ORIGINAL RESEARCH

Geriatric nursing competence and training needs among dermatology nurses: A cross-sectional study

Jinlian Feng[1], Yuling Zhong[2], Xueyu He[3], Han Liu[1], Xujie Zhang[3], Xiujuan Zhuo[3], Mu Diao Chen*[2]

[1] *Department of Physiotherapy, Dermatology Hospital, Southern Medical University, Guangzhou, China*
[2] *Nursing Department, Dermatology Hospital, Southern Medical University, Guangzhou, China*
[3] *Dermatology Department, Dermatology Hospital, Southern Medical University, Guangzhou, China*

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ABSTRACT

Objective: To investigate the current status of geriatric nursing competence among dermatology nurses and analyze its potential related factors.

Methods: A cross-sectional quantitative study was conducted with 550 dermatology nurses from 20 medical institutions in China. Data were collected using a questionnaire containing sociodemographic variables and the Geriatric Nursing Competency Assessment Scale for Clinical Nurses, which includes primary, secondary, and tertiary dimensions. Multivariate linear regression was used for analysis.

Results: The overall mean score for geriatric nursing competence among dermatology nurses was 2.36 ± 0.90. Among the three primary dimensions, "professional competence" received the highest score (2.46 ± 0.89). Of the ten secondary dimensions, "critical thinking" achieved the highest score (2.48 ± 0.96), while "research and innovation" received the lowest score (2.15 ± 1.05). Experience in caring for elderly patients, the duration of geriatric nursing training, and the presence of patients aged ≥ 60 years were the main factors related to geriatric nursing competence. The level of the healthcare institution, educational background, work experience, and the degree of specialization in geriatric nursing training were statistically significant factors influencing dermatology nurses' competence.

Conclusions: The geriatric nursing competence of dermatology nurses is moderate. There is an urgent need to strengthen research development and promote professional growth.

Key Words: Cross-sectional study, Dermatology nurses, Geriatric nursing competence, Nursing training

1. INTRODUCTION

The global trend of population aging is accelerating, and with it, the healthcare needs of the elderly continue to rise, positioning geriatric care as one of the most pressing challenges faced by healthcare systems worldwide. By the end of 2023, China's population aged 60 and above had reached 297 million, representing 21.1% of the total population. Among them, 154 million were aged 65 and above, accounting for 15.4% of the total.[1] Additionally, the 2022 China Health and Nutrition Statistics Yearbook[2] indicates that 42% of hospitalized patients in 2021 were aged 60 or older. As the elderly population grows, the management of their healthcare has emerged as an urgent and critical issue, demanding immediate attention from healthcare systems.

Among the most prevalent health conditions in the elderly are skin diseases, which are particularly pronounced in those with chronic conditions. Elderly patients with dermatological issues often suffer from multiple chronic comorbidities, such

*Correspondence: Mu Diao Chen; Email: 781485867@qq.com; Address: Nursing Department, Dermatology Hospital, Southern Medical University, Guangzhou, China.

as diabetes, hypertension, and cardiovascular diseases.[3–5] These comorbidities complicate the diagnosis and treatment of dermatological conditions. The management of geriatric dermatological diseases differs significantly from that of adult or pediatric patients, primarily due to factors such as impaired skin barrier function, dryness, increased susceptibility to injury, and delayed wound healing. These age-related challenges present additional difficulties for dermatology nurses when caring for elderly patients. As such, dermatology nurses must not only possess a solid foundation in dermatological knowledge but also acquire specialized skills tailored to the needs of elderly patients. These include performing comprehensive skin assessments, managing chronic dermatological conditions, and implementing appropriate nursing interventions.

Nursing competence is integral to delivering high-quality clinical care, ensuring patient safety, and achieving optimal health outcomes, particularly in geriatric care. Nurses' professional abilities are directly tied to the health management and quality of life of elderly patients.[6–8] In alignment with the national strategy to "actively address population aging", the National Health Commission and other relevant authorities have issued a series of policy documents in recent years, requiring healthcare institutions to enhance geriatric nursing training to improve nurses' competence in this critical area.[9] For example, the "Geriatric Nursing Specialist Training Outline (Trial)" and the "Geriatric Nursing Practice Guidelines (Trial)", released in 2019, explicitly mandate that healthcare institutions implement specialized geriatric nursing training.[10] While these policies provide a framework for enhancing geriatric nursing competencies, it remains unclear whether healthcare institutions are fully executing these measures or whether nurses' abilities in geriatric care have been sufficiently improved. Therefore, further research is essential to evaluate the actual impact of these initiatives.

Dermatology nurses, in particular, require specialized skills to assess and manage dermatological issues in elderly patients, especially common geriatric skin conditions such as pressure ulcers, diabetic dermopathy, and xerosis. Existing research has primarily focused on the geriatric nursing competencies of general clinical nurses, geriatric specialty nurses, and nurses working in geriatric departments or community service centers.[11–14] However, there is currently no research specifically targeting dermatology nurses. Therefore, this study aims to fill this gap by investigating the current status of geriatric nursing competence among dermatology nurses and analyzing its potential related factors. The results will provide a theoretical foundation for the development of demand-driven geriatric nursing training strategies, ultimately enhancing the overall competence of dermatology nurses in geriatric care.

2. METHODS

2.1 Study design and participants

A quantitative cross-sectional study used convenience sampling. A total of 550 dermatology nurses from 20 medical institutions in China participated in the study. Five to ten participants were considered for each of the 43 items of the Geriatric Nursing Training Needs for Dermatology Nurses questionnaire.[15] Therefore, the sample size was estimated at 430 participants. The sample size in this study met this threshold. The inclusion criteria were: (1) working in clinical dermatology nursing; (2) having at least one year of experience in dermatology nursing; (3) being a registered nurse. The exclusion criteria included: (1) nurses on leave, participating in training programs or in residency; (2) nurses who were unable to complete the questionnaire within the specified time frame.

2.2 Data collection instruments

2.2.1 *Sociodemographic questionnaire*

A sociodemographic questionnaire was developed by the research team based on the study objectives. The questionnaire includes demographic variables (age and sex) and variables related to the nurses' professional activities, such as hospital location, healthcare institution level, department type, educational qualifications, years of nursing experience, position, professional title, proportion of elderly patients in the department, experience in geriatric patient care, and self-assessed knowledge in geriatric nursing. These professional activity-related variables were used to capture participants' characteristics and provide contextual data for analyzing factors potentially related to geriatric nursing competence.

2.2.2 *Geriatric nursing training needs questionnaire for dermatology nurses*

To assess the geriatric nursing training needs of dermatology nurses, the researchers developed the Geriatric Nursing Training Needs Questionnaire, which was informed by an extensive literature review[16–18] and expert insights. The questionnaire includes questions about nurses' participation in clinical geriatric nursing training, the types of training they have received, its systematic nature, as well as the training's duration, format, and their expectations for future content. This tool offers a comprehensive framework for evaluating the training needs of dermatology nurses, identifying gaps in their geriatric nursing education, and pinpointing areas for improvement.

2.2.3 *Geriatric nursing competence of clinical nurses*

In this study, the Geriatric Nursing Competency Assessment Scale for Clinical Nurses, developed by Wei et al.,[19] was

used to assess the geriatric nursing competence of dermatology nurses. The scale consists of 43 items and includes three primary dimensions: professional competence, professional practice, and professional development, along with ten secondary dimensions: legal and ethical knowledge, critical thinking, professional knowledge, clinical practice, safety management, communication and consultation, quality management, leadership and education, professional learning, and research innovation. A 5-point Likert-type scale was used for evaluation, with scores ranging from 0 to 4, resulting in a total score range of 0 to 172. Based on the scores for each dimension and the overall mean score, geriatric nursing competence was classified into three levels: low (score < 2), moderate (score 2–3), and high (score > 3).[19,20] In this study, the overall Cronbach's α coefficient for the scale was 0.993, with individual Cronbach's α values for the primary dimensions of "professional competence", "professional practice", and "professional development" ranging from 0.985 to 0.992, indicating strong reliability and validity.

2.3 Data collection

Data were collected using an electronic survey platform (Wenjuanxing). After obtaining approval from the nursing departments of the participating healthcare institutions, the research team distributed the survey link along with the study's objectives, content, and essential instructions to dermatology nurses through platforms such as WeChat groups. The survey required mandatory responses, and the system automatically prompted respondents to complete any missing items. Each IP address was permitted to submit only one response, ensuring the integrity and validity of the data. The data collection period ran from December 20, 2023, to February 10, 2024. Upon completion of data collection, two trained researchers independently reviewed the responses, excluding those with unusually short completion times (less than 120 seconds), inconsistent answers, or extreme data fluctuations. A total of 579 questionnaires were collected, of which 550 were valid, resulting in an effective response rate of 95%.

2.4 Statistical analysis

Data were processed using Excel to create a database, and statistical analysis was performed using SPSS 27.0. Frequencies and percentages were employed to describe the sociodemographic characteristics of the participants. The mean ± standard deviation ($\bar{X}\pm$ s) was used to report the geriatric nursing competence scores of dermatology nurses. The independent *t*-test was used for comparing two groups with homogeneous variances, while one-way analysis of variance (ANOVA) was applied for comparing multiple groups with homogeneous variances. For data that did not meet the assumption of homogeneity of variance, the Mann-Whitney U test was used for pairwise comparisons, and the Kruskal-Wallis H test was applied for comparisons among multiple groups. Based on the factors identified as statistically significant in the univariate analysis, a multivariate stepwise linear regression was conducted with the overall mean score of geriatric nursing competence as the dependent variable to explore its relationship with various independent variables. The significance level was set at $p < .05$.

3. RESULTS

3.1 Demographic and professional characteristics of the participants

This study recruited 550 dermatology nurses from 20 medical institutions located in 15 provinces and municipalities across Eastern, Southern, Central, Northern, Northwestern, Northeastern, and Southwestern China. The majority of participants were young to middle-aged nurses aged 21 to 50 years, comprising 93.5% of the total sample. Regarding professional titles, 89.3% held junior or intermediate-level positions, reflecting relatively basic professional qualifications. Additionally, 89.1% of participants were frontline clinical nurses without administrative responsibilities. These characteristics align with the typical demographic profile of clinical nursing staff, supporting the representativeness of the study sample.

3.2 Levels of geriatric nursing competence among dermatology nurses

The overall mean score for geriatric nursing competency of the 550 dermatology nurses was 101.31 ± 38.71, with a mean score of 2.36 ± 0.90, indicating a moderate level of competency. Further analysis of nursing competency scores at different hospital levels showed that dermatology nurses in community service centers had the lowest mean score (2.13 ± 0.92), followed by secondary (2.26 ± 0.96) and tertiary (2.41 ± 0.87) hospitals. Of the 550 participants, 32.0% (176 nurses) were classified as having low competency, 42.2% (232 nurses) as having moderate competency, and 25.8% (142 nurses) as having high competency.

Regarding the items at the first level, "professional competence" received the highest score (2.46 ± 0.89), followed by "professional practice" (2.37 ± 0.92), while "professional development" obtained the lowest score (2.25 ± 0.96). Regarding the second level, "critical thinking" (2.48 ± 0.96), "legal and ethical knowledge" (2.48 ± 0.89) and "safety management" (2.41 ± 0.94) obtained the highest scores, while "professional learning" (2.27 ± 0.99), "leadership and education" (2.26 ± 0.97) and "research and innovation" (2.15 ± 1.05) obtained the lowest scores. Regarding the third level, the top three were "I respect the cultural, religious beliefs,

values, and lifestyle of elderly patients" (2.88 ± 1.04), "I respect the rights of elderly patients and their families to make self-determined choices and decisions" (2.88 ± 1.04), and "I maintain the privacy of elderly patients in clinical practice" (2.87 ± 1.06). The bottom three were "I am familiar with the laws and regulations related to elderly care and implement nursing practices accordingly" (1.98 ± 1.13), "I actively engage in the development of new nursing technologies and products for the elderly" (2.04 ± 1.14), and "I am able to identify existing or potential abuses against elderly patients" (2.12 ± 1.09). Detailed results are presented in Table 1 and Appendix A.

3.3 Univariate analysis of factors associated with geriatric nursing competence

The study found that 59.8% of dermatology nurses had participated in geriatric nursing training, with 25.8% having received specialized training in geriatric nursing. Further details are provided in Table 2. Univariate analysis revealed significant differences in geriatric nursing competence based on factors such as institution type, hospital classification, department type, professional title, job position, education level, experience in geriatric care, the proportion of elderly patients in the department, participation in geriatric nursing training, training duration, and the format of clinical geriatric training ($p < .05$). However, no significant differences were found based on age, gender, years of nursing experience, or the type of geriatric nursing training received ($p > .05$). Detailed statistical results can be found in Table 2.

3.4 Multivariate linear regression analysis of factors associated with geriatric nursing competence among dermatology nurses

A multivariate stepwise regression analysis was conducted, with the overall mean score of geriatric nursing competence as the dependent variable. Independent variables included those identified as statistically significant in the univariate analysis. The results indicated that education level (highest degree attained), experience in geriatric care, duration of specialized training, and the proportion of patients aged 60 years and older in the department were independent predictors of geriatric nursing competence. Detailed results are presented in Table 3.

Table 1. Mean (± SD) scores of geriatric nursing competence among dermatology nurses

Dimension	Score range	Total score	Average score per item	Ranking
First-level items				
Professional Competence	0~44	27.01 ± 9.75	2.46 ± 0.89	1
Professional Practice	0~76	45.07 ± 17.55	2.37 ± 0.92	2
Professional Development	0~52	29.23 ± 12.46	2.25 ± 0.96	3
Second-level items				
Critical Thinking	0~12	7.44 ± 2.87	2.48 ± 0.96	1
Legal and Ethical Knowledge	0~24	14.86 ± 5.37	2.48 ± 0.89	2
Safety Management	0~12	7.22 ± 2.83	2.41 ± 0.94	3
Communication and Consultation	0~20	12 ± 4.74	2.40 ± 0.95	4
Professional Knowledge	0~8	4.71 ± 1.94	2.36 ± 0.97	5
Clinical Practice	0~44	25.85 ± 10.31	2.35 ± 0.94	6
Quality Management	0~8	4.66 ± 1.99	2.33 ± 1.00	7
Professional Learning	0~8	4.54 ± 1.97	2.27 ± 0.99	8
Leadership and Education	0~24	13.58 ± 5.84	2.26 ± 0.97	9
Research Innovation	0~12	6.45 ± 3.14	2.15 ± 1.05	10
Total Score	0~172	101.31 ± 38.71	2.36 ± 0.90	

3.5 Training needs for geriatric nursing among dermatology nurses

This study identified the following prioritized training needs among dermatology nurses: geriatric health assessment, safety and protection for older adults, nutrition and dietary care, geriatric psychology, rehabilitation training and guidance, emergency care techniques, traditional Chinese medicine nursing, communication with older adults, health education, and pain management and end-of-life care (see Table 4). These findings indicate that the greatest training need was in geriatric health assessment, followed by safety management and nutritional support. Furthermore, the study found that a blended training format—combining both online and offline modalities—was significantly more effective in enhancing nurses' geriatric nursing competence. Compared to single-mode training, the integrated approach was more beneficial in improving both theoretical knowledge and practical skills in geriatric care.

Table 2. Univariate analysis of sociodemographic factors associated with geriatric nursing competence among dermatology nurses

Variables	Total (n = 550)	Low Level (n = 176)	Moderate Level (n = 232)	High Level (n = 142)	Overall Mean Score	Z/F/χ^2	*p*
Gender							
Male	51 (9.7)	10 (5.7)	22 (9.5)	19 (13.4)	2.6 ± 0.92	-2.045*	.041
Female	499 (90.3)	166 (94.3)	210 (90.5)	123 (86.6)	2.33 ± 0.9		
Age (years)							
21-30	126 (22.9)	33 (18.8)	51 (22.0)	42 (29.6)	2.49 ± 0.9		
31-40	282 (51.3)	94 (53.4)	115 (49.6)	73 (51.4)	2.34 ± 0.93	1.483†	.218
41-50	106 (19.3)	36 (20.5)	47 (20.3)	23 (16.2)	2.24 ± 0.84		
≥51	36 (6.5)	13 (7.4)	19 (8.2)	4 (2.8)	2.32 ± 0.81		
Total length of career (years)							
1-5	98 (17.8)	25 (14.2)	41 (17.7)	32 (22.5)	2.52 ± 0.83		
6-10	145 (26.4)	53 (30.1)	51 (22.0)	41 (28.9)	2.29 ± 1.03	2.128†	.096
11-15	149 (27.1)	47 (26.7)	62 (26.7)	40 (28.2)	2.42 ± 0.89		
≥16	158 (28.7)	51 (29)	78 (33.6)	29 (20.4)	2.26 ± 0.81		
Professional title							
Nurse	95 (17.3)	28 (15.9)	31 (13.4)	36 (25.4)	2.5 ± 0.97		
Nurse Practitioner	176 (32.0)	67 (38.1)	72 (31.0)	37 (26.1)	2.23 ± 0.93		
Head Nurse	221 (40.2)	63 (35.8)	109 (47.0)	49 (34.5)	2.36 ± 0.83	3.215†	.013
Deputy Head Nurse	40 (7.3)	13 (7.4)	17 (7.3)	10 (7.0)	2.31 ± 0.8		
Head Nurse	18 (3.3)	5 (2.8)	3 (1.3)	10 (7.0)	2.89 ± 1.03		
Position							
General Nurse	430 (78.2)	145 (82.4)	189 (81.5)	96 (67.6)	2.29 ± 0.89		
Nursing Team Leader	60 (10.9)	12 (6.8)	24 (10.3)	24 (16.9)	2.63 ± 0.91	5.256†	.005
Head Nurse and Above	60 (10.9)	19 (10.8)	19 (8.2)	22 (15.5)	2.54 ± 0.89		
Educational level							
Vocational High School	13 (2.4)	10 (5.7)	1 (0.4)	2 (1.4)	1.79 ± 0.9		
Associate Degree	79 (14.4)	23 (13.1)	35 (15.1)	21 (14.8)	2.4 ± 0.89	4.934†	.002
Bachelor's Degree	433 (78.7)	139 (79)	190 (81.9)	104 (73.2)	2.33 ± 0.88		
Master's degree or above	25 (4.5)	4 (2.3)	6 (2.6)	15 (10.6)	2.89 ± 0.97		
The category of the affiliated institution							
General hospital	279 (50.7)	75 (42.6)	105 (45.3)	99 (69.7)	2.50 ± 0.91	-4.009*	< .001
Specialized hospital	271 (49.3)	101 (57.4)	127 (54.7)	43 (30.2)	2.20 ± 0.86		
Level of healthcare institution							
Community Service Center	43 (7.8)	18 (10.2)	19 (8.2)	7 (4.9)	2.13 ± 0.92		
Secondary Grade A Hospital	128 (23.3)	49 (27.9)	57 (24.6)	23 (16.2)	2.26 ± 0.96	3.815†	.005
Tertiary Grade A Hospital	379 (68.9)	109 (61.9)	156 (67.3)	112 (78.9)	2.41 ± 0.87		
Department of Affiliation							
Department of Dermatology	320 (58.2)	90 (51.1)	138 (59.5)	92 (64.8)	2.47 ± 0.89		
Dermatology Outpatient Clinic	196 (35.6)	72 (40.9)	81 (34.9)	43 (30.3)	2.22 ± 0.87	4.729†	.003
Dermatology Surgery Room	18 (3.3)	6 (3.4)	7 (3.0)	5 (3.5)	2.29 ± 0.94		
Others	16 (2.9)	8 (4.5)	6 (2.6)	2 (1.4)	1.88 ± 1.14		
Self-assessment of your proficiency in geriatric nursing knowledge							
Very Unskilled	114 (20.7)	2 (1.1)	1 (0.4)	1 (0.7)	1.99 ± 0.85		
Unskilled	253 (46.0)	23 (13.1)	11 (4.7)	3 (2.1)	1.64 ± 0.75		
Neutral	142 (25.8)	36 (20.5)	75 (32.3)	31 (21.8)	2.43 ± 0.8	67.261‡	< .001
Skilled	37 (6.7)	104 (59.1)	110 (47.4)	39 (27.5)	2.12 ± 0.78		
Very Skilled	4 (0.7)	11 (6.3)	35 (15.1)	68 (47.9)	3.05 ± 0.89		
Self-assessment of your experience in caring for elderly individuals							
Very Unskilled	127 (23.1)	4 (2.3)	1 (0.4)	2 (1.4)	1.27 ± 0.54		
Unskilled	245 (44.5)	26 (14.8)	11 (4.7)	27 (19.0)	1.6 ± 0.7		
Neutral	134 (24.4)	32 (18.2)	75 (32.3)	40 (28.2)	2.41 ± 0.78	70.533‡	< .001
Skilled	39 (7.1)	100 (56.8)	105 (45.3)	73 (51.5)	2.14 ± 0.76		
Very Skilled	5 (0.9)	14 (8)	40 (17.2)	2 (1.4)	2.99 ± 0.94		
What percentage of patients aged 60 and above were present in your department over the past 12 months?							
All	31 (5.6)	5 (2.8)	8 (3.4)	18 (12.7)	2.9 ± 1.17		
More than half	231 (42.0)	55 (31.3)	99 (42.7)	77 (54.2)	2.56 ± 0.88		
Half	169 (30.7)	57 (32.4)	82 (35.3)	30 (21.1)	2.2 ± 0.81	11.781†	< .001
Less than half	115 (20.9)	58 (33)	40 (17.2)	17 (12.0)	2.04 ± 0.83		
Almost none	4 (0.7)	1 (0.6)	3 (1.3)	0	2.03 ± 0.71		
Have you participated in clinical geriatric nursing training?							
Yes	329 (59.8)	103 (58.5)	93 (40.1)	117 (82.4)	2.58 ± 0.91	-7.171*	< .001
no	221 (40.2)	73 (41.5)	139 (59.9)	25 (17.6)	2.02 ± 0.77		
The duration of the specialized training you have attended							
1 to 3 days	124 (37.8)	41 (23.3)	51 (22.0)	32 (22.5)	2.39 ± 0.94		
4 to 7 days	79 (24.1)	14 (8)	32 (13.8)	33 (23.2)	2.65 ± 0.95		
2 to 4 weeks	75 (22.9)	12 (6.8)	38 (16.4)	25 (17.6)	2.54 ± 0.73	4.537†	< .001
3 months	48 (14.6)	5 (2.8)	17 (7.3)	26 (18.3)	3.02 ± 0.91		
More than 3 months	2 (0.30)	0	1 (0.6)	1 (0.7)	2.55 ± 0.92		
What type of training have you participated in?							
Single-topic lecture	198 (60.2)	51 (29)	85 (36.6)	62 (43.7)	2.51 ± 0.91		
Systematic training	128 (38.9)	22 (12.5)	53 (22.8)	53 (37.3)	2.68 ± 0.91	2.074†	.127
Others	3 (0.6)	0	1 (0.4)	2 (1.4)	3.19 ± 0.66		
The systematic training you participated in was:							
Geriatric specialty nurse training	33 (25.8)	6 (3.4)	14 (6)	13 (9.2)	2.61 ± 0.92		
Specialized geriatric nursing training organized by the hospital	71 (55.5)	11 (6.3)	30 (12.9)	30 (21.1)	2.69 ± 0.91	0.46†	.711
Geriatric nursing workshops organized by professional societies	21 (16.4)	5 (2.8)	8 (3.4)	8 (5.6)	2.64 ± 0.97		
Others	3 (2.3)	0	1 (0.4)	2 (1.4)	3.25 ± 0.55		
The format of clinical geriatric nursing training received							
In-person training	98 (29.8)	26 (14.8)	40 (17.2)	32 (22.5)	2.52 ± 0.97		
Online courses	62 (18.8)	21 (11.9)	30 (12.9)	11 (7.7)	2.17 ± 0.8	10.39†	< .001
Blended learning	169 (51.4)	26 (14.8)	69 (29.7)	74 (52.1)	2.76 ± 0.86		

Notes. * indicates the Z value from the Mann–Whitney U test; † indicates the F value from one-way ANOVA; ‡ indicates the χ^2 value from the Kruskal-Wallis H test.

Table 3. Stepwise multivariate regression analysis of factors associated with geriatric nursing competence

Variables	B	SE	β	*t*	*p*	VIP
Highest level of education	0.172	0.080	0.112	2.161	.031	1.004
Self-assessment of your experience in elderly care	0.299	0.058	0.285	5.164	< .001	1.138
The duration of the specialized training you have participated in.	0.109	0.044	0.130	2.490	.013	1.026
What proportion of patients aged 60 and above were there in your department in the past 12 months?	0.123	0.057	0.120	2.167	.031	1.146

Notes. $R^2 = 0.163$; F = 15.290. SE = standard error; VIF = variance inflation factor.

Table 4. Identified training needs in geriatric nursing among dermatology nurses

Content*	Number of participants
Geriatric patient health assessment	455 (82.7)
Geriatric patient safety and protection	439 (78.9)
Nutrition and diet for geriatric patients	411 (74.7)
Geriatric psychology	383 (69.6)
Rehabilitation training and guidance	387 (70.4)
Geriatric emergency nursing techniques	354 (64.4)
Geriatric Traditional Chinese Medicine nursing	332 (60.4)
Geriatric Interpersonal Communication	321 (58.4)
Geriatric Health Education	397 (54.0)
Pain Management and Palliative Care	312 (56.7)

Notes. * indicates a ranking question item.

4. Discussion

4.1 Moderate geriatric nursing competence among dermatology nurses and variability across competency dimensions

This study found that dermatology nurses exhibited a moderate level of geriatric nursing competence, with an overall mean score of 2.36 ± 0.90. This aligns with previous findings from tertiary hospitals in China, where similar scores have been reported (e.g., 2.30 ± 0.71).[19] Although the general competence level is acceptable, only 25.8% of nurses were categorized as having high competence, highlighting a significant gap in geriatric care preparedness within dermatology settings.

Notably, the analysis revealed considerable variability across different competency dimensions. "Professional Development" emerged as the weakest area, particularly in research innovation and clinical judgment. These findings suggest that, while dermatology nurses possess a solid foundation in basic skills, they exhibit a notable deficiency in higher-order competencies—such as evidence-based practice, critical thinking, and innovation—which are crucial for addressing the complex needs of an aging patient population. Addressing these gaps through targeted, multidimensional training programs could significantly improve the quality and adaptability of geriatric care in dermatology nursing practice.

The analysis also highlighted that nurses scored relatively low in areas related to their knowledge of geriatric care laws and regulations, as well as their ability to identify elder abuse. These gaps underscore critical deficiencies in nurses' understanding of legal and ethical responsibilities, which could compromise both patient safety and professional accountability. This is especially concerning given the growing complexity of geriatric care and the vulnerability of older adults.

Previous studies have similarly indicated that legal and ethical competencies in nursing remain underdeveloped, particularly regarding the recognition and management of elder abuse.[21–23] Evidence suggests that nurses often lack the skills to detect abuse—especially in high-stress environments or in the absence of formal training—leading to missed opportunities for timely intervention.[24, 25]

To address this gap, there is a pressing need to integrate targeted legal and ethical training into geriatric nursing curricula and continuing education programs. Innovative approaches—such as case-based simulations, interdisciplinary ethics workshops, and scenario-driven e-learning modules—can enhance nurses' ability to recognize signs of elder abuse, apply relevant legislation, and uphold ethical standards in clinical settings.[26, 27] Strengthening these competencies will help better safeguard older patients and promote a culture of accountability and professional integrity in geriatric care.

This study also identified a significant deficiency in research innovation among dermatology nurses, reflected by a low mean score of 2.15 ± 1.05, suggesting limited research capacity within this group.[28, 29] In modern nursing, research innovation is an essential competency—it underpins evidence-based practice, drives the development of new interventions and care models, and enables nurses to address complex clinical challenges through systematic inquiry.

Despite possessing extensive clinical experience, many dermatology nurses show limited ability to apply structured

research methodologies or engage in critical and innovative thinking.[30] This gap is likely due to insufficient exposure to formal research training, limited interdisciplinary collaboration, and a lack of institutional infrastructure to support nursing-led research initiatives.

To bridge this gap, nursing education and continuing professional development must prioritize research literacy and innovation as core competencies. Effective strategies may include structured mentorship programs, the integration of clinical inquiry projects into routine practice, and collaborations with academic institutions to facilitate collaborative research. These initiatives will not only foster a research-oriented culture among nurses but also enhance the discipline's capacity for innovation in geriatric care.

Specifically, to enhance research innovation among dermatology nurses, a skills-based, progressive approach is needed. Hospitals and healthcare institutions should implement foundational research training modules that focus on essential competencies such as literature appraisal, data analysis, and study design. At the same time, nurses should actively engage in clinical research projects to gain hands-on experience and develop translational problem-solving skills. Such initiatives, supported over time, will help build a sustainable pipeline of nurse researchers who are equipped to drive continuous advancement in geriatric nursing through innovation.

4.2 Multidimensional factors associated with geriatric nursing competence among dermatology nurses

This study conducted a multivariate analysis to explore the factors associated with geriatric nursing competence among dermatology nurses. The findings indicated that hospital tier, educational attainment, duration of geriatric nursing training, and prior experience in elderly care were significant correlates of competence. Notably, nurses working in tertiary hospitals demonstrated significantly higher levels of geriatric nursing competence compared to those in secondary hospitals or community health service centers.

This disparity may be linked to the superior training infrastructure, broader clinical exposure, and more complex patient care demands typically found in tertiary care settings.[31] These institutions are more likely to attract highly educated, experienced nursing staff and offer greater access to professional development resources, including specialized geriatric continuing education programs. Collectively, these factors may create a more conducive environment for the development of advanced geriatric nursing skills.

To reduce disparities in competence across different care settings, future workforce development strategies should prioritize equitable access to geriatric nursing education and training, particularly in lower-tier and community-based institutions. Initiatives such as cross-institutional training platforms, enhanced clinical rotation systems, and tele-education technologies may help bridge the resource and capability gap, fostering more uniform competence across the dermatology nursing workforce.

Regarding geriatric nursing training, this study found that training duration plays a critical role in improving nurses' geriatric care competence. Although most dermatology nurses had received some form of training, it was primarily brief, informal, and delivered through on-the-job sessions rather than structured, specialized curricula. This suggests that the current training approach may not adequately meet the clinical demands of geriatric care in dermatology settings.

Emerging evidence emphasizes that extended, in-depth training programs are essential for equipping nurses with the knowledge and skills necessary to manage complex geriatric conditions effectively.[11,32] Short-term or fragmented training may result in superficial understanding, limiting nurses' ability to apply comprehensive, patient-centered care principles.

To address this gap, healthcare institutions should invest in longitudinal, competency-based geriatric nursing training programs that integrate theoretical instruction with hands-on clinical experience. These programs should focus on key topics such as multimorbidity management, functional assessment, polypharmacy, and communication strategies for cognitively impaired older adults. Establishing tiered training pathways—from foundational to advanced levels—can support professional growth and ensure progressive skill acquisition tailored to clinical realities.

This study also found that senior nurses, such as those holding the title of chief nurse, demonstrated significantly higher levels of geriatric nursing competence. This may be due to their extensive clinical experience, advanced educational backgrounds, and greater involvement in scholarly activities and evidence-based practice. These factors collectively contribute to a deeper understanding of the complex needs of older adults and support the development of advanced competencies in geriatric care.

This finding is consistent with previous research indicating that nurses in higher-ranking roles often exhibit superior clinical judgment, leadership, and research proficiency, all of which are essential for delivering high-quality, patient-centered care to older populations.[32] Professional titles often reflect a nurse's engagement in lifelong learning and specialization, both of which are key drivers of competence in geriatric nursing.

To cultivate a highly skilled geriatric nursing workforce, healthcare systems should implement structured career advancement frameworks that integrate tiered educational pathways, leadership development, and specialized geriatric training. Providing incentives for certification,interdisciplinary collaboration, and embedding geriatric competencies into professional promotion criteria will encourage nurses to pursue higher-level roles, while simultaneously elevating care standards for older adults.

4.3 Training needs of dermatology nurses in geriatric nursing

The analysis of dermatology nurses' training needs revealed a high demand for enhanced education in core areas of geriatric care, including comprehensive health assessment, patient safety, nutrition and dietary management, geriatric psychology, and rehabilitation training and guidance. Among these, geriatric health assessment emerged as the most pressing need. Although many nurses reported prior exposure to this topic, they expressed a clear desire for more in-depth, systematic instruction.

This finding aligns with existing evidence that emphasizes the essential role of ongoing, comprehensive health assessments in geriatric nursing practice.[11,33,34] Such assessments are crucial for the early identification of functional decline, nutritional deficiencies, psychological distress, and multimorbidity in older adults, which are fundamental for developing individualized, person-centered care plans.

To meet this demand, training programs should shift from brief, general sessions to longitudinal, skill-based modules that incorporate case-based learning and simulation. Additionally, integrating interprofessional collaboration and digital health tools into training can further enhance nurses' ability to conduct holistic assessments and respond proactively to the evolving needs of geriatric patients.

Geriatric health assessment emerged as the most urgent training priority among dermatology nurses. This suggests that, despite having received basic instruction, many nurses feel underprepared to manage the complex and multifaceted health needs of older adults. This finding highlights a critical gap in current training programs, which often lack the depth and specificity needed to address the clinical realities of aging populations—particularly those with multimorbidity, functional decline, and atypical symptom presentations.

The inadequacy of existing training is especially concerning in the context of geriatric dermatology, where nurses must navigate the unique challenges associated with chronic skin conditions, delayed wound healing, polypharmacy-related skin reactions, and age-associated changes in skin integrity.[35] To address these issues, hospitals should develop and implement specialized, competency-based training modules tailored specifically to the dermatologic care of older adults.

Such programs should incorporate case-based simulations, interdisciplinary collaboration, and evidence-based clinical scenarios to enhance nurses' diagnostic acumen and care-planning skills. Emphasizing assessment frameworks that account for geriatric syndromes, skin frailty, and the psychosocial dimensions of aging can further empower nurses to deliver more holistic, proactive, and patient-centered care in dermatologic settings.

5. Conclusion

The results suggest that although dermatology nurses demonstrated moderate levels of competence in geriatric nursing, significant gaps persist in key areas such as research innovation, legal knowledge, and ethical decision-making. Key factors related to nursing competence include the level of the healthcare institution, academic background, professional experience, and degree of specialization in geriatric nursing training. To improve nursing practice, healthcare institutions should expand and strengthen geriatric nursing education by offering comprehensive and expanded training programs that integrate theoretical and practical components. In addition, a concerted effort should be made to enhance nurses' research capabilities and advanced leadership skills to ensure that they are adequately equipped to meet the challenges posed by the aging population. Addressing these gaps in education will not only improve the quality of geriatric care but also promote better treatment outcomes for older patients in dermatology and other specialized healthcare settings.

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Authors Contributions

Jinlian Feng were responsible for the conceptualization, methodology, validation, formal analysis, investigation, data curation, writing of the original draft, and writing–review & editing. Yuling Zhong, Xueyu He, Han Liu, and Xujie Zhang contributed to the conceptualization, methodology, validation, formal analysis, investigation, resources, and writing–review & editing. Xiujuan Zhuo contributed to the conceptualization, methodology, validation, formal analysis, investigation, and writing — review & editing. Prof. Mu

Diao Chen provided supervision, contributed to the conceptualization, methodology, validation, formal analysis, investigation, resources, data curation, writing–review & editing, and project administration.

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