informed consent.

The exclusion criteria were:

1. nurses undertaking temporary placement in the participating community healthcare institutions;
2. nurses on extended leave during the data collection period; and
3. nurses who were unable to complete the interview.

Recruitment continued until data saturation was reached.

A total of 12 nurses ultimately participated in the study.

Development of the interview guide

The semi-structured interview guide was developed collaboratively by the research team based on the study objectives, a review of relevant literature concerning nursing pain management and continuing professional education, and discussion among researchers with expertise in community nursing/pain management/nursing education/qualitative research.

An initial interview guide was developed using open-ended questions. To evaluate comprehensibility, relevance, and sequencing, pilot interviews were undertaken with two community nurses who met the eligibility criteria. Based on their feedback, minor modifications were made to the wording and sequence of questions. The two pilot participants were not included in the final analysis.

The final interview guide included the following questions:

1. Can you describe your experiences of managing patients with pain in community nursing practice?
2. What difficulties or challenges do you usually encounter when assessing or managing pain?
3. How confident do you feel about your current knowledge and skills related to pain management?
4. What pain management knowledge or skills would you most like to receive further training in?

5. 5.Are there particular patient groups or pain situations that you find difficult to manage?
6. 6.What kind of pain management training have you previously received, and how useful was it for your practice?
7. 7.What training methods would be most useful or acceptable to you?
8. 8.What characteristics should an effective pain management trainer have?
9. 9.What types of assessment, feedback, or follow-up would you prefer after training?
10. 10.What organizational or professional support would help you apply pain management knowledge in community practice?
11. 11.What outcomes would you expect to achieve following pain management training?
12. 12.Is there anything else you would like to suggest regarding pain management training for community nurses?

Probing questions such as “Could you explain that further?”, “Can you provide an example?”, “Why do you think this happens?”, and “What would help you manage this situation better?” were used when appropriate.

Researcher positionality

Researcher positionality and potential interviewer influence were considered throughout the study[23]. All interviews were conducted by first author(X.X.S.), who had received training in qualitative interviewing and data analysis.

The interviewer did not have a previous professional relationship with participants and held no managerial or supervisory authority over them. Before data collection, participants were informed that there were no correct or incorrect answers and that the study sought to understand their genuine experiences and views.

To minimize the influence of researcher assumptions, the interviewer maintained reflexive notes during data collection and analysis. Regular research-team discussions were conducted to examine emerging interpretations, challenge assumptions, and distinguish participants’ perspectives from researchers’ preconceptions.

Data collection

Potential participants were informed of the purpose, procedures, confidentiality safeguards, and voluntary nature of the study before interviews were scheduled. Written informed consent was obtained from all participants.

Individual semi-structured interviews were conducted face-to-face in a quiet and private location selected to protect confidentiality and minimize interruptions. Each interview lasted approximately 40–60 minutes. With participants’ permission, interviews were digitally audio-recorded. The interviewer also documented field notes concerning contextual information, important pauses, emotional expressions,

and other non-verbal observations potentially relevant to interpretation. Interviews were transcribed verbatim within 48 hours. Personally identifiable information was removed and participants were assigned codes such as P1, P2, P3, and so forth. Participants were invited to review their transcripts to enhance the accuracy of the data. Data collection and preliminary analysis were undertaken iteratively. After interview 10, no substantially new codes or themes emerged. An additional two interviews were conducted to confirm thematic saturation, after which recruitment was discontinued.

Data analysis

Interview data were managed using NVivo 14.0 software. An inductive thematic analysis was undertaken with reference to Braun and Clarke's six-phase framework[24]. First, two researchers independently read the transcripts repeatedly to become familiar with the data and gain an overall understanding of participants' experiences. Second, meaningful units relating to pain management experiences, perceived competence, barriers, educational preferences, training expectations, and organizational support were systematically identified and assigned initial codes. Third, conceptually similar codes were compared, grouped, and organized into candidate subthemes and broader themes. Fourth, candidate themes were reviewed against both coded extracts and the complete dataset to determine whether they accurately represented participants' accounts and whether sufficient distinction existed between themes. Fifth, each theme and subtheme was defined and named according to its central meaning. Finally, representative quotations were selected to illustrate participants' experiences and provide transparent links between interpretation and the original data. Disagreements between researchers were resolved through discussion. When consensus could not initially be achieved, a third researcher was consulted. The analysis remained primarily inductive rather than imposing an existing pain education framework on participants' accounts.

Trustworthiness

Trustworthiness was addressed according to the principles of credibility, dependability, confirmability, and transferability[25].

Credibility was enhanced by recruiting community nurses with direct experience of caring for individuals experiencing pain and by using open-ended interviews that allowed participants to describe their experiences in detail.

Data saturation was used to guide sample adequacy[26].

Where applicable, transcript checking or participant verification was undertaken to ensure the accuracy of participants' accounts.

Dependability was supported through maintenance of an audit trail documenting recruitment, interview procedures, coding decisions, theme development, and revisions to the analytic framework.

Confirmability was strengthened through independent coding by two researchers, comparison of interpretations, reflexive documentation, and regular research-team discussions.

Transferability was facilitated by providing detailed descriptions of the study setting, participant characteristics, sampling strategy, and research procedures so that readers could evaluate the applicability of the findings to other primary healthcare settings.

Results

Participant characteristics

A total of 12 community nurses participated in the study. Participants ranged in age from 29 to 48 years, with a mean age of 38 years. Their total nursing experience ranged from 4 to 28 years, and community nursing experience ranged from 3 years to 28 years.

Among the participants, 6 held a diploma or associate degree and 6 held a bachelor’s degree. With respect to professional titles, 4 were junior nurses and 8 were intermediate-level nurses. 9 participants reported having previously received pain-related training. Participants shared their views and needs concerning pain management training for community nurses. Following thematic analysis, five main themes and 15 subthemes were identified, as summarized in Table 1.

Table 1
Themes and subthemes generated in this study

Themes	Subthemes
Theme 1. Establishing systematic and practice-oriented pain management training content	1.1 Building a systematic foundation of pain knowledge
	1.2 Strengthening pharmacological pain management knowledge
	1.3 Emphasizing practical non-pharmacological interventions
	1.4 Focusing on common and complex pain situations in community practice
Theme 2. Strengthening pain assessment and individualized clinical decision-making	2.1 Improving multidimensional pain assessment competence
	2.2 Developing individualized pain management decision-making
	2.3 Strengthening patient and family education and communication
Theme 3. Adopting flexible, interactive, and context-based training approaches	3.1 Combining online and offline learning
	3.2 Emphasizing case-based, simulation, and interactive learning
	3.3 Integrating training into authentic community practice
	3.4 Diversifying assessment and feedback methods
Theme 4. Developing competent trainers and multidisciplinary learning mechanisms	4.1 Selecting trainers with both professional expertise and practical experience
	4.2 Strengthening multidisciplinary training and consultation
Theme 5. Establishing organizational, resource, and continuous-learning support for pain management	5.1 Providing institutional guarantees and protected learning time
	5.2 Providing accessible pain management resources
	5.3 Establishing continuous training and follow-up mechanisms

Theme 1: Establishing systematic and practice-oriented pain management training content

Participants generally believed that their existing knowledge of pain management was fragmented and largely derived from undergraduate courses, personal clinical experience, occasional continuing education, or informal learning from colleagues. They expressed a strong expectation that future training should provide a systematic knowledge framework while remaining closely connected with problems encountered in community practice.

Rather than simply increasing the amount of theoretical information provided, participants emphasized that training content should enable them to understand pain, assess patients appropriately, select suitable interventions, identify treatment risks, and apply acquired knowledge in real clinical situations.

Subtheme 1.1: Building a systematic foundation of pain knowledge

Several participants reported that although they encountered patients with pain frequently, they lacked a structured understanding of pain mechanisms, classifications, and management principles.

Pain-related knowledge was often perceived as scattered across different nursing subjects rather than taught as an independent and coherent body of knowledge. Participants therefore hoped that future training would first establish a clear theoretical framework covering pain definition, mechanisms, classification, influencing factors, acute and chronic pain, and basic principles of pain management.

One participant described the fragmented nature of previous learning:

"I learned some things about pain before, but they were scattered across different courses. I never really had a systematic framework, so sometimes I am not sure how the different concepts are connected." (P1)

Another participant emphasized the importance of starting with basic principles: *"I think we should first understand why pain occurs, what types of pain there are, and the mechanisms behind them. Only after we understand these basics can we really know how to manage pain properly."* (P4)

Participants indicated that systematic theoretical knowledge would provide a foundation for subsequent assessment and intervention, helping them move beyond experiential or habitual approaches to pain management.

Subtheme 1.2: Strengthening pharmacological pain management knowledge

Pharmacological management was one of the areas in which participants expressed substantial uncertainty.

Participants wanted more detailed education regarding commonly used analgesics, medication indications, dosage principles, routes of administration, contraindications, adverse effects, drug interactions, and medication monitoring.

Some participants were particularly concerned about their limited knowledge regarding opioid analgesics and expressed uncertainty about dependence, tolerance, respiratory depression, constipation, and safe medication education. *"I know the names of some commonly used painkillers, but I am not always clear about when they should be used, what side effects to watch for, or how to explain these issues to patients."* (P3) Another participant discussed concerns about opioid-related knowledge: *"I am still quite uncertain about opioids. I worry about dependence and other adverse effects, and when patients are afraid of these medicines, I sometimes do not know how to explain their safe use clearly."* (P8) Participants also emphasized that training should be relevant to the medications commonly encountered in community practice rather than providing excessively specialized pharmacological content. *"For us in the community, I would prefer training on the pain medicines we actually see in daily practice, including what to monitor and what problems to look out for, rather than very specialized pharmacology that we rarely use."* (P11)

Subtheme 5.1: Providing institutional guarantees and protected learning time

Time constraints were frequently described as a practical barrier. Participants reported that training was sometimes scheduled on top of normal workloads, which reduced concentration and willingness to participate. *"Sometimes training is arranged after a full day of community work. By that time I am already very tired, so even if I attend the session, it is difficult to concentrate and learn effectively."* (P4)

Participants hoped that pain management education would be formally incorporated into institutional continuing education arrangements. *"If the institution could set aside dedicated work time for training, I think we would take it more seriously and learn more effectively than if we were simply expected to study in our own time."* (P8) They also emphasized the importance of managerial support for applying new assessment procedures and care approaches after training.

Subtheme 5.2: Providing accessible pain management resources

Participants expressed a desire for concise clinical resources that could be consulted rapidly during practice. Suggested resources included pain assessment tools, clinical algorithms, medication reference cards, red-flag checklists, patient education materials, referral criteria, guideline summaries, and digital resources. *"Long guidelines are difficult to read when we are busy at work. I would prefer a short practical manual, checklist, or mobile resource that I can look up quickly when I need it."* (P5) Another participant emphasized the value of standardized patient education materials: *"It would be helpful to have standardized patient education materials, because then we could explain pain management more clearly and give patients consistent information."* (P3) Participants believed that readily accessible tools could facilitate the translation of training into routine clinical practice.

Subtheme 5.3: Establishing continuous training and follow-up mechanisms

Participants generally believed that one-time training would have limited long-term impact. They expressed concern that knowledge would gradually be forgotten without repeated application and reinforcement. *“A single lecture may help at the beginning, but if we do not use the knowledge or review it again, we will gradually forget a lot of the content.”* (P7) Participants suggested regular case discussions, refresher sessions, online updates, follow-up assessments, and opportunities to consult experts about difficult cases. *“It would be useful to have a group or online platform where we could post difficult pain cases and ask specialists for advice when we are not sure how to manage them.”* (P5) These expectations indicate that participants perceived pain management education as an ongoing professional development process rather than a single training event.

Discussion

This study explored community nurses’ perceptions and training needs regarding pain management and identified five interconnected themes: establishing systematic and practice-oriented training content; strengthening multidimensional pain assessment and individualized clinical decision-making; adopting flexible, interactive, and context-based training approaches; developing competent trainers and multidisciplinary learning mechanisms; and establishing organizational, resource, and continuous-learning support.

The findings suggest that community nurses’ perceived training needs extend considerably beyond the acquisition of pain-related theoretical knowledge. Participants expected training to strengthen their capacity to interpret complex patient information, make individualized decisions, communicate with patients and caregivers, coordinate multidisciplinary resources, and apply evidence-based strategies within the practical constraints of community healthcare. Together, these findings support the development of a competency-oriented training model in which knowledge acquisition is integrated with clinical reasoning, practical application, and organizational implementation.

Systematic and practice-oriented content is fundamental to community nurses’ pain management competence

The first major finding was participants’ desire for systematic yet clinically relevant pain management education. Although participants had previously encountered pain-related information through nursing education and clinical practice, their knowledge was often described as fragmented. They therefore expected training to establish a coherent framework encompassing pain mechanisms, assessment, pharmacological management, non-pharmacological interventions, and common community pain conditions.

This need is consistent with previous evidence demonstrating persistent deficits in nurses’ pain knowledge and attitudes. A systematic review and meta-analysis by Ortiz found that nurses’ knowledge of pain management remained below desirable levels, particularly in relation to pain interventions and pharmacological management[6]. However, the present findings extend previous knowledge by showing

that community nurses do not simply request more information. Rather, they want information that is directly applicable to the populations and conditions encountered in primary healthcare.

This distinction has important implications for training design. Traditional pain education is often organized according to disciplinary categories such as pain physiology, analgesic pharmacology, and assessment instruments[21, 22]. While these components are necessary, community nurses in the present study emphasized learning around actual clinical problems. For example, managing an older adult with osteoarthritis, multiple chronic diseases, polypharmacy, poor sleep, and limited mobility requires simultaneous consideration of pain assessment, medication safety, non-pharmacological strategies, function, patient education, and referral. Training programmes should therefore use a combination of structured theoretical modules and integrated clinical cases. The need for greater pharmacological knowledge was particularly prominent. Previous studies have similarly identified misconceptions concerning analgesics and opioid medications as persistent barriers to effective pain management[27]. Insufficient knowledge regarding adverse effects, tolerance, dependence, and appropriate medication use may contribute to overly cautious or inconsistent pain management[28]. Community nurses require sufficient pharmacological knowledge not to independently prescribe outside their professional scope, but to monitor patients safely, identify potential medication-related problems, provide appropriate education, and recognize when medical reassessment is necessary. At the same time, participants placed substantial importance on non-pharmacological strategies. This is particularly relevant in community settings, where chronic pain management often requires long-term multimodal strategies rather than episodic symptom relief. Education should therefore enable nurses to integrate appropriate non-pharmacological approaches with medication management and patient self-management.

Multidimensional assessment should be directly connected with individualized clinical decision-making

The second theme represents one of the most important findings of this study. Participants did not regard pain assessment as an isolated technical skill. Instead, they emphasized the need to understand how assessment findings should influence subsequent management decisions. This finding suggests that a critical educational gap may exist between assessment competence and decision-making competence.

Pain is inherently multidimensional. Although pain intensity scales provide useful information, intensity alone cannot fully capture the influence of pain on patients' physical function, emotional state, sleep, mobility, social participation, and quality of life[29]. This is especially important in community settings, where nurses frequently care for patients with chronic pain and multimorbidity. Training should therefore strengthen comprehensive assessment across several domains, including pain intensity, characteristics, duration, functional interference, psychosocial effects, treatment response, medication use, and patient goals. Special attention should also be given to people who may have difficulty communicating pain,

including older adults with cognitive impairment[30]. More importantly, training should explicitly teach how assessment results are translated into action. A useful competency pathway may be conceptualized as: recognition, multidimensional assessment, problem identification, risk assessment, individualized goal setting, intervention selection, patient education, reassessment and adjustment or referral. This approach differs from conventional training in which assessment, medication, and nursing interventions are often taught as separate subjects[21, 22]. By integrating these components into a clinical reasoning pathway, training may better reflect the cognitive processes required in actual community nursing practice. The present findings also demonstrate that individualized decision-making is essential. Participants recognized that patients with apparently similar pain intensity may require different management because of differences in age, cognitive function, comorbidities, medication use, functional status, psychological conditions, personal preferences, and family support. Consequently, standardized guidelines and algorithms should support rather than replace clinical judgment.

Communication and patient education should be positioned as core pain management competencies

Participants repeatedly highlighted difficulties related to patients' and families' beliefs about pain and pain treatment. Some patients may regard pain as an unavoidable consequence of ageing or disease, whereas others may fear that analgesics will inevitably cause dependence or serious adverse effects. Such perceptions can affect symptom reporting, medication adherence, and willingness to engage with treatment[31, 32]. In community healthcare, these issues are especially important because much of pain management occurs outside direct professional supervision. The effectiveness of a care plan therefore depends substantially on whether patients and families understand and accept management recommendations[33]. The findings suggest that future training should place communication and education alongside assessment and intervention rather than treating them as secondary skills. Community nurses should be able to assess patients' existing beliefs, provide understandable explanations, address misconceptions, negotiate realistic treatment goals, promote adherence, and encourage active self-management. Communication training may be particularly suitable for experiential teaching approaches such as simulated consultations and role-play[34]. Rather than simply teaching nurses what information should be provided, educators can create scenarios involving patients who refuse analgesics, expect complete elimination of chronic pain, use medications incorrectly, or rely heavily on family caregivers. Such training would allow nurses to practice both clinical reasoning and communication within the same scenario.

Flexible and experiential educational strategies may improve the translation of knowledge into practice

The third major theme concerned the way in which pain management education should be delivered. Participants expressed a clear preference for blended, interactive, case-based, and context-sensitive educational approaches. Their preference for combining online and offline teaching reflects the realities

of community nursing workloads. Online learning provides flexibility and may be particularly appropriate for theoretical concepts, guideline updates, short educational modules, and repeated review[35]. However, participants perceived offline learning as more appropriate for complex case discussion, simulation, communication practice, and direct feedback. Consequently, a blended model appears particularly appropriate for this population[35]. More importantly, participants repeatedly emphasized the value of real cases. This finding can be interpreted using experiential learning theory. According to Kolb, effective learning occurs through a cyclical process involving concrete experience, reflective observation, abstract conceptualization, and active experimentation[36]. Community-based pain cases provide an opportunity to operationalize this cycle. Learners can first encounter or review an authentic clinical problem, reflect on their initial assessment and management, connect these experiences with evidence-based principles, and then apply new strategies to subsequent cases. Scenario-based learning may be particularly useful for addressing the theory-practice gap[37, 38]. A traditional lecture may teach that pain should be comprehensively assessed, whereas a simulated scenario can require the nurse to decide which questions to ask, identify medication risks, respond to family concerns, determine whether immediate referral is required, and develop a follow-up plan. These contextualized educational strategies may therefore be more effective in cultivating integrated competence[37, 38].

Assessment should evaluate clinical competence rather than knowledge acquisition alone

Participants' dissatisfaction with purely written examinations also deserves attention.

Pain management is a complex clinical competency combining knowledge, assessment skills, communication, decision-making, and professional judgment[39]. A written examination can measure some aspects of factual knowledge but cannot fully determine whether nurses can apply this knowledge safely and appropriately. Future training programmes should therefore consider multimethod assessment. Knowledge tests may remain useful for evaluating foundational understanding, but they could be complemented by clinical case analysis, objective structured clinical examinations, simulated consultations, direct observation, and reflective review of actual practice[39]. Assessment should also include feedback. Participants wanted to understand why particular decisions were appropriate or inappropriate rather than simply receiving scores. Formative feedback can help learners identify gaps in reasoning and develop more sophisticated approaches to future cases[40]. Longitudinal assessment is also important. Educational interventions may produce immediate improvements in knowledge without necessarily resulting in sustained practice change[7, 9]. Therefore, evaluation should ideally occur at multiple time points and include both individual learning outcomes and indicators of implementation in clinical practice.

Training quality depends on competent educators and multidisciplinary collaboration

The fourth theme emphasized educator quality and multidisciplinary participation.

Participants preferred educators who combined updated theoretical knowledge with practical experience and familiarity with community healthcare. This expectation is particularly understandable in pain management because recommendations that are feasible in specialist pain centres may not always be directly transferable to community environments[15, 16]. Educators must therefore be able to translate evidence into realistic strategies according to available personnel, medications, equipment, referral pathways, and patient circumstances. Faculty selection should consequently consider both professional expertise and educational competence. Clinical experience alone does not necessarily make an effective educator, and academic expertise alone does not ensure contextual relevance. Training institutions may therefore consider preparing a core group of pain management educators who receive standardized instruction regarding educational objectives, current evidence, case facilitation, feedback methods, and community-specific implementation. Participants also emphasized multidisciplinary learning. Pain is a biopsychosocial phenomenon and frequently requires input from nursing, medicine, pharmacy, rehabilitation, psychology, and other disciplines[2]. Multidisciplinary training may help community nurses develop a more comprehensive understanding of pain and clarify professional boundaries. This is particularly important because one component of competent community pain management is recognizing when nursing interventions are insufficient. Training should therefore include referral criteria and consultation pathways, enabling nurses to identify red flags, complex medication problems, persistent uncontrolled pain, psychological distress, or other conditions requiring additional professional input.

Organizational and resource support is essential for translating training into practice

The fifth theme highlights a critical distinction between education and implementation. Participants emphasized that even high-quality training may have limited impact when nurses lack time, resources, managerial support, or opportunities to apply what they have learned[41, 42]. This finding is consistent with broader evidence concerning evidence-based nursing practice, which has identified workload, limited time, insufficient access to evidence, and organizational barriers as obstacles to implementation[43–45]. Pain management training should therefore not be viewed solely as an individual educational intervention. Rather, it should be embedded within an organizational support system. First, community healthcare institutions should provide protected learning time. Expecting nurses to complete professional education exclusively outside working hours may reduce participation, concentration, and motivation[46]. Second, practical tools should be made easily available. Participants specifically requested concise resources such as standardized assessment instruments, decision algorithms, medication reference materials, referral criteria, patient education materials, and digital resources. These resources can function as cognitive supports, helping nurses apply knowledge at the point of care. Third, managers should support the incorporation of new practices into routine workflows. For example, if nurses are trained to use multidimensional pain assessment but documentation systems do not include corresponding fields, implementation may remain inconsistent. Institutional processes should therefore align with educational objectives.

Pain management training should develop into a continuous learning system

Participants' preference for continuing education rather than one-time training suggests that pain management competence should be regarded as an evolving professional capability. Knowledge acquired during a single course may diminish over time, particularly when specific skills are not frequently used[7]. In addition, recommendations regarding pain management continue to evolve, requiring clinicians to update their knowledge periodically[47]. A sustainable model may therefore combine initial structured training with continuing reinforcement[7]. For example, an initial programme could provide systematic foundational education followed by regular case conferences, brief online updates, specialist consultation, clinical debriefing, and periodic reassessment. Digital platforms could also facilitate access to updated resources and provide mechanisms for community nurses to submit questions arising from clinical practice[35, 47]. This continuous model may be especially valuable for community nurses, who may have fewer opportunities than hospital-based nurses to consult pain specialists directly. A network connecting community healthcare institutions with higher-level hospitals or pain specialists could therefore provide both educational and clinical support. Such a model would shift pain management education from an isolated event toward an integrated professional learning system.

Implications for nursing practice and education

The findings have several implications for community nursing education. First, educators should avoid designing pain management programmes solely on the basis of predetermined theoretical content. Needs assessment should be incorporated into programme development to ensure that education reflects nurses' actual clinical challenges. Second, pain assessment should be taught as part of a broader clinical reasoning process rather than as an isolated measurement skill. Third, training should include substantial attention to communication and self-management support because community pain outcomes depend heavily on patient and family participation[33]. Fourth, case-based and simulation-based learning should be used to strengthen transfer of knowledge into clinical decisions[37, 38]. Fifth, competency assessment should include practical and longitudinal components rather than relying exclusively on immediate post-training knowledge tests[39]. Finally, healthcare organizations should establish mechanisms that allow nurses to access resources, seek specialist consultation, and continue learning after formal training has ended[46, 47].

Strengths and limitations

This study provides an in-depth exploration of pain management training needs from the perspective of community nurses and contributes to understanding how pain education should be adapted to primary healthcare settings. Unlike studies focusing exclusively on nurses' knowledge or attitudes, the present study examined training needs across content, clinical reasoning, educational methods, faculty,

organizational support, and continuing professional development. The findings therefore provide a comprehensive foundation for the subsequent development of a community-based pain management training programme. Several limitations should nevertheless be acknowledged. First, participants were recruited from one community healthcare institution in Nanchang, which may limit the transferability of the findings to other regions and healthcare systems. Second, the findings reflect participants' perceived training needs. Self-perceived needs may differ from objectively measured deficits in pain knowledge or clinical competence. Future research should therefore triangulate qualitative findings with validated quantitative assessment tools. Third, qualitative interviewing and interpretation may have been influenced by researcher positionality despite the use of reflexive records, independent coding, and research-team discussion. Finally, this study explored perceived needs but did not evaluate a training intervention. Future research should translate the identified needs into a structured programme and assess its feasibility, acceptability, effectiveness, and sustainability.

Conclusions

This study identified multidimensional pain management training needs among community nurses. Participants expected training not only to strengthen knowledge of pain assessment and interventions but also to improve individualized clinical decision-making, communication with patients and families, multidisciplinary collaboration, and management of complex pain conditions encountered in community practice. Effective training should therefore move beyond fragmented theoretical education and adopt a systematic, practice-oriented, and competency-based approach. Blended learning, authentic case discussion, simulation, clinical-context teaching, diversified assessment, qualified educators, multidisciplinary consultation, accessible resources, institutional support, and continuing education should be integrated within the programme. The findings provide an empirical basis for developing a structured community nurse pain management training model and may contribute to strengthening the quality and continuity of pain care in primary and community healthcare settings.

Declarations

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Author contributions

X.X. Sun: Study design, data collection and analysis, manuscript writing.

X.A. Zhang: Study supervision, manuscript review and revision.

W.C. Liu, D.Y. Zhang: Administrative support, technical support.

A.D. Zhou, X.Y.Ou , Y.H. Ma: Assistance with data collection.

J.M. Wei: Study supervision, manuscript verification.

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Data availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethics approval and consent to participate

Ethical approval was obtained from the Medical Ethics Committee of The First Affiliated Hospital of Nanchang University (approval No. IIT20260877). All research methods were conducted in strict accordance with the relevant guidelines and regulations of the Declaration of Helsinki. Prior to the interviews, participants were informed of their right to anonymity, the confidentiality of their personal information, the research methods and objectives, as well as their right to withdraw from the study voluntarily. All participants signed the informed consent form. During the study, the personal identity information of participants was strictly kept confidential. For the statements cited in the results section, identifiers such as numbers that cannot directly identify individuals were used for processing. All data (including audio recordings and transcripts) were stored in encrypted and anonymized form on a password-protected institutional server, accessible only to members of the research team. The data will be retained for five years after the completion of the study and subsequently securely destroyed.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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