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Nurses' Knowledge Regarding Incontinence-Associated Dermatitis

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Background and Objective: Incontinence-associated dermatitis (IAD), is a skin injury brought on by protracted exposure to urine or feces in the gluteal, sacral, or perianal regions. Therefore, this study aimed to evaluate nurses' level of knowledge, attitudes, social pressure, and intention to prevent IAD and to explore the factors that explain nurses' intention to prevent incontinence-associated dermatitis.

Methods: A cross-sectional study was conducted among staff nurses from two designated hospitals in Riyadh, Saudi Arabia. The Knowledge, Attitudes, and Practices of the Incontinence-associated Dermatitis Questionnaire with 22 items (KAP-IAD-Q) on a five-agreement rating scale (1=*not agreeable* to *5=highly agreeable*) was used. Also, the intention to use deep vein thrombosis (DVT) preventive measures was rated on a seven-point Likert scale, ranging from 1=*strongly disagree* to 7=*strongly agree*.

Results: The participants showed that they had a sufficient knowledge (M= 48.2 ± 9.9) and, a positive attitude toward IAD prevention average score of 6.6 (SD ± 9.9) related to IAD etiology and risk factors. The perceived behavior to prevent IAD average was 5.1 (SD ± 3.9), showing that nurses had confidence and control in preventing IAD. The intention average score was 5.3 (SD ± 3.1), which indicates that nurses had the intention to prevent IAD. Furthermore, knowledge, attitude, social pressure, and perceived behavior to prevent IAD had a positive strong association with intention to prevent IAD (r= 0.547, $p < 0.01$; r= 0.564, $p < 0.01$; r= 0.579, $p < 0.01$; and $r = 0.709$, $p < 0.01$) respectively.

Conclusion: The study highlights the critical role of knowledge, attitudes, social pressure, and perceived behavior in shaping nurses' intentions to prevent IAD. The findings demonstrate that nurses generally have a positive attitude and strong intention to prevent IAD, influenced by their level of education, hospital type, and clinical experience.

Keywords: knowledge, attitude, practice, dermatitis, nurses, Saudi Arabia

Introduction

Perineal dermatitis, also known as incontinence-associated dermatitis (IAD), is a skin injury brought on by protracted exposure to urine or feces in the gluteal, sacral, or perianal regions.[1] IAD frequently includes edema and erythema of the skin's surface, as well as inflammation and tissue damage.[2] According to various healthcare settings and patient demographics, its prevalence ranges from 5.6 to 50%.[3–5] IAD prevalence in long-term care institutions in the United States and Canada ranged from 8.4% to 19% in 2019.[6]

A hospital in Australia reported in 2014 that 24% of patients had urine or fecal incontinence, and 42% of those patients went on to develop IAD.[7] Patients with IAD can suffer from pain, sleep disturbances, and discomfort,[1] which has serious negative effects on patients' quality of life in terms of their health, the length of their hospital admissions, and their mental health.[8] Patients with IAD suffer from severe pain, burning, and itching in the affected areas (buttocks, perineum, and gluteal clefts).[1,9,10] Loss of independence, sadness, sleep disturbance, and exacerbation of fecal and urine soiling are also potential effects of IAD.[11–13] The absence of specific, organized strategies and procedures still makes it

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difficult to prevent and manage IAD effectively.[14] Nurses are in a key position to promote and maintain healthy skin conditions through evidence-based practices because of the care they provide to patients.[15] The implementation of such evidence into practice, however, might be significantly hampered by knowledge gaps, unfavorable attitudes, and improper nursing procedures.[15]

This is challenging given the lack of clarity surrounding the existing state of IAD-related knowledge, attitudes, and practices (KAP).[16] Although there is a large body of research evaluating nurses' knowledge, attitudes, and ability to avoid pressure injuries (PIs), the results cannot be generalized to IAD due to the basic differences between IAD and PIs in terms of etiology, prevention, and management strategies.[16] For nurses to efficiently maintain skin integrity, their knowledge levels must be acceptable.[16] Nurses can recognize patients with a high likelihood of damaged skin integrity by having a thorough understanding of risk factors.[16] To improve care outcomes for patients who already have reduced skin integrity, understanding the therapy options is also essential. In addition, according to published research, rigorous prevention measures, and appropriate behavioral practices, adequate knowledge about the specific diseases would have a significant impact on positive health outcomes, which would aid in limiting the disease's spread.[17,18]

Nurses continue to be at the forefront of IAD prevention and treatment in healthcare settings due to their direct and frequent interaction with patients.[15,19] The care of IAD requires long-term adherence to a combination of processes and products. Most nurses still find it challenging to implement and follow the many well-acknowledged evidence-based preventative guidelines that are available to aid in making wise judgments and lowering the incidence of IAD.[20] It is anticipated that the identification of these impediments to compliance and non-compliance with recommendations requires adequate knowledge and positive attitudes which will result in the development of effective and scientific IAD prevention solutions. In addition, literature suggested that posing adequate knowledge, attitude, and practice about particular diseases helps them in accurate diagnosis and health outcomes.[21,22]

IAD can be avoided by taking sensible precautions, even if it is a crucial clinical problem linked to overall poor health.[23] IAD, sadly, is consistently overlooked as a nursing care need.[19] 20.5%–39.5% of nurses were said to have neglected skin care during their most recent shift.[22,24,25] The process of implicit rationing was created through clinical priority setting in response to time constraints and a nursing labor shortage.[16] Skincare is frequently neglected as a result of nurses' increased attention to "critical" care in clinical settings[14] One of the causes might be a negative attitude toward pressure IAD prevention. Therefore, this study aimed to evaluate nurses' level of knowledge, attitudes, social pressure, and intention to prevent IAD and to explore the factors that explain nurses' intention to prevent incontinence-associated dermatitis.

Methods

Study Design, Setting, and Sample

This study was conducted by using a cross-sectional, correlational descriptive design. Staff nurses, who provide direct patient care, were recruited from two designated hospitals in Riyadh, Saudi Arabia. The two hospitals were public and private. The inclusion criteria to participate include staff nurses with all levels of education which range from associate to diploma degrees and work in different acute units, experience between 0–30 years was included. Additionally, participating nurses must be capable to speak and read English. The exclusion criteria were nurses who refused to participate, and the ones who were working in outpatient, quality, and managerial departments.

Sample Size

A non-probability, convenience sampling was used in this study. The sample was calculated by using G*Power software 3.1 with a significance level of 0.05, a power of 0.80, a medium effect size of 0.15, and 14 predictors, a minimum of 135 participants was needed to run the statistical analyses. However, to avoid missing responses and to add strength to the study we approached 200 nurses, so a total of 200 nurses were included in the final analysis.

Data Collection

The participants completed self-report paper-based surveys. The data were gathered during the morning and night shifts without the attendance of the head or charge nurses to minimize any influence on participating nurses' responses. The participants who were willing to participate were invited to sit in a meeting room. Afterward, the cover letter was provided to the participants with the necessary information regarding this study. After completing the surveys on-site, the participants were asked to place them in an envelope to secure their anonymity.

Measures

Three instruments were employed to collect data. The three instruments were as follows: Knowledge, Attitudes, and Practices of the Incontinence-associated Dermatitis Questionnaire (KAP-IAD-Q), Intention to Use incontinence-associated Dermatitis Preventive Measures instrument, and demographics of participants.

The demographics including age, gender, marital status, level of nursing education, years of experience as a nurse, hospital type, unit type, and training related to IAD prevention were collected. While the KAP-IAD-Q measures staff nurses' knowledge, attitude, and practice regarding IAD prevention.[26] The KAP-IAD-Q has 22 items that are rated on a five-agreement rating scale (1=*not agreeable*, 2=*slightly agreeable*, 3=*somewhat agreeable, 4=quit agreeable, and 5=highly agreeable*). The KAP-IAD-Q has 13 items related to IAD knowledge (eight items related to IAD etiology and identification and five items related to risk factors), four items related to nurses' attitudes, and six items related to nurses' practice to prevent IAD.[26] The KAP-IAD-Q has a total score ranging from 22 to 110.[26] A high value indicates high knowledge, a positive attitude, and a high frequency of performing IAD prevention. The KAP-IAD-Q has a good test and retest reliability (ICC=0.89).[26] In this study, the researchers used the knowledge subscales which included 13 items. This makes the total score range from 13 to 65.

The intention to use preventive measures instrument was created to measure the intention to use deep vein thrombosis (DVT) preventive measures.[27] This study was composed of 14 items divided into four subscales: attitude (4 items), subjective norms (3 items), perceived behavioral control (4 items), and behavior intention (3 items). For this study, we modified the original items to fit the content of the study. The items in the two subscales are rated on a seven-point Likert scale, ranging from 1=*strongly disagree* to 7=*strongly agree*. Scores range from −3 to +3 for each item; with higher scores reflecting a high social pressure and high intention in respect to performing IAD prevention. The validity and reliability of the instrument were established (Overall Cronbach alpha = 0.82, subjective norm subscale = 0.74, behavior intention subscale=0.79).[27]

Data Analysis

SPSS (v.26.0) was used to clean data and perform all statistical analyses. Missing data ranged between 0.6% and 2.5% across all variables. Descriptive statistics were utilized to explore participants' characteristics and scale scores. Bivariate analyses, *t*-tests one-way analysis of variance (ANOVA), and Pearson correlation were used to examine the mean differences in frequency of performing IAD prevention across all the categorical variables. Inferential testing was conducted with hierarchical multiple regression, which provided data regarding the relationships between the 11 independent variables and the intention to prevent IAD. The level of significance was set at $p<0.05$.

Ethical Considerations

All the study procedures were performed according to the Declaration of Helsinki guidelines. Institutional review board approvals were obtained before data collection from two selected (DR. Sulaiman Al Habib Hospital Research Center, RC23.07.011 Reference number HAP-01-R-082, and King Fahad Medical City Institutional Review Board, IRB log Number: 23–341E) hospitals in Riyadh, Saudi Arabia. A cover letter was attached to each survey to all participants. The cover letter includes the necessary information that elucidates the purpose of the study, potential risks and benefits, privacy and confidentiality, voluntary participation, and compensation. The participants were not required to sign a consent to participate in this study because completing this survey implies that they voluntarily agreed to participate in this study.

Results

Participants' Demographic Characteristics

Table 1 presents the participants' demographic characteristics. The mean age of the participants was 32 years with a mean of 8.5 years of experience. Most of the participants were female *n*= 186 (84%). The participants varied regarding education level, but the majority of them held a bachelor's degree *n*= 161 (80.5%). Also, most of the participants were married *n*= 106 (53%). The participants were recruited equally from a private and public hospital. Approximately, all participants received training related to wound care 166 (83%).

Knowledge About IAD, Attitude Toward IAD Prevention, Social Pressure, Perceived Behavior to Prevent IAD, Intention to Prevent IAD

The participants showed that they had a sufficient knowledge level (*M*= 48.2 ± 9.9) related to IAD etiology and risk factors (Table 2). The participants had a positive attitude toward IAD prevention average score of 6.6 (*SD* ± 9.9). The average score of social pressure to prevent IAD was 3.6 (*SD* ± 3.5) which indicates that nurses experience some social pressure to prevent IAD. The perceived behavior to prevent IAD average was 5.1 (*SD* ± 3.9), showing that nurses had confidence and control in preventing IAD. The intention average score was 5.3 (*SD* ± 3.1), which indicates that nurses had the intention to prevent IAD.

Table 1 Demographics Characteristic of Participants (N= 200)

Variables	***Frequency n* (%) *M* ± *SD***
Age [a] (21–55)	32 ± 6.7
Years of Experience [b] (1–30)	8.5 ± 5.9
Gender	
Male	32 (16%)
Female	168 (84%)
Level of Education	
Diploma	33 (16.5%)
Bachelor	161 (80.5%)
Master	6 (3%)
Marital Status	
Single	91 (45.5%)
Married	106 (53%)
Divorced	3 (1.5%)
Type of Hospital	
Private	100 (50%)
Public	100 (50%)
Training related to wound care	
Yes	166 (83%)
No	34 (17%)

Note: [a]Missing n= 8, [b]Missing n= 6.
Abbreviation: *M*= Mean; *SD*= Standard Deviation.

Table 2 Descriptive Statistics of Average Scores of Knowledge About IAD, Attitude Toward IAD Prevention, Social Pressure, Perceived Behavior to Prevent IAD, and Intention to Prevent IAD

Variables	Range	Mean (*SD*)
Knowledge related to IAD etiology and risk factors level [a]	20–60	48.2 (*SD*= 9.9)
Attitude toward IAD prevention level [b]	(−9) – 12	6.6 (*SD*= 4.5)
Social pressure to prevent IAD [c]	(−6) – 9	3.6 (*SD*= 3.5)
Perceived behavior to prevent IAD	(−6) – 12	5.1 (*SD*= 3.9)
Intention to Perform IAD prevention	(−9) – 9	5.3 (*SD*= 3.1)

Note: [a]Missing n= 6, [b]Missing n= 1, [c]Missing n= 1.

Association and Mean Differences in Intention to Prevent IAD

Table 3 and Table 4 show information related to the association and mean differences between variables in this study. Gender, type of hospital, knowledge, attitude, social pressure, and perceived behaviour to prevent IAD were significantly associated with nurses' intention to prevent IAD. Regarding gender and type of hospital, there were statistically significant differences in the intention to prevent IAD average score (t= - 2.503, p= 0.013; t= 2.870, p= 0.005) respectively. These differences indicated that female nurses and nurses working in private hospitals had more intention to prevent IAD. In addition, four continuous variables (knowledge, attitude, social pressure, and perceived behaviour to prevent IAD) had a positive strong association with intention to prevent IAD (r= 0.547, $p < 0.01$; r= 0.564, $p < 0.01$; r= 0.579, $p < 0.01$; and $r = 0.709$, $p < 0.01$) respectively.

Multiple Regression Analysis

Two models were used to run the multiple regression analysis (Table 5). The first model included participants' demographic characteristics which explained 10.8% of the variance of the intention to prevent IAD ($p < 0.01$). Type

Table 3 Mean Differences in Intention of Performing IAD Prevention by Sample Characteristics

Variables	The intention of performing IAD prevention			
(possible range)	(−9) – 9			
		M (SD)	T Or *F*	P
Gender	Male	4 (3.3)	(−2.503)	0.013*
	Female	5.6 (3.1)		
Level of education	Diploma	4.5 (3.1)	2.274	0.106**
	Bachelor	5.5 (3.1)		
	Master	3.5 (4.7)		
Marital status	Single	5.4 (3.3)	0.809	0.447**
	Married	5.1 (3.0)		
	Divorced	7.3 (1.5)		
Type of hospital	Private	5.9 (2.8)	2.870	0.005*
	Public	4.6 (3.4)		
Training related to wound care	Yes	5.4 (2.9)	1.182	0.239*
	No	4.7 (3.8)		

Note: *Independent sample *t*-test. **one-way ANOVA were used.

Table 4 Correlation Matrix for Age, Years of Experience, Knowledge About IAD Prevention, Attitude Toward IAD Prevention, Social Pressure to Prevent IAD, Perceived Behavior Toward IAD Prevention, and Intention to Prevent IAD

Variables		1	2	3	4	5	6	7
1	Age	1						
2	Years of Experience	0.897**	1					
3	Knowledge	0.016	0.030	1				
4	Attitude	0.036	0.071	0.578**	1			
5	Social pressure	0.020	0.043	0.488**	0.553**	1		
6	Perceived behavior	−0.021	−0.023	0.594**	0.602**	0.761**	1	
7	Intention	0.027	0.067	0.547**	0.564**	0.579**	0.709**	1

Note: Pearson's correlation was used. **$p < 0.01$.

Table 5 Hierarchical Multiple Regression of Intention to Perform IAD Prevention

Variables	Intention to perform IAD prevention							
	Model 1				Model 2			
	B	*β*	*T*	*P*	B	β	*T*	*P*
Age	−0.041	−0.085	−0.516	0.607	−0.061	−0.129	−1.091	0.277
Gender -male	0.977	0.112	1.534	0.127	0.538	0.062	1.180	0.240
Marital Status – divorce	0.417	0.069	0.824	0.411	0.046	0.007	0.126	0.900
Type of hospital - private	−1.235	− 0.192	−2.618	0.010**	−0.397	−0.062	−1.160	0.248
Level of education – Bachelor	−1.225	−0.182	−2.456	0.015*	0.177	0.026	0.480	0.632
Years of experience	0.116	0.215	1.333	0.184	0.090	0.168	1.455	0.148
Training related to wound care	−0.371		−0.593	0.554	−0.356	−0.041	−0.787	0.433
Knowledge related to IAD					0.047	0.143	2.097	0.037*
Attitude toward IAD prevention					0.113	0.160	2.257	0.025*
Social pressure to prevent IAD					0.015	0.017	0.204	0.839
Perceived behavior to prevent IAD					0.399	0.495	5.506	0.0001**
R^2	0.108				0.562			
F	3.082				20.330			
ΔR^2	0.108				0.454			
Δ F	3.082				45.162			
P	0.004				0.000			

Note: * Significance at 0.05 level; ** Significance at = 0.01 level.

of hospital and level of education were statistically significant in predicting the nurses' intention to prevent IAD (β = -0.192, $p = 0.010$; β= - 0.182, $p< 0.015$) respectively. This indicates that nurses who work in private hospitals and hold bachelor's degrees had the intention to prevent IAD more than others. In the second model, knowledge about IAD,

attitude toward IAD prevention, social pressure to prevent IAD, and perceived behaviour to prevent IAD were added, which explained 56.2% of the variance of the intention to prevent IAD ($p < 0.01$). Knowledge-related IAD was statistically significant in predicting nurses' intention to prevent IAD (β= 0.143, p=0.037). This indicated that nurses with a high level of knowledge had more intention to prevent IAD. In addition, attitude toward IAD prevention was statistically significant in predicting nurses' intention to prevent IAD (β= 0.160, p=0.025) which reflects those nurses with positive attitudes toward IAD prevention had more intention to prevent IAD. Perceived behaviour to prevent IAD was statistically significant predicting intention to prevent IAD (β= 0.495, $p < 0.01$). This reflects those nurses who had high confidence and control in preventing IAD had more intention to prevent IAD.

Discussion

The mean knowledge score of participants was 48.2 out of 60, showing strong IAD etiology and risk factor knowledge. The high mean score implies that the nurses polled understand IAD, which is essential for prevention and treatment. Knowing the origin and risk factors of IAD helps identify and treat it early, minimizing its incidence and severity in clinical settings. The knowledge level in this study matches previous studies. Tay et al examined nurses' IAD knowledge, attitudes, and practices and found that their psychometrically validated KAP-IAD-Q had strong internal consistency and reliability, with high scores indicating good understanding.[26] Kaçmaz, Kaplan et al revealed that Turkish ICU nurses with greater clinical experience and high-risk patients had better knowledge ratings, stressing the relevance of practical experience in comprehending.[28]

A large multicenter study in China by Liu et al found substantial heterogeneity in nurses' IAD diagnosis accuracy, highlighting the necessity for ongoing education.[29] Barakat-Johnson et al discovered that health professionals knew IAD etiology and risk factors well, but categorization and treatment were much less so.[30] This mismatch highlights the need for focused educational initiatives to connect theoretical and practical knowledge. Qiang et al found that nurses with greater clinical experience scored better on IAD knowledge exams. This matches our research, where 83% of participants got wound care instructions, explaining the high mean knowledge score.[31]

The mean attitude score of 6.6 out of 12 in the study suggests that nurses are usually favorable about IAD prevention. Positive perspectives help patients comply with preventive measures and optimal practices, reducing IAD incidence and severity. Tay et al, who designed and validated the Knowledge, Attitudes, and Practices of Incontinence-Associated Dermatitis Questionnaire, support this conclusion. Similar to the present research, nurses had good views on IAD prophylaxis.[26] This shows that research agrees on the significance of avoiding IAD and nurses' proactive approach to prevention.

Kaçmaz, Kaplan et al found that Turkish ICU nurses, especially those with substantial clinical expertise or who cared for high-risk patients, were favorable about IAD prevention.[28] This shows that expertise and exposure to high-risk settings may emphasize preventative efforts, as the present research found. Qiang et al observed that Chinese ICU nurses' opinions about IAD improved with time, although their behaviors differed.[31] This increase in views suggests a greater awareness and good opinion of IAD prevention, supporting the present study's positive findings. Ximenes et al found that tailored training improved nurses' IAD preventive attitudes in Brazil.[32] Educational interventions may promote positive attitudes, supporting the present study's finding that nurses value IAD prevention and are motivated by training and knowledge.

The mean social pressure score of 3.6 out of 9 in this research implies nurses face modest social pressure to avoid IAD. This score indicates how much nurses feel pressured by coworkers, superiors, and the hospital environment to conduct preventive care. Social pressure, such as social pressure and perceived expectations, may impact healthcare habits. This moderate social pressure indicates that nurses realize the necessity of IAD prevention but may get varied degrees of peer and superior support. Social pressure on nursing practices emphasizes the need for a friendly and collaborative workplace that values and promotes prevention.

Comparing these results to others helps explain how social pressure prevents IAD. Qiang et al observed that social pressure substantially affected Chinese ICU nurses' IAD preventative practices.[31] According to the present research, moderate social pressure affects nursing practices, and nurses who experience stronger social pressure from peers and supervisors are more likely to take preventative measures. In multicenter Chinese hospital research, Liu et al found that

social pressure was a major determinant in nurses' IAD preventive strategy adherence.[29] The research found that nurses who felt supported and encouraged by their colleagues and the institution followed preventative behaviors better. This supports the present study's finding that modest social pressure drives IAD prevention.

The mean perceived behavior score of 5.1 out of 12 in this research shows that nurses are relatively confident in their IAD prevention abilities. This score shows their self-assessed proficiency in IAD prevention and procedure compliance. Preventive practices depend on perceived behavior, which emphasizes the relevance of knowledge and self-efficacy in healthcare. Comparing these data to others helps explain how perceived conduct affects nursing practices. With proper information and training, Singaporean nurses showed strong perceived behaviors, according to Tay et al in their information, Attitudes, and Practices of Incontinence-Associated Dermatitis Questionnaire (KAP-IAD-Q).[26] Their investigation found that validated educational interventions substantially improved perceived behavior, supporting the present study's result that training and knowledge improve moderate reported conduct.

Kaçmaz, Kaplan et al examined Turkish ICU nurses' knowledge, attitudes, and behaviors regarding IAD and found that those with more than seven years of experience and those caring for high-risk patients had higher perceived behavior ratings.[28] This association between experience and perceived conduct supports the present study's findings that experience and clinical exposure boost nurses' IAD prevention confidence. Qiang et al observed that ICU nurses' IAD preventive guidelines and incidence monitoring knowledge substantially affected their perceived behavior ratings in China. Similar to the present research, well-versed nurses had higher perceived behavior ratings.[31] This suggests that comprehensive training programs that include theoretical and practical knowledge might improve nurses' conduct.

In a quasi-experimental research in Brazil, Ximenes et al found that training enhanced nurses' IAD preventative activities.[32] Following training, nurses reported more confidence and control in executing preventative measures, echoing the moderate perceived behavior scores in the present research. This supports the idea that focused educational interventions improve nurse conduct. According to Liu et al, Chinese ICU nurses with better education and more wound-related training had higher perceived behavior ratings.[29] This supports the present research, which suggests that nurses' perceived capacity to prevent IAD requires ongoing education and practical training.

Barakat-Johnson et al evaluated Australian clinicians' IAD knowledge and found that nurses with greater experience and those working in supportive institutions had higher perceived behavior ratings.[30] This confirms the present study's result that a supportive workplace and continued professional development improve IAD-preventative behavior. According to Lee et al, Australian ICU nurses with formal training and institutional support had higher perceived behavior ratings.[33] This confirms the present research and demonstrates that institutional policies and organized training programs help nurses achieve IAD prevention confidence. This difference from the present research shows how important training and resources are for nurses' trust in preventative strategies.

The mean intention score of 5.3 out of 9 in this research demonstrates significant nurse intention to avoid IAD. This shows that nurses are motivated and dedicated to preventing IAD in clinical practice. Behavior change theories depend on intention, which shows people's desire to behave. Nursing intentions vary among healthcare settings, as shown by these and other research. Tay et al in Singapore reported that developing and validating the Knowledge, Attitudes, and Practices of Incontinence-Associated Dermatitis Questionnaire (KAP-IAD-Q) increased nurses' IAD prevention intentions.[26] Their research found that nurses' intention to adopt preventative measures increases when they have comprehensive knowledge and practical skills, supporting the present study's high intention scores.

In Turkey, Kaçmaz, Kaplan et al examined ICU nurses' IAD knowledge, attitudes, and behaviors. They observed that clinically experienced and high-risk nurses had better IAD prevention goals.[28] This is similar to the present research, where experienced nurses showed strong IAD prevention commitment, demonstrating the impact of clinical experience in creating preventive intentions. Qiang et al examined Chinese ICU nurses' IAD knowledge, attitudes, and practices.[31] Their research found that nurses who understood IAD preventive policies and standards had greater IAD prevention goals. This validates the present study's findings that nurses need a good knowledge foundation to have high preventative intentions. Liu et al found that Chinese ICU nurses with better education and wound care training intended to reduce IAD.[29] The present research emphasizes the relevance of continuing education and professional development in nurses' IAD preventive efforts.

Ximenes et al in Brazil found that nurses' IAD prevention goals increased post-training.[32] Their quasi-experimental research shows that focused education affects nurses' preventative intentions, supporting the present study's high intention ratings. This emphasizes the need for ongoing education for nurses' IAD preventive efforts. Barakat-Johnson et al evaluated Australian nurses' IAD knowledge and found that those with greater experience and in supportive circumstances had stronger intentions to avoid IAD.[30] This confirms the present study's result that a supportive work environment and professional experience shape nurses' strong preventative intentions.

Female nurses reported greater intention ratings for preventing IAD than male nurses ($t = -2.503$, $p = 0.013$), consistent with gender-related patterns in other healthcare practices. Different empathy, caring dispositions, and professional experiences between male and female nurses may explain this gender variation in intention. For instance, Park et al found that female nurses had better preventative intentions and healthcare protocol compliance than male nurses, indicating that gender may affect nursing motivation.[34] Due to shared skin care and patient hygiene standards, Kang and Kim (2018) discovered that female nurses were more committed to pressure ulcer avoidance, which might extend to IAD prevention.[35] These studies show the relevance of gender dynamics in creating and implementing educational interventions and support systems to improve preventative intentions among all nurses.

Private hospital nurses exhibited greater intention ratings for preventing IAD than public hospital nurses ($t = 2.870$, $p = 0.005$) due to resource, training, and institutional priority. Private hospitals have greater financial resources, which might mean better wound care supplies, specialized training personnel, and more instructional activities. Liu et al observed that nurses at well-resourced institutions had higher competence and intention to apply wound care procedures owing to better training and resources.[29] Due to better training and access to the latest clinical guidelines and resources, Barakat-Johnson et al found that healthcare personnel at private or well-funded institutions had stronger IAD preventive knowledge and practices.[30] Thus, private hospitals' supportive environments encourage continual improvement and patient care best practices, which may explain why nurses at these hospitals have better intention scores.

Knowledge, attitude, social pressure, perceived behavior, and IAD prevention purpose are strongly correlated, demonstrating the complexity of nursing practices. Much research has shown this association. Tay et al found that increased knowledge and positive attitudes improve IAD preventative strategies.[26] Kaçmaz, Kaplan et al revealed that ICU nurses with deeper knowledge and good attitudes toward IAD prevention were more vigilant in their preventative actions, supported by clinical experience and ongoing education.[28] Barakat-Johnson et al noted that peer influence and organizational expectations enforce better practices via social pressure.[30] Lee et al found that institutional support and peer reinforcement promoted proactive IAD management.[33]

Model 1 shows that demographics account for 10.8% of the variation in IAD prevention intents, with significant predictors being hospital type ($\beta = -0.192$, $p = 0.01$) and education level ($\beta = -0.182$, $p < 0.05$). This shows that private hospital nurses and those with greater education want to avoid IAD more. Park et al found that nurses with higher education levels had better knowledge and practices for pressure injury and IAD prevention, supporting the premise that education improves clinical skills and preventative measures.[34] Liu et al found that nurses in tertiary hospitals had better wound care training and thus higher wound care proficiency.[29] This may be due to differences in resources, training opportunities, and institutional priorities.

Model 2, which includes knowledge, attitude, social pressure, and perceived conduct, explains 56.2% of IAD prevention intention. Key determinants of nurses' preventative intentions include knowledge ($\beta = 0.143$, $p < 0.05$), attitude ($\beta = 0.160$, $p < 0.05$), and perceived behavior ($\beta = 0.495$, $p < 0.01$). Tay et al validated the Knowledge, Attitudes, and behaviors of the Incontinence-Associated Dermatitis Questionnaire (KAP-IAD-Q) and found that nurses' behaviors were substantially impacted by increased knowledge and positive attitudes.[26] Qiang et al observed that ICU nurses' knowledge and attitudes concerning IAD drove their preventative actions, with knowledge directly affecting their ability to adopt effective prevention initiatives.[31]

Although this study has several limitations, firstly it includes the reliance on self-reported data, which may not accurately reflect actual practices and could introduce bias. Secondly, the sample was restricted to a single hospital, limiting the generalizability of the findings to other settings. Additionally, the study did not explore concurrent and discriminant validity, which could further substantiate the psychometric properties of the questionnaire used. Future

research should address these limitations by incorporating observational methods, expanding the sample size and diversity, and including additional validity measures.

Implications and Recommendations

The examination of factors for IAD prevention intention has major implications for nurses, educators, healthcare administrators, and legislators. A holistic strategy that addresses stakeholder requirements and responsibilities is needed to improve IAD prevention. Education and training are essential for nurses. The substantial correlation between knowledge and preventative intents emphasizes the necessity for ongoing professional development on IAD etiology, risk factors, and therapy. To boost IAD preventative self-efficacy, these programs should teach practical skills and confidence-building activities. Attending frequent workshops, seminars, and certification courses may improve nurses' IAD management skills and patient outcomes.

Nurse educators shape future nurses' attitudes and actions. Undergraduate and postgraduate nursing curricula must include thorough IAD material. The integration should stress evidence-based approaches, critical thinking, and problem-solving. Interactive approaches including case studies, simulations, and role-playing may help students understand and apply theoretical principles in clinical situations. Policymakers are crucial to enable IAD prevention. Develop and enforce national IAD management guidelines and standards to provide consistent and high-quality treatment across hospital settings. Teaching patients and caregivers about skin care, IAD symptoms, and prevention may empower them to engage in their treatment. Informational materials and training may assist support nurses in avoiding IAD, particularly in home care.

Conclusion

In conclusion, this study highlights the critical role of knowledge, attitudes, social pressure, and perceived behavior in shaping nurses' intentions to prevent IAD. The findings demonstrate that nurses generally have a positive attitude and strong intention to prevent IAD, influenced significantly by their level of education, hospital type, and clinical experience. The study underscores the need for continuous education and standardized protocols to enhance nurses' competency and confidence in IAD prevention. By addressing these factors, healthcare institutions can improve patient outcomes and reduce the prevalence of IAD in clinical settings.

Data Sharing Statement

The data used to support the findings of this study is available from the corresponding author upon request.

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Disclosure

The authors declare no conflict of interest.

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