Assessing Palliative Care Nursing Knowledge In Macau SAR: A Cross-Sectional Study With Implications For The Greater Bay Area During The Covid-19 Pandemic

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ABSTRACT

Background: The COVID-19 pandemic exposed critical gaps in palliative care knowledge among nurses globally. In the unique context of the Guangdong-Hong Kong-Macau Greater Bay Area (GBA), where healthcare integration is a key goal, ensuring consistent palliative care standards is essential. This study aimed to assess the prevalence of palliative care knowledge deficits among clinical nurses in Macau SAR during the pandemic and to identify predictors of knowledge to inform regional policy.

Methods: A quantitative, cross-sectional study was conducted with a sample of 282 clinical nurses from the public sector in Macau SAR between June and August 2021. Data were collected using a secure online questionnaire, which included demographic variables and the validated Palliative Care Quiz for Nursing (PCQN). Data were analyzed using descriptive and inferential statistics with SPSS 26.

Results: The overall mean correct answer rate on the PCQN was 65.07%. Knowledge deficits were most significant in the domains of palliative care philosophy (45.21% correct) and psychosocial support (45.15%). In contrast, knowledge was highest in pain and symptom management (75.78%). Bivariate analysis showed that older age, senior professional rank, longer palliative care nursing experience, and prior palliative care training or clinical experience were all significantly associated with higher knowledge scores (p < .05).

Conclusion: Clinical nurses in Macau possess moderate but incomplete knowledge of palliative care, with significant gaps in the philosophical and psychosocial domains. To meet the post-pandemic challenges and the ambitions for regional integration within the GBA, it is necessary to implement standardized, mandatory palliative care education. This training must be holistic, integrating lessons from the COVID-19 pandemic to ensure nurses can provide comprehensive and compassionate end-of-life care across the region.

Keywords: palliative care; COVID-19; Greater Bay Area (GBA); nursing knowledge; PCQN; end-of-life care.

1. INTRODUCTION

Palliative care, an approach that improves the quality of life for patients and families facing life-threatening illness, is a cornerstone of compassionate healthcare. The COVID-19 pandemic starkly illuminated the global need for palliative care skills beyond specialized units. Healthcare systems worldwide were challenged with managing severe symptoms, facilitating difficult end-of-life conversations under visitor restrictions, and supporting profound grief among families and healthcare workers alike. This crisis underscored that a fundamental knowledge of palliative principles is essential for all frontline nurses.

This study is situated within the unique context of the Guangdong-Hong Kong-Macau Greater Bay Area (GBA), a strategic initiative to create an integrated economic and innovation hub. With increasing cross-border mobility for work, life, and healthcare, there is a pressing need for harmonized healthcare standards. Ensuring consistent, high-quality palliative care across the GBA is crucial for this vision. Recent analyses of palliative care development in the Asia-Pacific region emphasize that while progress has been made, significant disparities in service provision, education, and policy remain, reinforcing the need for localized data to inform regional strategies (Monzón et al., 2025).

Despite these regional and global pressures, the development of palliative care in Macau SAR remains in its early stages. While demand is rising due to an aging population and the prevalence of chronic diseases, the nursing workforce's preparedness to deliver this specialized care is largely unknown. Previous international research consistently shows that while nurses may be proficient in physical symptom control, they often lack knowledge in the philosophical and psychosocial aspects of palliative care (Alshammari et al., 2022). A 2022 systematic review confirmed that while educational interventions are effective, knowledge gaps, particularly in the psychosocial and spiritual domains, persist globally, highlighting this as a universal challenge in nursing education (Tay, Ang, & Hegney, 2022). Factors like education, experience, and training are proven to be significant predictors of competence (Wang et al., 2023).

This study, conducted during the COVID-19 pandemic, aims to fill a critical research gap by providing the first baseline assessment of palliative care knowledge among clinical nurses in Macau, offering timely insights relevant to both post-pandemic healthcare planning and regional GBA collaboration.

2. METHODS

This study used a quantitative-descriptive, cross-sectional design.

Sample and Setting
A convenience sample of 282 clinical nurses was recruited between June and August 2021 from various departments within the public sector in Macau SAR.

Procedures
To ensure safety and physical distancing during the COVID-19 pandemic, a secure online questionnaire was created using Google Forms. The survey link was distributed through nurses' social media groups. All questions were mandatory to ensure complete datasets. The study received ethical approval from the ethnical review board of Faculty of Health Sciences and Sports, Macau Polytechnic University (Approvals: ESCSD/MSN-014/2020).

Measures
The survey instrument consisted of a demographic questionnaire and the Palliative Care Quiz for Nursing (PCQN). The PCQN is a 20-item, validated tool assessing knowledge across three domains: Philosophy and Principles, Pain and Symptom Management, and Psychosocial Support (Ross et al., 1996). Scores range from 0 to 20, with higher scores indicating better knowledge.

Data Analysis
Data were analyzed using SPSS Version 26.0. Descriptive statistics, independent sample t-tests, and one-way ANOVA with Scheffé post-hoc tests were used. Statistical significance was set at $p < .05$.

3. RESULTS

The 282 participants were predominantly female (88.3%), aged 30-39 years (49.6%), and held a bachelor's degree (75.5%). Notably, 61.0% had never participated in a palliative care course, and 55.7% had no direct clinical experience in palliative care.

The overall mean PCQN score was 13.01 ± 2.57, with a correct answer rate of 65.07%. Knowledge was highest in "Pain and Symptom Management" (75.78%) and lowest in "Psychosocial Support" (45.15%) and "Philosophy and Principles" (45.21%) (see Table 1).

Table 1. Current Status of Palliative Care Knowledge Questionnaire Across Different Dimensions for Study Participants (n = 282)

Dimension	Minimum Value	Maximum Value	Mean	Standard Deviation	Correct Answer Rate (%)
Palliative Care Philosophy and Principles	0.00	4.00	1.81	1.44	45.21
Psychosocial-Spiritual Support	0.00	3.00	1.35	0.67	45.15
Pain and Symptom Management	4.00	12.00	9.85	1.58	75.78
Overall Palliative Care Knowledge	6.00	19.00	13.01	2.57	65.07

ANOVA and t-tests revealed that older age, higher professional rank, longer work experience, prior palliative care training, and clinical palliative care experience were all significantly associated with higher total PCQN scores (see Table 2).

Table 2. Bivariate Analysis of Factors Influencing Total PCQN Knowledge Scores (n=282)

Variable	Category	n	Mean (SD)	Test Statistic	p-value
Age (years)	① < 30	105	12.12 (2.21)	F=11.83	<.001
	② 30-39	140	13.41 (2.58)		
	③ ≥ 40	37	14.05 (2.77)		
Professional Rank	Nurse I	244	12.88 (2.53)	t=-2.29	.023
	Non-Nurse I	38	13.89 (2.68)		
Work Experience	① < 5 years	118	12.36 (2.17)	F=7.57	<.001
	② 6-10 years	74	12.85 (2.91)		
	③ 11-15 years	50	14.08 (2.15)		
	④ ≥ 16 years	40	13.90 (2.85)		
Course Participation	Yes (within 5 years)	57	13.86 (2.88)	F=16.84	<.001
	Yes (>6 years)	53	14.26 (2.20)		
	No	172	12.35 (2.34)		
Palliative Care Exp.	No	157	12.18 (2.25)	t=6.57	<.001
	Yes	125	14.06 (2.57)		

Note: F-statistic from ANOVA, t-statistic from Independent Samples T-Test
Nurse I (staff nurse), Non-Nurse I (senior staff nurse)

4. DISCUSSION

This study reveals that clinical nurses in Macau have a moderate but incomplete knowledge of palliative care. The knowledge deficit in the philosophical and psychosocial domains is a primary concern. Effective palliative care is not merely symptom management; it is a holistic philosophy requiring nurses to engage with patients' emotional, social, and spiritual suffering. The pandemic amplified this need, as nurses were often the sole human connection for dying patients. A lack of knowledge in this area can lead to moral distress for nurses and inadequate care for patients. This is consistent with findings from a 2023 study in China, which found that higher palliative care knowledge was associated with lower levels of burnout and higher professional quality of life among nurses (Wang et al., 2023).

The study's timing during the COVID-19 pandemic provides a unique lens. While the crisis may have heightened awareness of end-of-life issues, it also severely disrupted traditional training models. The high percentage of nurses (61%) without formal training suggests that existing educational opportunities are insufficient or inaccessible, a problem likely exacerbated by the pandemic's operational pressures. This finding aligns with broader research in the region; for instance, a 2025 study of ICU nurses in China found that prior training was a significant predictor of palliative care knowledge, attitudes, and behaviors, yet many nurses lacked access to such programs (Zhang et al., 2025). Similarly, a study in the Philippines highlighted that while healthcare providers had favorable attitudes, their practice was poor due to inadequate training (Pasaol et al., 2025).

Viewed through the lens of the Greater Bay Area, these findings have significant regional implications. Hong Kong, a neighboring GBA city, has a more developed palliative care framework. The knowledge gaps identified in Macau suggest an opportunity for cross-border collaboration. Standardized, accredited training modules could be co-developed and shared across the GBA, promoting a consistently high standard of care and facilitating professional mobility. A 2021 viewpoint paper on Hong Kong's palliative care needs stressed that despite a more developed system, it still trailed behind other comparable regions, indicating that even the more advanced areas in the GBA have room for improvement and could benefit from collaborative, region-wide initiatives (Yip et al., 2021). Furthermore, a 2023 study among Jordanian nurses found a significant positive correlation between knowledge and attitudes, suggesting that improving educational standards can directly foster a more positive approach to end-of-life care (Al-Qadire et al., 2023).

Nursing Implications or Clinical Practice
Based on the findings of this study, several key implications for nursing practice and clinical application emerge:
1. **Prioritize Holistic Palliative Care Education:** Educational programs and continuing professional development initiatives must expand beyond basic symptom management to emphasize the core philosophy and psychosocial-spiritual components of palliative care, ensuring comprehensive palliative care is integrated into undergraduate nursing curricula. This includes training in effective communication, grief and bereavement support, and cultural sensitivity in end-of-life discussions.
2. **Implement Mandatory Basic Palliative Care Training:** Given the observed knowledge gaps and the increasing demand for palliative care across all hospital units, foundational palliative care education should become mandatory for all clinical nurses, not just those in specialized roles. This ensures a baseline competence across the workforce.
3. **Integrate Lessons from the Pandemic:** Training should specifically address the unique challenges nurses faced during the COVID-19 pandemic, such as delivering care under isolation protocols, facilitating virtual family meetings, and managing complex emotional responses from patients and families in crisis. This is critical, as a 2022 study revealed that nurses experienced significant moral distress during the pandemic when their values conflicted with the care they were able to provide, an issue that targeted training can help mitigate (Sia et al., 2022).
4. **Establish Interdisciplinary Support Systems:** Hospital administrators should develop and strengthen interdisciplinary palliative care teams or consultation services that can provide ongoing support and expertise to frontline nurses in all units. This can help bridge knowledge gaps in daily practice and foster a culture of holistic care.
5. **Promote Experiential Learning in Clinical Settings:** Clinical rotations, preceptorships, and mentorship opportunities in palliative care settings should be encouraged to provide nurses with hands-on experience, which this study identified as a significant factor in higher knowledge.
6. **Advocate for Regional Standardization:** Nursing leaders and professional organizations within Macau should collaborate with counterparts across the Greater Bay Area to develop harmonized palliative care education standards and mutual recognition of training. This will promote consistency in care quality and facilitate cross-border professional development.

7. **Leverage Technology for Education:** Given the effectiveness of online data collection during the pandemic, online or blended learning models for palliative care education could be further developed to enhance accessibility and flexibility for nurses with demanding schedules.

5. CONCLUSIONS

To meet the challenges of a post-pandemic world and the ambitions of the GBA, Macau must invest in its nursing workforce. This study provides a clear mandate for action. First, palliative care training must now explicitly integrate lessons from the COVID-19 pandemic, including modules on crisis communication, managing grief in isolation, and supporting families remotely. Second, Macau's healthcare and academic institutions should collaborate to create accessible, standardized palliative care courses for all nurses. Finally, policymakers should foster a GBA Palliative Care Education Network to share best practices and co-develop curricula, benefiting all residents of the region. Ultimately, as a 2023 Ethiopian study concluded, continuous professional development and integrating palliative care into the curriculum are essential strategies to equip nurses with the necessary competence to meet the growing demand for these services (Gile, Woreta, & Belay, 2023).

6. ACKNOWLEDGEMENTS

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