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ORIGINAL RESEARCH

Investigation of Knowledge, Attitudes and Practices Related to Incontinence-Associated Dermatitis Among Nursing Home Nurses in Shanghai

Xiaoyan Yang[1,2], Yaping Yang[2], Jing Wang[2]

[1]School of Medicine, Tongji University, Shanghai, 200092, People's Republic of China; [2]Yangpu Hospital, School of Medicine, Tongji University, Shanghai, 200090, People's Republic of China

Correspondence: Jing Wang, Yangpu Hospital, School of Medicine, Tongji University, 450 Tengyue Road, Yangpu District, Shanghai, People's Republic of China, Tel +86 13918271059, Email 840518242@qq.com

Purpose: The aim of this study was to examine the knowledge, attitudes and practices (KAPs) of current nursing home nurses with regard to incontinence-associated dermatitis (IAD), which has not been studied in China, to provide a theoretical basis for nursing homes to conduct training on IAD and reduce its incidence.

Patients and Methods: The KAP model, one of the most commonly used models in medicine, suggests that any practice depends on one's attitude and knowledge. Following this theory, we designed a questionnaire to investigate IAD-related KAPs among 382 nurses who were recruited via the cluster sampling method from ten Shanghai nursing homes.

Results: The IAD-related KAP scores (completion rates) were 50.69±7.46 (1.05%), 53.67±7.88 (35.34%) and 45.9±7.69 (19.90%) points. The IAD-related knowledge scores differed significantly by ability level and professional title ($P<0.05$). IAD-related attitudes differed significantly by professional title and ostomy wound-related incontinence group membership status ($P<0.05$). IAD-related practice scores differed significantly by ostomy wound-related incontinence group membership status ($P<0.05$).

Conclusion: Nursing home nurses have positive attitudes towards IAD, but their understanding of IAD is not comprehensive, and their execution in practice is insufficient. The results of this study indicate potential directions for future training.

Plain language summary: A self-designed questionnaire was used to investigate IAD-related KAPs among 382 nurses from ten nursing homes in Shanghai. The results revealed that nursing home nurses had a positive attitude towards IAD, but their knowledge was not comprehensive, and their execution was insufficient. These findings provide a theoretical basis for the IAD-related training of nursing home nurses.

Keywords: KAP, dermatitis, nursing homes

Introduction

Incontinence-associated dermatitis (IAD) refers to skin damage caused by long-term exposure of the skin to urine or faeces. It mainly affects the perineum, scrotum, and groin around the anus, buttock, and buttock fissure and can also extend to the inner and posterior thighs.[1] The main manifestations of IAD are redness of the skin and blisters, which are sometimes accompanied by infection.[2] IAD can lead to pain, infection, and complicated pressure injuries, which significantly reduce patients' quality of life.[3] When complications of IAD occur, they can prolong the length of hospital stay, increase the cost of treatment, and cause pain for patients.[4] IAD can also cause psychological problems, so it is necessary to prevent its occurrence.[5]

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The incidence of incontinence is very high for older adults in nursing homes. As many as 46–72% of nursing home patients experience urinary and/or faecal incontinence and the incidence of IAD is 20.23%, whereas the incidence of IAD in older adults living in apartments ranges from 36.0%-50%[6–9] and the overall prevalence of IAD in China is 1.91%.[10] International studies[6,7,11,12] have shown that the reported number of IAD cases ranges from 3.4–25% worldwide. When patients transition from acute care to a community setting or nursing home for care, the closer these institutions are to primary health institutions, the weaker the knowledge base of nurses is and the higher the prevalence of IAD.[9] Studies have noted that nurses' insufficient IAD-related knowledge and failure to identify high-risk patients and take corresponding measures in a timely manner are related to in increased incidence of IAD.[13] In addition, nurses' attitudes are important factors in the prevention of IAD. A positive attitude is beneficial for quality improvement projects, nursing research and clinical practice, and optimized interventions to improve IAD prevention.[14] Therefore, investigating nursing home nurses' level of knowledge, attitudes and practices (KAPs) related to IAD is conducive to improving the behaviour of nursing home nurses. To date, most studies on nurses' KAPs related to IAD have focused on intensive care units (ICUs) and internal medicine departments, and research sites are concentrated in Grade 3A hospitals and community hospitals in certain regions.[15–19] However, there are no reports of the IAD-related KAPs of nursing home nurses. In China, medical institutions are ranked from high to low as Grade A tertiary hospitals, Grade A secondary hospitals, community hospitals and nursing homes. Tertiary medical institutions provide comprehensive transitional care for patients.[20] Nursing homes are home to many older adults who cannot take care of themselves and need rehabilitation, and people in nursing homes with dementia and disability are at high risk of IAD. As the main caregivers for these individuals, nurses play an important role that is directly related to patients' quality of life and prognosis. Therefore, the aim of this study was to investigate the knowledge, beliefs, and practices of nurses in nursing homes in Shanghai with regard to IAD to understand their level of awareness of this condition and to improve the quality of nursing services and prevent and reduce the incidence of IAD.

Materials and Methods

Subjects

A total of 382 nurses from ten nursing homes in Shanghai were selected via the cluster sampling method and completed questionnaires. The specific demographic information of the sample is shown in Table 1. The survey period was from May 1 to June 1, 2024. Data were collected via a questionnaire, and participation was voluntary. The inclusion criteria were as follows: (1) registered nurses; (2) nurses working in nursing homes; and (3) nurses who provided informed consent and volunteered to participate in this study. The invited participants were given 24 hours to decide whether to participate. Before the participants completed the questionnaire, they signed informed consent. No form of compensation

Table 1 Basic Information of the Subjects and Results of Univariate Analysis of IAD-Related KAP Scores

Category		Number of People (%)	Total KAP Score	Knowledge Score	Attitude Score	Practice Score
Sex	Male	24 (6.28)	153.46±17.81	52.38±7.72	54.13±10.53	46.96±6.82
	Female	358 (93.72)	150.11±17.94	50.57±7.44	53.64±7.69	45.82±7.75
F/t			0.89	1.15	0.30	0.70
P			0.38	0.25	0.77	0.48
Highest degree	Junior college	267 (69.90)	150.36±18.46	50.64±7.85	53.69±8.30	45.92±7.87
	Bachelor's degree	115 (30.10)	150.23±16.70	50.79±6.48	53.63±6.83	45.83±7.29
F/t			0.06	−0.18	0.08	0.11
P			0.95	0.86	0.94	0.91

(*Continued*)

Table 1 (Continued).

Category		Number of People (%)	Total KAP Score	Knowledge Score	Attitude Score	Practice Score
Age	18 to 23 years old	70 (18.32)	148.66±17.43	49.29±8.02	53.07±8.56	46.3±7.76
	24 to 29 years old	199 (52.09)	148.99±19.12	50.80±7.39	52.92±8.43	45.27±7.97
	30 to 35 years old	70 (18.32)	153.54±16.23	51.50±6.82	54.89±6.50	46.79±7.57
	36 to 41 years old	13 (3.40)	150.46±18.46	48.77±7.40	55.54±6.86	46.15±7.46
	Over 41 years of age	30 (7.85)	155.43±12.93	52.13±7.80	56.37±4.40	46.93±5.88
F/*t*			1.61	1.34	4.53	0.76
P			0.17	0.26	0.34	0.56
Length of service	1 to 5 years	238 (62.30)	149.05±19.01	50.05±7.84	53.41±8.47	45.60±7.99
	6 to 10 years	87 (22.77)	151.86±16.03	51.78±6.22	53.83±6.87	45.93±7.55
	11 to 20 years	32 (8.38)	151.34±18.08	51.78±6.98	52.78±7.80	46.84±7.60
	21 years or more	25 (6.54)	155.68±11.68	51.56±7.93	56.76±4.17	47.36±4.99
F/*t*			1.39	1.56	2.09	0.58
P			0.24	0.20	0.11	0.63
Expertise level	N0	39 (10.21)	144.28±20.32	48.05±7.74	52.33±10.04	43.9±9.68
	N1	157 (41.10)	149.55±18.41	49.91±7.91	53.39±8.39	46.07±7.30
	N2	146 (38.22)	151.53±17.08	51.76±6.66	53.68±7.10	46.11±7.78
	N3	36 (9.42)	154.69±15.49	52.64±7.22	55.92±5.82	46.14±6.74
	Above N3	4 (1.05)	155.75±15.52	50.00±8.64	57.25±4.27	48.50±5.00
F/*t*			1.99	3.09	1.49	0.90
P			0.10	0.02	0.21	0.47
Post	Nurse clinician	337 (88.22)	149.99±18.34	50.50±7.58	53.55±8.11	45.87±7.86
	Teaching nurse	8 (2.09)	156.25±12.85	53.75±5.68	55.88±3.76	46.63±8.09
	Nursing supervisor	36 (9.68)	152.05±14.82	51.76±6.51	54.30±6.23	46.00±5.96
F/*t*			0.67	1.17	1.03	0.04
P			0.51	0.31	0.36	0.96
Job title	Nurse	208 (54.45)	148.43±18.85	49.92±7.89	52.74±8.97	45.63±7.76
	Nurse practitioner	132 (34.55)	151.67±16.90	51.40±6.45	54.26±6.39	46.02±7.95
	Nurse in charge	40 (10.47)	154.30±14.63	51.63±7.63	56.25±5.28	46.43±6.38
	Associate chief nurse	2 (0.52)	178.00±1.41	64.00±2.83	59.50±0.71	54.50±0.71
F/*t*			5.81	5.00	6.30	0.99
P			0.00	0.00	0.00	0.40

(*Continued*)

Table 1 (Continued).

Category		Number of People (%)	Total KAP Score	Knowledge Score	Attitude Score	Practice Score
Ostomy wound-related incontinence group membership	Yes	7 (1.83)	163.71±5.94	53.57±4.28	58.43±2.23	51.71±4.68
	No	375 (98.17)	150.07±17.99	50.63±7.50	53.58±7.92	45.78±7.69
F/t			5.62	1.03	5.19	2.03
P			0.00	0.30	0.00	0.04

Note: Statistical inference was performed via analysis of variance. Total scores are expressed as the mean±SD.

was provided to the participants. The exclusion criteria were as follows: (1) nurses who were not on duty due to illness, business, or maternity leave and those who were participating in other studies; (2) nurses who were participating in advanced studies and standardized training; and (3) nurses who did not provide direct patient care and who had long-term engagement in general affairs and office work. This study was approved by the ethics committee of Shanghai Yangpu District Central Hospital (No. LL-2024-LW-002). This study complies with the Declaration of Helsinki.

Research Tools

Demographic Information Questionnaire

The questionnaire comprised items related to nine aspects, including department, sex, education level, age, length of service, ability level, position, professional title, and ostomy wound-related incontinence group membership status.

IAD-Related KAPs Questionnaire for Nursing Home Nurses

On the basis of KAP theory,[21] an IAD-related KAP questionnaire for nursing home nurses was developed based on a literature search, evidence summaries, semistructured interviews and research group discussions. Through expert consultation, the collected data were analysed, organized, and summarized to form the final questionnaire to meet the needs of nursing home nurses and prepare for the current situation survey.[22–29] Eighteen nursing experts with bachelor's degrees or above, professional titles of supervisor nurse or above, and relevant work tenure of more than 15 years were invited to complete two rounds of Delphi expert consultation with a focus on wound stoma incontinence nursing, nursing management, nursing education, and nursing research. The language used was Chinese (Mandarin). After the first round of expert consultation, a total of 8 new items were added and 6 items were deleted. The deletion criteria were a mean score less than 4.0, a perfect score ratio less than 20%, and a CV greater than 0.25. On the basis of expert opinions and discussions with the research team, 16 items were ultimately modified. After the second round of expert consultation, no items were deleted or added. On the basis of expert opinions and discussions with the research team, three items were ultimately modified. This was a significant reduction compared with the first round of opinions. When the suggestions proposed by the experts reached consensus, further consultation was stopped. Pilot investigations involved a limited scope of research conducted in advance to evaluate the feasibility of conducting a large-scale study.[30] After the presurvey was conducted, the content of the questionnaire was analysed and revised and reliability and validity tests were conducted to make the design of the questionnaire more scientific. The sample size was selected as follows. There are 16 districts in Shanghai, which are divided into urban areas, semiurban areas, semisuburban areas, suburban areas, and remote suburban areas according to their economic level and include 7, 1, 7, and 1 specific areas, respectively. They were encoded, and one area was randomly selected using a random number table for a total of 4 areas. The regional distributions were the urban area of Yangpu District, the suburban area of Baoshan District, Pudong New Area, and Chongming District. Using the cluster sampling method, a total of ten nursing homes in the region that mainly treated patients with dementia and disability were selected.[31] The number of participants in the reliability and validity tests was 5–10 times the number of items. Considering a 5% turnover rate, the sample size was 226–452. Confirmatory factor analysis required a sample size of over 200. Finally, 340 nursing home nurses who met the inclusion and exclusion criteria were included. The researcher personally sent the questionnaire to the nursing home and conducted an on-site,

face-to-face survey by scanning the QR code for Questionnaire Star. The researcher ensured that the response time was more than 10 minutes to ensure the authenticity and effectiveness of the questionnaire. All items were mandatory, and the survey results were monitored in real time to ensure that important questions were not missed. The questionnaires were collected immediately after completion, and the effective recovery rate was 99.71%. During the analysis process, the reliability and effectiveness of the questionnaire were significantly improved by removing indicators that were not ideal in the reliability and validity tests. The consistency of the content was determined via Cronbach's alpha method. The Cronbach's α of the questionnaire was 0.93 and the content validity was 0.98, both of which were within the ideal range. For stability, test–retest reliability requires at least 1/10 of the sample size to be retested two weeks later.[32] Therefore, 34 nursing home nurses who completed the presurvey were randomly selected for retesting.[33] The overall test–retest reliability of the questionnaire was 0.80, indicating that the questionnaire had good reliability. Open-ended questions were derived from qualitative interviews, and the final questionnaire covered five aspects: (1) knowledge of IAD among nursing home nurses, including their degree of understanding, sources and forms of knowledge (eg, training, lectures, books, self-search databases), and knowledge of group standards for IAD. This part of the study investigated the sources of knowledge; (2) IAD-related knowledge among nursing home nurses, determined by 14 questions. Seven single-choice questions were worth five points, 6 multiple-choice questions were worth one point, 2 multiple-choice questions were worth four points, and 4 multiple-choice questions were worth five points. The other seven items were rated on a Likert scale ranging from five points (completely understand) to one point (do not understand). The total score ranged from 13 to 68 points. The calculation method for the full score was the number of respondents with 68 points/total number of respondents × 100%. This part of the survey focused on knowledge mastery and gaps in knowledge (see Table 2 for detailed entries); (3) attitudes towards IAD among nursing home nurses, with a total score ranging from 12–60 points. The full score was calculated as (number of respondents with 60 points/total number of respondents ×100%) (see Table 2 for detailed entries); (4) IAD-related practices among nursing home nurses: This part of the questionnaire comprised 11 questions scored on a 5-point Likert scale. The full score was calculated as the number of respondents with 55 points/total number of respondents ×100%. The total score for the questionnaire ranged from 36–183 points (see Table 2 for detailed entries); (5) knowledge needs and suggestions, which required the nurses to answer open questions about the knowledge the respondent wanted to obtain about IAD care (eg, risk factors, prevention management, skin cleaning agents, skin protective agents and others) and the respondent's suggestions or views on the development of IAD care.

Table 2 Scores for Knowledge, Attitudes and Practices Related to Incontinence-Associated Dermatitis Among Nursing Home Nurses (N=382)

Dimensionality	Item	Score
Knowledge	K-1.Definition of incontinence dermatitis	3.81±0.70
	K-2.Difference from other skin injuries	3.68±0.67
	K-3.Managing incontinence is the foundation for preventing and treating incontinence dermatitis	3.78±0.65
	K-4.Causes of incontinence dermatitis	3.87±0.58
	K-5.High-risk factors for incontinence dermatitis	4.19±1.25
	K-6.Incontinence dermatitis increases the risk of stress injury	4.00±0.59
	K-7.Measures to prevent incontinence dermatitis	3.92±0.58
	K-8.Classification and evaluation tool for incontinence dermatitis	3.63±1.44
	K-9.What factors increase the risk of skin infection after incontinence dermatitis	3.32±0.98
	K-10.Patients with incontinence must first identify the cause	3.22±2.40
	K-11.Frequent use of water and soap to clean the skin can damage the skin barrier	4.01±0.58
	K-12.What care products should be used for skin protection	3.05±1.44
	K-13.What faecal collection products are included	3.01±1.64
	K-14.What urine collection products are included	3.15±0.92

(*Continued*)

Table 2 (Continued).

Dimensionality	Item	Score
Attitude	A-1.Prevention of incontinence dermatitis is more important than treatment	4.55±0.71
	A-2.Proactively learn new knowledge and skills about incontinence dermatitis	4.39±0.76
	A-3.The prevention and management of incontinence dermatitis is an important part of your nursing work	4.41±0.76
	A-4.If many patients develop incontinence dermatitis, you will discuss and analyse each case of incontinence dermatitis with the superior nurse	4.45±0.75
	A-5.When you are unable to handle a situation or encounter bottlenecks, you will seek the help of specialized nurses	4.55±0.69
	A-6.The configuration of nursing staff is crucial for the implementation of nursing care for incontinence dermatitis	4.48±0.73
	A-7.The incidence of incontinence dermatitis is an indicator of nursing quality	4.43±0.75
	A-8.Strengthening immediate education for family members/caregivers and improving their caregiving abilities is crucial for the prevention and treatment of incontinence dermatitis	4.56±0.70
	A-9.It is very important to establish standardized prevention and treatment procedures for incontinence dermatitis	4.50±0.72
	A-10.It is important to raise questions and propose improvement measures if it is found that the established nursing process is not suitable for clinical practice	4.47±0.73
	A-11.You think it is very important to use smart incontinence care materials with sensors that are people-oriented	4.42±0.75
	A-12.Reporting incontinence dermatitis can encourage nurses to pay more attention to it	4.43±0.81
Behaviour	P-1.Risk assessment, classification assessment, and protection of incontinence dermatitis are conducted based on the latest information	4.25±0.81
	P-2.Proactively suggest placing the patient in a right or left position to reduce the skin contact area between urine and faeces	4.21±0.80
	P-3.Do you use wet wipes for wiping and wash your skin at least once a day or after each bowel movement	4.19±0.85
	P-4.Whether to choose highly breathable or absorbent materials as well as materials that can control pH value in the selection of absorbent products	4.10±0.89
	P-5.Be able to correctly select and use incontinence care products	4.14±0.84
	P-6.Skin protection measures have been taken	4.25±0.76
	P-7.Use antifungal cream or powder in combination with skin protectants to treat incontinence dermatitis with fungal infection	4.03±0.92
	P-8.Is a structured skin care plan followed when managing incontinence dermatitis	4.16±0.81
	P-9.Provide education on incontinence dermatitis-related knowledge to family members/caregivers	4.23±0.83
	P-10.Proactively educating patients and their families on reasonable nutritional support is important for the prevention of incontinence dermatitis	4.21±0.81
	P-11.Proactively obtain learning resources related to incontinence dermatitis provided by our nursing home	4.04±0.90

Investigation Process and Data Collection

The leaders of the surveyed nursing homes were contacted before June 2024, and their consent was obtained. The head nurses of relevant departments were subsequently contacted, the main purpose, significance, and implementation of the survey questionnaire were explained, and the participants' understanding, support, and cooperation were obtained. During the investigation, a quiet and comfortable conference room was selected to reduce interference from the external environment and to ensure that the nurses had more than 10 minutes to provide their answers. Nurses who met the inclusion criteria scanned the WJX platform code onsite and completed the questionnaire to ensure that they completed the questionnaire independently and that the results were authentic and reliable. WJX is an online questionnaire platform that is widely used in China. It includes examinations, evaluations, and voting platforms. The current survey used an enterprise-exclusive version of the platform. The completeness of the returned questionnaires was checked to ensure data integrity. There are a total of 16 districts in Shanghai that are divided into urban areas, semiurban areas, semirural areas, rural areas, and remote rural areas according to their economic level, with 7, 1, 7, and 1 specific levels, respectively.

These areas were encoded, and four areas were randomly selected using a random number table The distribution of the areas was as follows: the urban area of Huangpu District, the rural area of Minhang District, Pudong New Area, and Chongming District. Using the cluster sampling method, a total of ten nursing homes within this area that treated patients with dementia and disability were selected. According to the principle for calculating the sample size in cross-sectional studies, the total sample size for a survey should be 5–10 times the number of questionnaire items.[34] Since 37 items were included in the formal questionnaire in this study, the required sample size was 185–370 participants. The sample size was increased by 10% to account for missing questionnaires, so the required sample size was 205–411 participants. Four hundred respondents were ultimately included. A total of 400 questionnaires were distributed and 400 questionnaires were recovered for a response rate of 100%. These included 382 valid questionnaires with an effective response rate of 95.50%. The effective recovery rate refers to the number of questionnaires remaining after those that were incompletely filled out or obviously filled in randomly were eliminated. The calculation formula was as follows: effective response rate=(number of valid questionnaires returned/number of questionnaires issued)×100%.

Statistical Methods and Analysis

SPSS 24.0 software was used for statistical analysis of the data. The measurement data are presented as the means ± standard deviations, and t tests or variance analyses were used for statistical analysis. Count data are expressed as frequencies, rates and percentages, and the chi-square test was used for statistical analysis. Two independent-sample t tests or one-way analyses of variance were used for normally distributed data. After the one-way analysis of variance was conducted, the least significant difference (LSD) test was used for continuous data to assess differences between the groups. Normally distributed data were analysed via multiple linear regression, and nonnormally distributed data were analysed through multivariate analysis via a generalized linear model. The statistics of the open-ended questions were obtained by summarizing the key elements and then conducting an analysis. In accordance with the results of the normality test, Spearman correlation analysis or Pearson correlation analysis was used to analyse the correlations among KAPs, and $P<0.05$ was considered to indicate statistical significance. GraphPad Prism 10.0 software was used for mapping, and the results were subsequently discussed.

Results

Basic Information of the Subjects

A total of 382 participants were included in this study. Nurses aged 24 to 29 years accounted for more than half of the total sample. Most of the participants were female (93.72%), had a highest education level of junior college (69.90%), had worked less than 5 years (62.30%), and had a professional title of nurse (54.45%). The results of the study revealed statistically significant differences between the groups with different levels of expertise, professional titles and membership status in the ostomy wound-related incontinence group (Table 1). The level of competence refers to the five stages of nurses' development and is measured through assessment. According to Benner,[35] the five stages of nurses' expertise are novice, advanced, competent, proficient and expert, which correspond in China to levels NO-N3 and above, respectively. Specifically, NO refers to novice nurses, N1 refers to primary nurses, N2 refers to competent nurses, N3 refers to proficient nurses, and N4 refers to expert nurses.[36] Thirty-two nurses were excluded because they did not meet the inclusion criteria. Nurses who were engaged in general affairs or office work and nurses who were not on duty due to illness, business, maternity leave, or further study were excluded.

IAD-Related KAP Scores Among Nursing Home Nurses

The mean KAP score of the 382 nursing home nurses was 150.32±17.93 points, the mean±standard deviation knowledge score was 50.69±7.46 points, the mean±standard deviation attitude score was 53.67±7.88 points, the mean±standard deviation score of the practice dimension was 45.9±7.69 points, and the completion rates of the KAP dimensions were 1.05%, 35.34% and 19.90%, respectively. In the knowledge dimension, the question with the fewest correct answers was "What stool collection products do you know of?" The score for this question was the lowest, with a correct response rate of only 31.94%. The next question with the fewest correct answers was "What are the classification assessment tools for

IAD that you know of?" The correct response rate for this question was 43.19%. These data indicate that nursing home nurses have inadequate basic IAD-related knowledge. The questions with the lowest degree of positive attitudes were "Do you believe that reporting IAD can urge nurses to pay more attention to IAD?" and "Do you take the initiative to learn new knowledge and skills related to IAD?". The percentage of positive answers to these questions was 87.17% ((the number of respondents with four points + the number of respondents with five points)/total×100%). Studies have shown that nursing home nurses have a positive attitude towards IAD, but there are still shortcomings. The questions with the lowest execution power in the practice dimension were "Do you use antifungal cream or powder combined with skin protective agents to treat IAD in patients with fungal infections?" and "Do you take the initiative to obtain the IAD-related learning resources provided by the nursing home?", which had the lowest implementation rate of only 35.60%. These data indicate that nursing home nurses have deficiencies in IAD-related nursing practices, especially in terms of professional competence, and that they lack a certain degree of initiative.

Univariate Analysis of IAD-Related KAP Scores Among Nursing Home Nurses with Different Demographic Characteristics

The demographic data of the nurses were used as independent variables to analyse differences in the total IAD-related KAPs among nurses with different characteristics. The results revealed significant differences in the total IAD-related KAP scores among nurses with different professional titles and among those with ostomy wound-related incontinence group membership ($P<0.05$). The scores of nurses with ostomy wound-related incontinence group membership were higher than those of nurses without this membership. Furthermore, pairwise comparison of professional titles via the LSD test revealed that the mean KAP score of associate chief nurses was greater than that of nurses, nurse practitioners and supervisor nurses. The results of this study revealed statistically significant differences in the IAD-related knowledge scores of nurses with different levels of expertise ($P<0.05$). The LSD test revealed that the knowledge scores of nurses with expertise of N2 and N3 were higher than those of nurses with expertise of N0 and N1. Furthermore, there were significant differences in IAD-related attitudes among nursing home nurses stratified by professional title and ostomy wound-related incontinence group membership status ($P<0.05$). The IAD-related attitude scores of nurses in the ostomy wound-related incontinence group (58.43±2.23) were significantly higher than those of nurses without ostomy wound-related incontinence group membership (53.58±7.92). The scores of associate chief nurses were higher than those of nurses, senior nurses and nurses in charge. There was a statistically significant difference in the IAD-related practice scores of nursing home nurses with ostomy-related incontinence group membership and those without ($P<0.05$). The practice scores of the nurses in the ostomy wound-related incontinence group (51.71±4.68) were significantly greater than those of the nurses in the control group (45.78±7.69), as shown in Table 1.

Multivariate Analysis of IAD-Related KAPs Among Nursing Home Nurses

The questionnaire was used to investigate IAD-related KAPs among nursing home nurses in Shanghai. With the general information of the respondents as the independent variable and the KAP scores as the dependent variables, the statistically significant influencing factors in the single factor analysis of IAD-related KAPs among nursing home nurses were analysed via multivariate analysis. The assignment of independent variables is shown in Table 3.

The dependent variable was the total score, and the independent variable was the respondents' professional titles and whether they were members of the ostomy wound incontinence group. The stepwise regression method was used to construct a multiple linear regression model ($\alpha in = 0.05$, $\alpha out = 0.1$), and professional title was entered the regression equation: $Y=145.554+2.817X7$, $R=0.149$, $R^2=0.022$. $F=4.264$, $P=0.037$ (see Table 4).

The dependent variable was the knowledge score, and the independent variables were the respondents' professional title and level of expertise, which were constructed by stepwise regression.

In the multiple linear regression model ($\alpha in = 0.05$, $\alpha out = 0.1$), the level of expertise was entered into the regression equation: $Y=46.950+1.822X5$, $R=0.166$, $R^2=0.028$. The results of the variance analysis revealed that $F=5.372$ and $P=0.033$, indicating that the regression equation was statistically significant, as shown in Table 5.

Table 3 Assignment of Independent Variables That Influence IAD-Related KAPs Among Nursing Home Nurses

Influencing factor(X)	Assignment
Sex ($X_{1)}$	Male=1, Female=0
Highest degree ($X_{2)}$	College degree=1, Bachelor's degree=2
Age ($X_{3)}$	18 to 23 years old=1, 24 to 29 years old=2, 30 to 35 years old=3, 36 to 41 years old=4, Over 41 years of age=5
Number of working years ($X_{4)}$	1 to 5 years=1, 6 to 10 years=2, 11 to 20 years=3, 21 years or more=4
Expertise level ($X_{5)}$	N0=1, N1=2, N2=3, N3=4, Above N3=5
Post ($X_{6)}$	Nurse clinician=1, Teaching=2, Nursing supervisor=3
Job title ($X_{7)}$	Nurse=1, Senior Nurse=2, Nurse-in-Charge=3, Co-Chief Superintendent Nurse=4
Ostomy wound-related incontinence group membership ($X_{8)}$	Yes=1, No=0

Table 4 Linear Regression Analysis of Total IAD-Related KAP Scores Among Nursing Home Nurses

Independent Variable	Unstandardized Coefficient		Coefficient of Standardization	t	P
	B	Standard Error	Beta		
Constant quantity	145.554	2.283	_	63.756	0.000
Professional title	2.817	1.349	0.107	2.088	0.037
Ostomy wound-related incontinence group membership	12.526	6.784	0.094	1.846	0.066

Note: R=0.149, R^2=0.022, F=4.264, *P*=0.037.

Table 5 Linear Regression Analysis of IAD-Related Knowledge Scores Among Nursing Home Nurses

Independent Variable	Unstandardized Coefficient		Coefficient of Standardization	t	P
	B	Standard Error	Beta		
Constant quantity	46.950	1.201	_	39.098	0.000
Professional title	−0.521	1.026	−0.049	−0.507	0.612
Expertise level	1.822	0.852	0.205	2.139	0.033

Note: R=0.166, R^2=0.028, F=5.372, *P*=0.033.

The dependent variable was the attitude score, and the independent variables were the respondents' professional title and whether they were members of the ostomy wound incontinence group. The linear regression analysis revealed that F=3.716, *P*>0.05, R=0.169, and R^2=0.029, indicating that the regression equation was not statistically significant, as shown in Table 6.

The dependent variable was the behaviour score, and the independent variable was membership in the ostomy wound incontinence group. Linear regression analysis was conducted, and the regression equation was Y=45.784+5.930X8,

Table 6 Linear Regression Analysis of IAD-Related Attitudes Among Nursing Home Nurses

Independent Variable	Unstandardized Coefficient		Coefficient of Standardization	t	P
	B	Standard Error	Beta		
Constant quantity	50.872	1.023	_	49.738	0.000
Professional title	1.360	0.892	0.121	1.525	0.128
Ostomy wound-related incontinence group membership	4.112	2.984	0.070	1.378	0.169

Note: R=0.169, R^2=0.029, F=3.716, *P*>0.05.

Table 7 Linear Regression Analysis of Practice Scores for IAD Among Nursing Home Nurses

Independent Variable	Unstandardized Coefficient		Coefficient of Standardization	t	P
	B	Standard Error	Beta		
Constant quantity	45.784	0.395	_	115.832	0.000
Ostomy wound-related incontinence group membership	5.930	2.920	0.104	2.031	0.043

Note: R=0.104, R^2=0.011, F=4.125, *P*=0.043.

Table 8 Results of the Corirelation Analysis of IAD-Related KAP Scores Among Nursing Home Nurses

Indicators	Knowledge	Attitudes	Practices
Knowledge	1	0.270**	0.338**
Attitudes		1	0.593**
Practices			1

Note: **indicates a significant correlation.

R=0.104, R^2=0.011. The results of the variance analysis revealed that F=4.125 and *P*=0.043, indicating that the regression equation was statistically significant, as shown in Table 7.

Correlation Analysis of IAD-Related KAP Scores Among Nursing Home Nurses

Pearson correlation analysis was performed on the IAD-related KAP scores of the nursing home nurses. The results revealed that the knowledge–attitude, knowledge–practice, and attitude–practice scores were positively correlated with

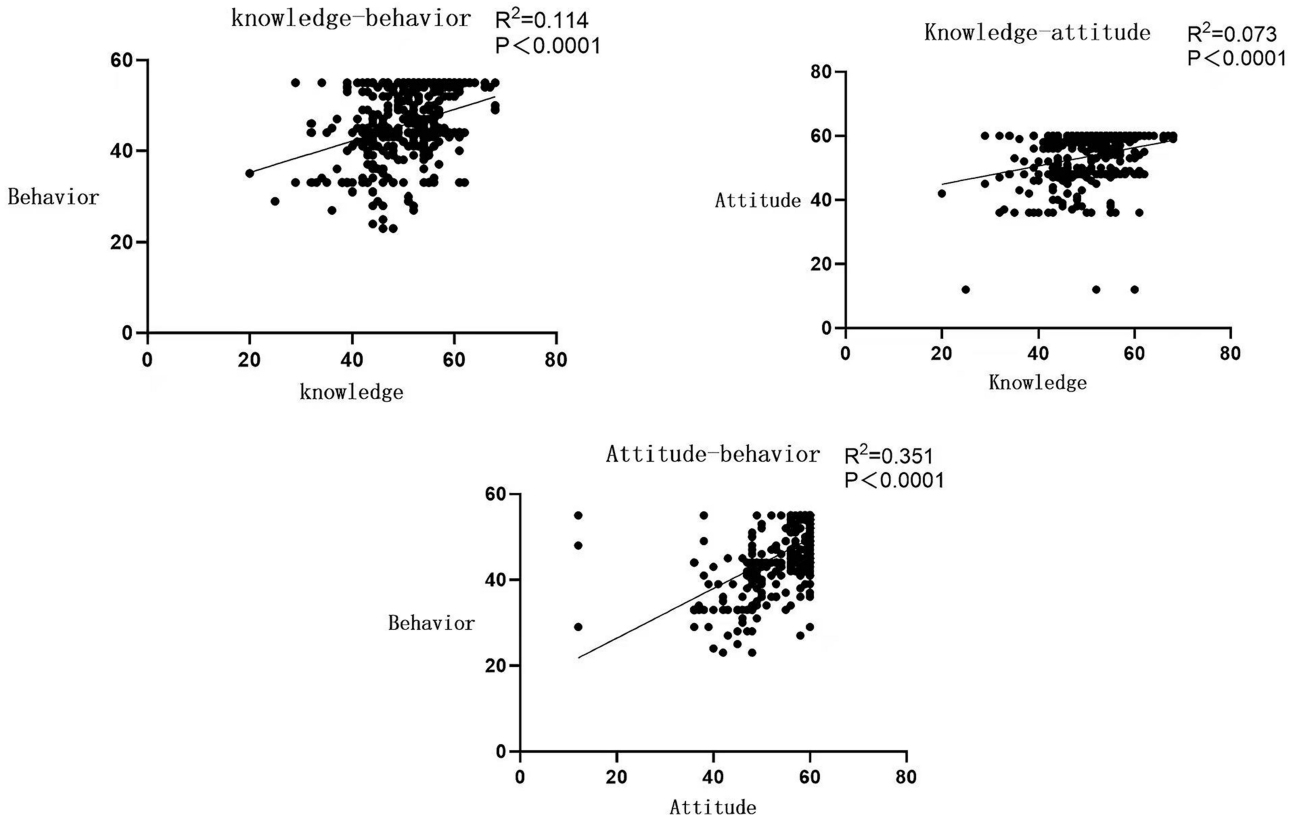

Figure 1 Correlation Analysis of Knowledge, Attitude, and Behavior.

Table 9 Correct Rate of Incontinence-Associated Dermatitis Knowledge Among Nursing Home Nurses (n=382)

Topic	Correct Number of People	Accuracy	Rank
K-5	234	61.26%	3
K-8	165	43.19%	5
K-9	235	61.52%	2
K-10	246	64.40%	1
K-13	122	31.94%	6
K-14	166	43.46%	4

correlation coefficients of 0.270, 0.338, and 0.593, respectively ($P<0.01$). The detailed results of the correlation analysis are shown in Table 8 and Figure 1. The data show that knowledge mastery can affect the level of attitudes and practices. In turn, attitudes also have an impact on practices; the greater the level of knowledge mastery is, the more positive attitudes are, which is conducive to the development of practices.

Discussion

Nursing Home Nurses Have an Incomplete Understanding of IAD-Related Nursing Knowledge

Overall, the results suggest that nursing home nurses' understanding of related knowledge is acceptable but lacks sufficient comprehensiveness and therefore requires improvement. This finding is consistent with the research of Zhao,[36] who reported that knowledge of IAD among nurses in primary hospitals was insufficient and that nurses' current level of knowledge and lack of prevention did not meet their clinical needs. To date, most studies have focused on large, comprehensive Class III Grade A hospitals, community hospitals, and regional hospitals and have shown that clinical nurses have a low awareness of IAD.[15,19,37] However, previous research sites did not involve nursing homes. This study investigated the level of knowledge of incontinence-associated dermatitis among nursing home nurses to provide a basis for the development of more targeted intervention and training programmes. For example, K-13 (see Table 9 for details) had the lowest score in the knowledge dimension. A systematic review abroad[28] noted that faecal collection products mainly include diapers, anal plugs, devices for faecal collection in the anal area, and devices inserted into the rectum for diversion. While nursing home nurses' knowledge of faecal collection products is mostly limited to diapers, diapers are not appropriate to isolate excretions in practical application for all patients. Appropriate measures should be taken according to the specific situation of patients with incontinence, and the tightness, comfort and economic cost of the collection products should be considered.[38] The K-8 score in the knowledge dimension was low, which is consistent with the research results of Zhang et al.[39] Nursing home managers should improve training for nurses, pay attention to the latest knowledge in this field, and master knowledge of common IAD assessment tools to understand the assessment of IAD from multiple perspectives.

Ability Level and Professional Title are Important Factors That Affect Nursing Home Nurses' Knowledge of IAD

The knowledge level of nurses with a high level of ability is greater than that of nurses with a low level of ability. Similarly, the level of knowledge of nurses with a high professional title is significantly greater than that of nurses with a low professional title. Nurses with a high level of ability and a high professional title have more experience, can continuously enrich their knowledge base according to the needs of their nursing work, and are more sensitive to knowledge. These findings are consistent with the research results of Lu et al.[40] Nurses with a high level of ability and a high professional title are responsible for training, and nurses with a low level of ability and a low professional title regularly receive relevant guidance to improve the overall quality of the nursing service.

Table 10 Attitudes Towards Incontinence-Associated Dermatitis Among Nursing Home Nurses (n=382,%)

Topic	Degree of Positivity	Rank
A-1	92.41%	2
A-2	87.17%	11
A-3	89.01%	7
A-4	88.48%	8
A-5	92.67%	1
A-6	89.79%	5
A-7	88.22%	9
A-8	92.15%	3
A-9	90.84%	4
A-10	89.53%	6
A-11	88.22%	9
A-12	87.17%	11

Nursing Home Nurses Have Positive Attitudes Towards IAD Care

The results of this study revealed that the nursing home nurses showed high enthusiasm for IAD care; 65.45% of the nurses had an attitude score of more than 50 points. This finding is similar to the results of Yuceler et al[41] and Huang et al[42] in China, who reported that nurses have a positive attitude towards IAD care. The response to Item A-5 (see Table 10 for details) in the attitude dimension was highly positive, indicating that nurses in the nursing home had a high degree of recognition and acceptance of IAD knowledge and an urgent need for solutions to difficult problems.[14] The number of positive responses to Items A-2 and A-12 in the attitude dimension was low, indicating that the nursing home nurses had some deficiencies in active learning. They generally believed that they needed to learn new knowledge only when they encountered problems. This may explain why nursing home nurses do not fully understand incontinence-associated dermatitis, which affects the implementation of IAD-related nursing behaviour. Nurses in nursing homes should cultivate their awareness of active learning instead of seeking solutions only when they encounter problems. Sun et al[43] noted that the reporting rate for adverse nursing events in China is less than 1%. One of the key bases for the reporting of adverse nursing events is nurses' attitudes towards reporting. It is necessary to establish and improve a reporting mechanism for IAD and to apply various types of training to improve nurses' willingness to report adverse events.[44]

Professional Title and Whether Nurses Were Members of the Ostomy Wound Incontinence Group Were Closely Related to Their Attitudes Towards Incontinence-Associated Dermatitis

Nursing home nurses had different attitudes towards IAD depending on their professional title and whether they were members of the ostomy wound incontinence group. Nurses with higher professional titles had more knowledge of the nursing work required for IAD, improved levels of learning, and better recognition of nursing related to IAD. After nurses systematically learned IAD-related knowledge, those who were members of the ostomy wound incontinence group significantly improved the depth and breadth of their knowledge of IAD nursing as well as the importance of this type of nursing. They also had a stronger willingness to learn, which is consistent with the research of Chen et al.[45]

Improving the IAD-Related Nursing Practices of Nursing Home Nurses

In this study, the practice scores of 45.55% of the nursing home nurses ranged from 41–50 points, and most nurses were not optimistic about the execution of IAD-related nursing. Some studies[42] have shown that clinical nurses' ability to prevent and treat IAD should be improved. These findings are similar to the results of Zhang et al.[39] For example, item P-1 (see Table 11 for details) in the behavioural dimension had the highest rate of implementation, but it was still implemented less than half of the time. Most nurses did not have sufficient understanding of it, and their behaviour did not meet the standard requirements. Nurses must pay attention to the latest knowledge and implement this knowledge in

Table 11 Scores for Each Item Related to Incontinence-Associated Dermatitis Among Nursing Home Nurses (n=382, %)

Topic	Always	Often	Sometimes	Occasionally	Never
P-1	173 (45.29%)	143 (37.43%)	56 (14.66%)	9 (2.36%)	1 (0.26%)
P-2	159 (41.62%)	161 (42.15%)	50 (13.09%)	11 (2.88%)	1 (0.26%)
P-3	158 (41.36%)	161 (42.15%)	48 (12.57%)	10 (2.62%)	5 (1.31%)
P-4	150 (39.27%)	144 (37.70%)	73 (19.11%)	10 (2.62%)	5 (1.31%)
P-5	150 (39.27%)	153 (40.05%)	65 (17.02%)	13 (3.40%)	1 (0.26%)
P-6	166 (43.46%)	155 (40.58%)	56 (14.66%)	4 (1.05%)	1 (0.26%)
P-7	136 (35.60%)	151 (39.53%)	76 (19.90%)	12 (3.14%)	7 (1.83%)
P-8	149 (39.01%)	160 (41.88%)	62 (16.23%)	11 (2.88%)	0 (0.00%)
P-9	168 (43.98%)	147 (38.48%)	58 (15.18%)	5 (1.31%)	4 (1.05%)
P-10	162 (42.41%)	153 (40.05%)	60 (15.71%)	3 (0.79%)	4 (1.05%)
P-11	136 (35.60%)	151 (39.53%)	77 (20.16%)	14 (3.66%)	4 (1.05%)

their departments. Items P-7 and P-11 in the behavioural dimension had the lowest rates of implementation. Studies[22] have shown that antifungal cream or powder is generally used for the topical treatment of candidiasis and can be used in combination with skin protective agents to protect the skin from faecal and urine damage. Therefore, antifungal cream or powder can be used for patients according to the doctor's advice. In terms of improving the ability of nurses, relying solely on self-determined learning needs may not be reasonable. The location where nurses work is the best choice for providing professional skills and diverse training methods.[46]

Being a Member of the Ostomy Wound Incontinence Group Is an Independent Risk Factor for Behaviour Related to Incontinence-Associated Dermatitis Among Nursing Home Nurses

In this study, the behaviour scores for members of the ostomy wound incontinence group were significantly greater than those of nurses in the non-ostomy wound incontinence group, which is consistent with the findings of Huang and Jin.[47] This is because members of the specialist team have more opportunities to participate in learning and training and can better combine professional theoretical knowledge with clinical practice. Nursing homes can focus on the training of specialist nurses to improve knowledge, attitudes and practices related to IAD among nursing staff.

Different Levels of Expertise, Professional Titles and Memberships in the Ostomy Wound Incontinence Group Can Affect the Level of IAD Nursing Knowledge, Attitudes and Practices of Nursing Home Nurses

The total IAD-related KAP score among nurses with high ability levels and professional titles was high, similar to the results of Liu et al.[48] The reason may be that nurses with high ability levels and professional titles have more opportunities to undertake teaching tasks and access nursing group leaders, which increases their initiative to learn and enriches their professional knowledge, thereby promoting changes in their attitudes and practices. The reason for the high KAP scores of the ostomy wound-related incontinence group members was that the nurses in this group received systematic specialized knowledge training. Because of their comprehensive mastery of theoretical knowledge and clinical skills related to nursing care for IAD, they have a greater understanding of incontinence-associated care. This finding is similar to the research results of Zhang et al.[39]

In this study, only seven nurses had ostomy wound-related incontinence group membership. In the future, most patients with IAD in China will be cared for at primary medical institutions. Therefore, it is necessary to improve the training of specialist nursing personnel in nursing homes with regard to ostomy wound-related incontinence and avoid the uneven distribution of health training resources.

There Is a Problem of "Disunity of Knowledge and Practice" in the Nursing Care of Patients with Incontinence-Associated Dermatitis Among Nurses in Nursing Homes

The results of the correlation analysis presented above suggest that although some nurses were aware of the importance of obtaining IAD-related knowledge, the score for Item A-2 showed that there was still a lack of learning initiative. Furthermore, nurses' level of knowledge was insufficient, resulting in an overall low quality of IAD-related nursing care. Therefore, relevant functional departments should attach great importance to this cross-sectional survey. The suggestion to establish an IAD-related training programme for nursing home nurses is similar to the research results of Zhang and Wang.[49] In addition, nurses' IAD-related knowledge can affect their attitudes and practices, and nurses' attitudes towards IAD can affect their practices. The better nurses' IAD-related knowledge is, the more positive their attitudes will be, and the more conducive these attitudes are to the development of practices. Therefore, the quality of nursing care for individuals with IAD can be further improved by improving knowledge levels and establishing positive attitudes to prevent the occurrence of IAD and improve patient outcomes. The findings of this study suggest that the factors that influence IAD-related knowledge among nursing home nurses should be further explored and analysed in combination with the specific factors that affect learning initiative to provide a theoretical basis for improving knowledge levels and establishing more positive attitudes.

Limitations

First, this study included only ten nursing homes in Shanghai and none in other provinces. There may be a certain degree of bias due to regional differences in economic levels, policy differences, and the cultural environment. This issue should be studied further in a larger population, and the regional scope should be expanded to obtain a more comprehensive understanding of nursing home nurses' IAD-related KAPs. Second, the development of IAD patient care relies on multidisciplinary collaboration, but this study investigated only nurses. In the future, other members of the multidisciplinary team can be investigated to fully understand the cognitive status of individuals with IAD, promote multidisciplinary cooperation and improve the quality of nursing care. As theoretical knowledge is updated and progresses, IAD-related nursing content should also be updated in a timely manner. Therefore, future research should focus on how to integrate updated evidence into the questionnaires used in this study. In addition, the fact that the majority of participants in the survey were female nurses is a limiting factor. This is mainly due to stereotypes about gender roles, which may affect the generalizability of the research results. With changes in these concepts, the corresponding indicators of the questionnaire should be further improved.

Summary

In this study, a self-designed questionnaire was used to investigate nursing home nurses who treated patients with dementia and disabilities. Nursing home nurses have many channels (eg, training, lectures, books, self-search databases) to obtain IAD-related knowledge, but most methods are traditional. The nurses' knowledge scores were acceptable, but their understanding of this knowledge was not comprehensive. Furthermore, their overall attitude was positive, but their level of practice needed improvement. Trainers should conduct training for nursing home nurses according to the influencing factors, consider the actual condition of patients in the department, develop diverse training programmes, and combine online and offline training. Offline training allows ostomy wound continence specialist nurses in medical alliances to be trained in the latest frontier knowledge and skills. Theoretical knowledge and the actual incidence of IAD should be regularly assessed as important aspects of quality control. Furthermore, departments must realize the importance of multidisciplinary cooperation and establish IAD-related nursing teams to provide patients with more comprehensive nursing services through multidisciplinary cooperation. In the future, it is important to focus on developing innovative training programmes, build a multidisciplinary system for team cooperation, and cooperate with medical institutions to promote improvements in the IAD-related nursing ability and practices of nursing home nurses.

Data Sharing Statement

The data that support the findings of this study are available upon reasonable request from the corresponding author. The data are not publicly available due to privacy and ethical restrictions.

Ethics Approval and Informed Consent

Ethical approval was obtained.

Consent for Publication

Consent for publication was obtained from the relevant units.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

References

1. Black JM, Gray M, Bliss DZ, et al. MASD part 2: incontinence-associated dermatitis and intertriginous dermatitis: a consensus. *J Wound Ostomy Cont Nurs*. 2011;38(4):359–370. doi:10.1097/WON.0b013e31822272d9
2. Ding Y. *Wound Care*. Beijing: People's Medical Publishing House; 2017.
3. Ying Z, Jingli K, Enyao X, et al. Effect of spray washing on prevention of faecalfecal incontinence-associated dermatitis in bedridden elderly patients. *Appl Geriatr*. 2020;34(7):734–736.
4. Ma J, Li H, Zhang X, et al. Research progress on risk assessment of incontinence-associated dermatitis in ICU patients. *Int J Lab Med*. 2020;(202):97–99.
5. Lijun G, Qianqian S. Effect of targeted skin care on the prevention of incontinence-associated dermatitis in the elderly. *Chin Sci Technol J Database Med Health*. 2024;(8):164–167.
6. Langemo D, Hanson D, Hunter S, Thompson P, Oh IE. Incontinence and incontinence-associated dermatitis. *Adv Skin Wound Care*. 2011;24(3):126–140. doi:10.1097/01.ASW.0000395037.28398.6c
7. Bliss DZ, Savik K, Harms S, Fan Q, Wyman JF. Prevalence and correlates of perineal dermatitis in nursing home residents. *Nurs Res*. 2006;55(4):243–251. doi:10.1097/00006199-200607000-00004
8. Chen X, Tan S, Shen X, et al. Effect and evaluation of cluster nursing strategy on the intervention of elderly incontinence-associated dermatitis in nursing home. *J Pract Clin Nurs Electron J*. 2019;4(19):19,29.
9. Jia J, Gao Y. Construction and implementation of "hospital-community-elderly nursing home-family"incontinence management model. *China Nurs Manag*. 2019;19(201):25–27.
10. Jiang Q, Kuang D, Jing W, et al. Current status and influencing factors of incontinence-associated dermatitis among elderly inpatients in 52 hospitals across China. *Chin J Mod Nurs*. 2022;28(21):2843–2849.
11. Campbell JL, Coyer FM, Mudge AM, Robertson IM, Osborne SR. Candida albicans colonisation, continence status and incontinence-associated dermatitis in the acute care setting: a pilot study. *Int Wound J*. 2017;14(3):488–495. doi:10.1111/iwj.12630
12. Wei L, Bao Y, Chai Q, Zheng J, Xu W. Determining risk factors to develop a predictive model of incontinence-associated dermatitis among critically ill patients with faecalfecal incontinence: a prospective, quantitative study. *Wound Manag Prev*. 2019;65(4):24–33.
13. Feng J, Xu J, Yu C, et al. Development and clinical application of prevention and control guidelines for ICU incontinence-associated dermatitis. *Chin J Nurs*. 2014;49(12):1483–1486.
14. Zhang Q, Zhang K, Wang Y, et al. Psychometric properties of the Chinese version of the attitude towards the prevention of incontinence-associated dermatitis (C-APrIAD) among Chinese nurses. *J Tissue Viability*. 2021;30(3):421–426. doi:10.1016/j.jtv.2021.03.006

15. Zhang X, Wang X. Investigation on knowledge,attitude, practice and knowledge needs of incontinence-associated dermatitis among ICU nurses in Beijing third class A hospitals. *Nurs Res*. 2017;31(33):4257–4259.
16. Lu Q, Ying Y, Cuisong Z, et al. Investigation on the knowledge-attitude-practice status and knowledge demand of incontinence-associated dermatitis among neurology nurses in Guangxi region. *Guangxi Med*. 2019;41(23):3073–3076.
17. Cheng Y, Chen D. Investigation of cognition status of 1429 nurses on incontinence-associated dermatitis and structured nursing in Bozhou area. *Anhui Med*. 2019;40(5):573–577.
18. Li J, Liang H, Mi X. Investigation and analysis of cognition of nurses on incontinence-associated dermatitis in a medical alliance in Beijing. *Nurs Res*. 2018;32(8):1318–1320.
19. Li Y, Jin L, Wu J. Investigation and analysis of cognition status of community nurses on incontinence-associated dermatitis in Zhongshan area. *Nurs Pract Res*. 2016;13(5):101–103.
20. Lv T, Tang A, Yang Y, Wang J. Clinical nurses' attitudes towards medical device-related pressure injuries and an analysis of relevant influencing factors: a cross-sectional study in China. *Int Wound J*. 2024;21(11):e70093. doi:10.1111/iwj.70093
21. Geng Y. *Research on the Construction and Application of Incontinence-Associated Dermatitis Nursing Training Program*. Kunming Medical University; 2022.
22. China Geriatric Nursing; Alliance ND, Beijing Hospital, National Center for Geriatrics;National Center for Geriatrics, Beijing Hospital Medical Disciplines in China, School of Nursing, Peking Union Medical College, Department of Nursing, Qilu Hospital of Shandong University, The First Affiliated Hospital of China Medical University Nursing Department, Department of Nursing, China-Japan Friendship Hospital, Beijing Department of Geriatrics and Nursing. Expert consensus group on nursing practice for adult incontinence related dermatitis. Expert consensus on nursing practice of adult incontinence related dermatitis [J]. *Chinese Journal of Nursing*. 2020;55(200):100–105.
23. Kottner J, Blume-Peytavi U, Lohrmann C, Halfens R. Associations between individual characteristics and incontinence-associated dermatitis: a secondary data analysis of a multi-centre prevalence study. *Int J Nurs Stud*. 2014;51(10):1373–1380. doi:10.1016/j.ijnurstu.2014.02.012
24. Gacci M, Sakalis VI, Karavitakis M, et al. European Association of Urology guidelines on male urinary incontinence. *Eur Urol*. 2022;82 (4):387–398. doi:10.1016/j.eururo.2022.05.012
25. Mugita Y, Koudounas S, Nakagami G, Weller C, Sanada H. Assessing absorbent products' effectiveness for the prevention and management of incontinence-associated dermatitis caused by urinary, faecal or double adult incontinence: a systematic review. *J Tissue Viability*. 2021;30 (4):599–607. doi:10.1016/j.jtv.2021.07.002
26. Zhang Y, Leng M, Guo J, Duan J, Wang Z. The effectiveness of faecal collection devices in preventing incontinence-associated dermatitis in critically ill patients with faecal incontinence: a systematic review and meta-analysis. *Aust Crit Care*. 2021;34(1):103–112. doi:10.1016/j.aucc.2020.04.152
27. Pather P, Hines S, Kynoch K, Coyer F. The effectiveness of topical skin products in the treatment and prevention of incontinence-associated dermatitis: a systematic review protocol. *JBI Database Syst Rev Implement Rep*. 2015;13(5):36–52. doi:10.11124/01938924-201513050-00005
28. Banharak S, Panpanit L, Subindee S, et al. Prevention and care for incontinence-associated dermatitis among older adults: a systematic review. *J Multidiscip Healthc*. 2021;14:2983–3004. doi:10.2147/JMDH.S329672
29. Xiaoyan Y, Jing W, Yaping Y. Qualitative study on the knowledge, attitude, and practice of incontinence related dermatitis among nurses in Shanghai nursing home. *J Nurs*. 2024;31(24):18–22.
30. Committee for the Examination and Approval of Medical Terms, Sub-Comm ittee for the Examination and Approval of Family Planning Terms. *Terms of Family Lanning*. Beijing: Science Press; 2019.
31. Bei C. Development of the evaluation questionnaire for high school students' mathematical core literacy. *Teach Manag*. 2021;(4):80–83.
32. Wu M. *SPSS Statistical Application Practice*. Beijing: Science Press; 2003.
33. Hong Y. *Medical Statistics*. Beijing: People's Health Press; 2005.
34. Teng J. *Current Status and FACTORS INFLUENCINGInfluencing Factors of ICU Nurses' Knowledge, Attitude and Practice on Delirium*. Anhui University of Traditional Chinese Medicine; 2023.
35. Buchan J. Evaluating the benefits of a clinical ladder for nursing staff: an international review. *Int J Nurs Stud*. 1999;36(2):137–144. doi:10.1016/S0020-7489(99)00005-X
36. Zhao D. Effect of training nurses in the identification of incontinence-associated dermatitis and pressure injury in primary hospitals. *Chin Community Physicians*. 2019;35(23):169–170.
37. Zhang X, Wang X. Investigation on knowledge, attitude, practice and Knowledge source and demand of incontinence-associated dermatitis among ICU nurses. *Chin Nurs Manag*. 2017;17(8):1119–1122.
38. Gray M, Kent D, Ermer-Seltun J, McNichol L. Assessment, selection, use, and evaluation of body-worn absorbent products for adults with incontinence. *J Wound Ostomy Cont Nurs*. 2018;45(3):243–264. doi:10.1097/WON.0000000000000431
39. Zhang W, Chen Y, Xu M. Current status and factors influencing factors of knowledge,attitude and practice of incontinence-associated dermatitis among gastroenterology department nurses. *Contemp Res Nurs*. 2023;30(8):106–109.
40. Lu Q, Ying Y, Zhao C, et al. Investigation on the knowledge-attitude-practice status and knowledge demand of incontinence-associated dermatitis among neurology nurses in Guangxi region. *Guangxi Med*. 2019;41(23):3073–3076.
41. Yüceler Kaçmaz H, Kaplan Ö, Kaplan A, Şahin MG, Cetinkaya A, Avci A. Incontinence-associated dermatitis: prevalence in intensive care units and knowledge, attitudes, and practices of nurses. *J Nurs Care Qual*. 2023;38(4):354–360. doi:10.1097/NCQ.0000000000000707
42. Huang Q, Jin Y. Investigation on cognition status of ICU nurses on incontinence-associated dermatitis in integrated traditional Chinese and Western medicine hospital. *Chin J Emerg Crit Care Nurs*. 2020;1(6):520–524.
43. Sun X, Peng H, Guo X, et al. Analysis of adverse events and patient safety risks reporting in a tertiary hospital. *Chin Hosp Manag*. 2018;38 (9):49–51.
44. Xu L, Wang J, Li L. Effect of TeamSTEPPS management model on safety attitude of operating room nurses. *Chin Med Guide*. 2020;20 (5):185–188.
45. Chen H, Yang S, Xie W, et al. Investigation on the status of knowledge,attitude and practice of 46 skin management liaisons in the prevention of incontinence-associated dermatitis. *Nurs J*. 2017;24(4):51–55.
46. Smith-Miller C. Graduate nurses' comfort and knowledge level regarding tracheostomy care. *J Nurses Staff Dev*. 2006;22(5):222–229. doi:10.1097/00124645-200609000-00003

47. Huang Q, Jin Y. Research status and progress of Traditional Chinese Medicine external therapy in prevention and treatment of incontinence-associated dermatitis. *Chin J Mod Nurs*. 2020;26(9):1121–1126.
48. Liu Q, Zhu X, Hu F. Investigation and analysis of knowledge,attitude and practice of incontinence-associated dermatitis among nursing staff in a tertiary hospital in Xi 'an. *Chin J Mod Nurs*. 2018;24(23):2734–2738.
49. Zhang Q, Wang H. Investigation and analysis of ICU nurses' cognition of incontinence-associated dermatitis. *Chin J Pract Nurs*. 2013;(33):36–38.