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A study to assess the effectiveness of self-structured teaching programme on knowledge and practice regarding use of Braden scale on pressure sore among staff nurses in selected hospital at Jaipur

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Abstract

Introduction: Pressure ulcers remain a significant concern in clinical practice, particularly among immobile and critically ill patients. The Braden scale is a widely utilized tool for assessing the risk of pressure sore development. However, its effective implementation depends on the knowledge and practical competence of nursing staff. This study was conducted to evaluate the effectiveness of a self-structured teaching programme in enhancing the knowledge and practice of staff nurses regarding the use of the Braden scale.

Methodology: A quantitative, pre-experimental one-group pre-test post-test design was adopted. The study was conducted at City Hospital, Jaipur, involving 120 staff nurses selected through non-probability convenience sampling. A structured knowledge questionnaire and an observational checklist were used as data collection tools. Statistical analysis was performed using descriptive and inferential methods, including the paired t-test and chi-square test.

Results: The mean knowledge score increased from 11.36 in the pre-test to 23.53 in the post-test, with a significant t-value of 11.53 at DF=129. Similarly, the mean practice score improved from 8.85 to 10.68, with a t-value of 8.38, indicating a statistically significant improvement ($p<0.05$). Post-test results showed that 98.33% of participants had good knowledge and 88.33% demonstrated good practice. A significant association was found between post-test knowledge and demographic variables such as gender ($\chi^2 = 8.47$) and work experience ($\chi^2 = 16.16$).

Conclusion: The structured teaching programme was highly effective in enhancing both knowledge and practical skills of staff nurses regarding pressure sore risk assessment using the Braden scale. These findings support the inclusion of structured training as a core component of professional nursing development to promote evidence-based practice and improve patient care outcomes.

Keywords: Braden scale, pressure ulcer, structured teaching programme, staff nurses, knowledge and practice

Introduction

Pressure ulcers, also referred to as decubitus ulcers, derive their name from the Latin term decumbere, meaning "to lie down." These ulcers develop when soft tissues such as the skin, subcutaneous layers, and muscles are compressed between a bony prominence and an external surface over a prolonged period. Early identification of patients at risk enables the implementation of effective preventive strategies to reduce their occurrence [1].

A pressure ulcer is a localized area of tissue necrosis that forms due to extended compression of soft tissue between a bony prominence and an external surface. Multiple factors contribute to the development of pressure ulcers, including advanced age, dehydration, medication use, malnutrition, incontinence, friction, and shear forces. Common anatomical sites affected include the occiput, scapula, sacrum, buttocks, ischium, heels, and toes.

The high incidence of pressure ulcers is considered a significant negative indicator of healthcare quality, as it adversely affects patients' quality of life and contributes to increased morbidity and mortality. Patients in intensive care units (ICUs) are particularly vulnerable due to sedation, mechanical ventilation, and prolonged immobility, which collectively heighten the risk of skin breakdown [2].

Often referred to as bedsores or decubitus ulcers, pressure ulcers predominantly occur in body regions subjected to prolonged pressure over bony prominences. They are characterized as areas of unrelieved pressure leading to ischemia, cellular death, and subsequent tissue necrosis. These ulcers frequently lead to adverse post-surgical outcomes, including pain, the need for additional medical or surgical interventions, extended hospitalization, scarring, increased morbidity, and elevated healthcare costs. In surgical patients, the risk of pressure ulcer development is notably higher. Pressure ulcers have also been recognized as one of the most physically debilitating and financially burdensome complications of the 20th century [3].

The Braden scale is widely utilized to assess the risk of pressure ulcer development. It comprises six subscales that represent key risk factors: mobility, activity, sensory perception, skin moisture, nutritional status, and friction/shear. Each subscale is scored from 1 to 4 (except friction/shear, which is scored 1 to 3), with lower scores indicating higher risk. The total Braden score ranges from 6

to 23 [4].

Designed for use by bedside nurses, the Braden scale facilitates individualized risk assessment by evaluating specific domains. These include sensory perception (ability to respond to discomfort), activity level (degree of physical activity), mobility (ability to change body position), moisture (extent of skin exposure to moisture), nutrition (adequacy of caloric intake), and friction/shear (level of assistance needed to reposition). Higher scores on each subscale and the total score signify a lower risk of developing pressure injuries. The scale comprehensively addresses the two primary factors involved in pressure injury development: pressure (sensation, activity, mobility) and tissue tolerance (moisture, nutrition, friction/shear) [5].

Need of the study

Pressure Injuries (PIs), also referred to as decubitus ulcers, ischemic ulcers, bedsores, pressure sores, and pressure ulcers, are localized areas of skin and underlying soft tissue damage typically occurring over bony prominences or as a result of medical devices. These injuries primarily affect individuals who present with multiple risk factors influencing both mechanical stress and individual tissue tolerance. Despite their severity, the majority of pressure injuries can be effectively prevented through proactive strategies such as regular skin assessments, risk evaluations, appropriate use of support surfaces, routine repositioning, mobilization, and nutritional support [6].

Among chronic conditions, pressure ulcers rank as the third most expensive disorder, following cancer and cardiovascular diseases. It is estimated that approximately 1.7 million individuals develop pressure ulcers annually. The financial burden associated with prevention and treatment is substantial, not only in terms of healthcare expenditure but also in the diminished quality of life for affected patients. The pain and suffering caused by pressure ulcers are immeasurable, reinforcing the age-old adage that "an ounce of prevention is worth a pound of cure" [7].

In a study by Kim *et al.*, various pressure ulcer risk assessment scales were evaluated in surgical ICU patients. Their findings demonstrated that the Cubbin-Jackson scale was superior in predicting pressure ulcer risk when compared to other tools [8].

Further research aimed at evaluating the effectiveness of the Braden scale, one of the most widely used assessment tools, revealed that it possessed moderate predictive validity. The analysis, which included literature published between 2000 and 2020 across databases such as PubMed, EMBASE, CINAHL, Web of Science, and the Cochrane Library, indicated that the Braden scale was more suitable for hospitalized patients under the age of 60 and within the Caucasian population. A cut-off score of 18 was proposed for clinical use. However, significant heterogeneity was noted due to variations in cut-off values used across studies, suggesting the need for further research to determine optimal thresholds in specific clinical environments [9].

A retrospective longitudinal study conducted in the medical ward of Hamad General Hospital in Qatar focused on elderly patients under acute geriatric care. Among the 90 participants, with an average age of 79±11.3 years, nearly half developed pressure ulcers. The study emphasized that correction of anemia, provision of a high-protein diet, and repositioning every two hours were the most effective practices for managing pressure ulcers. These interventions are, therefore, recommended for the early prevention of pressure injuries, particularly among the elderly population [10].

Problem Statement

"A study to assess the effectiveness of self-structured teaching programme on knowledge and practice regarding use of Braden scale on pressure sore among staff nurses in selected hospital at Jaipur".

Objectives of the study

1. To assess knowledge regarding use of Braden scale on pressure sore among staff nurses.
2. To assess practice regarding use of Braden scale on pressure sore among staff nursese.
3. To assess the effectiveness of structured teaching programme regarding use of Braden scale on pressure sore among staff nurses.
4. To find out the association between knowledge and practice regarding use of Braden scale on pressure sore among staff nurses with their selected demographic variables.
5. To develop structured teaching programme on knowledge and practice regarding use of Braden scale on pressure sore.

Research Methodology

Research approach

Quantitative research approach.

Research design

In the present study pre experimental design.

Setting of the study

This study has been conducted at City Hospital, Jaipur.

Sample

The samples selected for the present study comprises of staff nurses of City Hospital, Jaipur.

Sample size

The sample size for present study consist total of 120 staff nurses of City Hospital, Jaipur.

Sampling technique

In this study, samples were selected by using non-probability convenient sampling method.

Sampling criteria

The following criteria are set to select samples:

I. Inclusion criteria

- Staff nurses of selected hospital located in urban area.
- Staff nurses who are willing to participate in the study.

II. Exclusion criteria

- Staff nurses who are not available at the time of data collection.
- Staff nurses who are not willing to participate in the study.
- Staff nurses who are not co-operative.

Development of tool

- **Section-I:** Consist of demographic variables as: age, gender, educational status, area of working and working experience of staff nurses.
- **Section-II:** Consist of structured knowledge questionnaire on knowledge regarding use of Braden scale on pressure sore.
- **Section-III:** Consist of check list to assess practice regarding use of Braden scale on pressure sore.

Reliability of the tool

In order to establish reliability of the tool, the technique called Split Half method was used and reliability co-efficient was calculated by using raw score formula. The calculated 'r' value is 0.79 and the developed tool was found to be reliable.

Results

Description of demographic variables of nursing officers

The demographic characteristics of the study participants revealed a predominance of young staff nurses. A significant majority, accounting for 70% of the total sample, were within the age group of 20 to 30 years. This was followed by 20% in the 30 to 40 years category, while 6.67% belonged to the 40 to 50 years age group. Only 3.33% of the participants were above 50 years of age, indicating that most of the nursing workforce in the selected setting consisted of relatively younger professionals.

With respect to gender distribution, the sample was male-dominated, with 71.66% of the participants being male and 28.33% female. This suggests that more male nursing officers were available or willing to participate at the time of data collection in the selected hospital.

In terms of educational qualifications, the highest proportion of participants, 60%, held a General Nursing and Midwifery (GNM) qualification. This was followed by 28.33% who had completed a Bachelor of Science in Nursing (B.Sc. Nursing), while 10% had pursued Post Basic Nursing. Only a small fraction, 1.66%, had attained a Master of Science in Nursing (M.Sc. Nursing), suggesting that most nursing officers were qualified at the diploma or undergraduate level.

The distribution of participants based on their area of working indicated that more than half (53.33%) were posted in the Intensive Care Unit (ICU), highlighting the critical nature of patient care responsibilities held by the majority. The remaining participants were distributed across different clinical settings, with 20% working in the general ward, 15% in the medical ward, and 11.66% in the post-operative ward.

When analyzing working experience, 38.33% of the nursing officers had between one to three years of professional experience, reflecting a large proportion of early-career professionals. Additionally, 26.67% of participants had more than five years of experience, while 20% had between three to five years. A smaller group, comprising 15%, had less than one year of experience. This distribution indicates a fair mix of both novice and experienced staff among the participants of the study.

Level of knowledge of nursing officers in pre-test and post-test: The data on the level of knowledge of staff nurses before and after the implementation of the structured teaching programme reveals a significant improvement. In the pre-test, a majority of participants (91.67%) demonstrated an average level of knowledge regarding the use of the Braden scale for pressure sore assessment. A small percentage (8.33%) fell into the poor knowledge category, and notably, none of the participants were categorized as having good knowledge prior to the intervention.

Table 1: Level of knowledge of nursing officers in pre-test and post-test, N=120

	Pre-Test		Post-Test	
Level of knowledge	**Frequency (f)**	**Percentage (%)**	**Frequency (f)**	**Percentage (%)**
Poor (0-33%)	10	8.33	0	0
Average (34-66%)	110	91.67	2	1.67
Good (67-100%)	0	0	118	98.33
Total	120	100.0	120	100.0

In contrast, the post-test results show a substantial shift in knowledge levels. An overwhelming majority of nursing officers (98.33%) attained a good level of knowledge following the structured teaching programme. Only one participant (1.67%) remained in the average category, and no participants were found in the poor knowledge group post-intervention.

This marked improvement in knowledge levels from pre-test to post-test clearly indicates the effectiveness of the structured teaching programme in enhancing the understanding of nursing officers regarding the Braden scale and its application in pressure sore prevention and management.

Comparison of pre-test and post-test level of knowledge

Fig 1 reveals the comparison of pre-test and post-test scores reveals a significant enhancement in the knowledge level of staff nurses regarding the use of the Braden scale following the structured teaching programme. In the pre-test, the mean knowledge score was 11.36, corresponding to a mean percentage of 44.55%, with a median score of 12 and a standard deviation of 1.39, indicating moderate variability in the responses.

In the post-test, the mean knowledge score increased substantially to 23.53, which corresponds to a mean percentage of 85.11%, and the median score reached the maximum of 24, showing a uniform improvement in knowledge across participants. The standard deviation decreased to 1.19, suggesting more consistency in the post-test responses.

This sharp rise in mean scores and reduction in variability clearly indicates that the structured teaching programme was highly effective in improving the knowledge of staff nurses about the Braden scale and its application in pressure sore prevention.

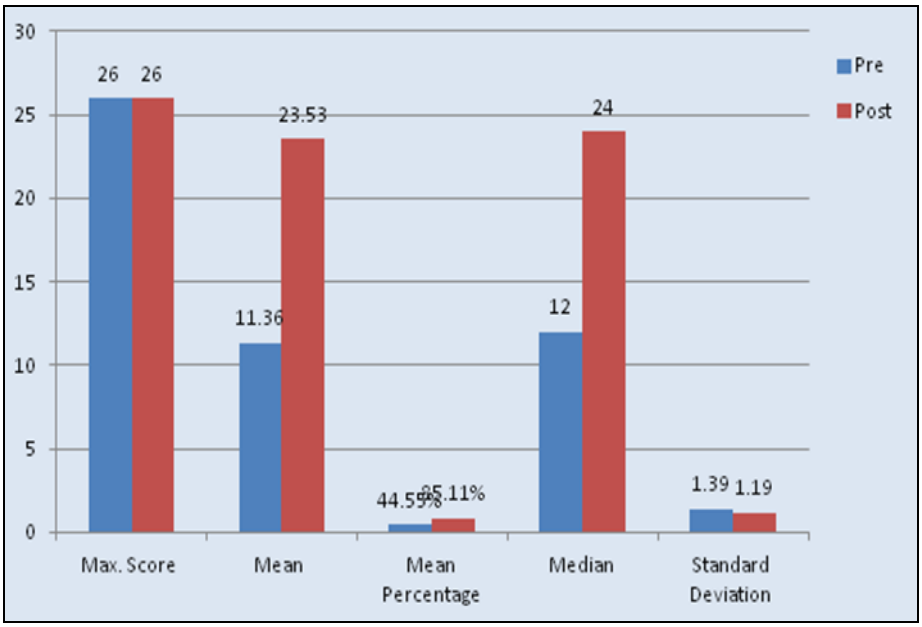

Fig 1: Comparison of pre-test and post-test level of knowledge

Level of practice of nursing officers in pre-test and post-test

Table 2: Level of practice of nursing officers in pre-test and post-test, N=120

	Pre-Test		Post-Test	
Level of Practice	**Frequency (f)**	**Percentage (%)**	**Frequency (f)**	**Percentage (%)**
Poor (0-33%)	20	16.66%	0	0%
Average (34-66%)	100	83.33%	14	11.66%
Good (67-100%)	0	0%	106	88.33%
Total	120	100.0	120	100.0

The data in Table 2 clearly demonstrates an improvement in the practical application of the Braden scale among staff nurses after the implementation of the structured teaching programme. During the pre-test, a majority of participants (83.33%) exhibited average practice, while 16.66% were in the poor category, and none demonstrated good practice.

Following the educational intervention, the post-test results showed that 88.33% of the staff nurses achieved a good level of practice. Only 11.66% remained at the average level, and there were no participants in the poor category.

This significant improvement reflects the effectiveness of the structured teaching programme in enhancing both knowledge and clinical skills related to the use of the Braden scale for pressure sore assessment and prevention.

Comparison of pre-test and post-test level of practice

Figure 2 graphically represents the comparison of pre-test and post-test practice scores indicates a noticeable improvement in the practical skills of staff nurses concerning the use of the Braden scale after undergoing the structured teaching programme. In the pre-test, the mean practice score was 8.85, representing a mean percentage of 49.25%, with a median of 9 and a standard deviation of 2.35, reflecting moderate variability in practical competence.

After the intervention, the post-test mean score increased to 10.68, which corresponds to a mean percentage of 58.41%. The median also rose to 11, and the standard deviation slightly reduced to 2.18, indicating a marginal improvement in score consistency among participants.

These results suggest that the structured teaching programme had a positive impact on improving the practical application of the Braden scale among nursing officers, though the degree of improvement was moderate compared to the observed knowledge gains. Continuous hands-on reinforcement may further enhance practice outcomes.

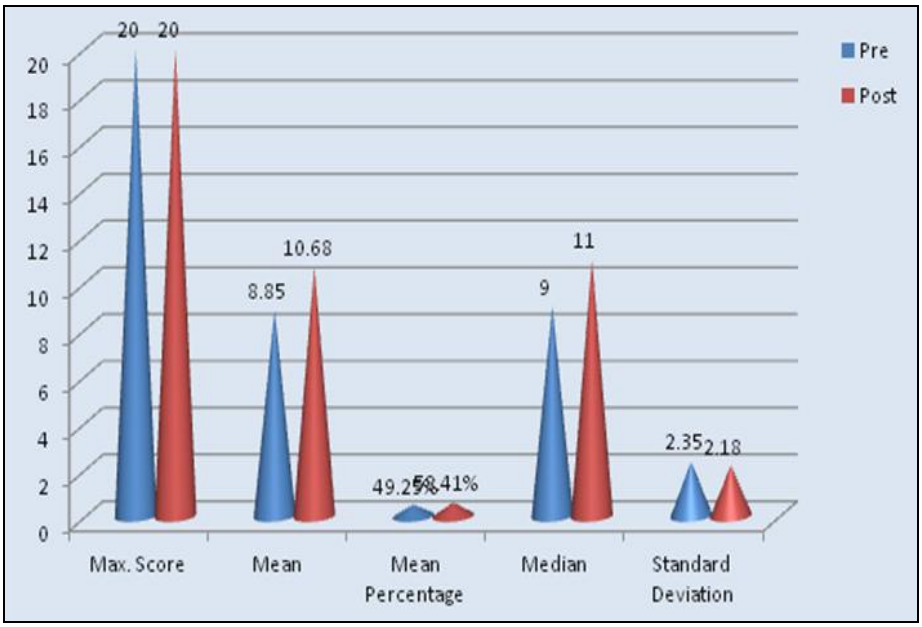

Fig 2: Comparison of pre-test and post-test level of practice

Effectiveness of self-structured teaching programme on knowledge and practice regarding use of Braden scale on pressure sore

Table 3: Effectiveness of self-structured teaching programme, N=120

Area	Pre-test			Post-test			T-Value	DF
	Mean	S.D	Mean %	Mean	S.D	Mean %		
Level of knowledge	11.36	1.39	44.55	23.53	1.19	85.11	11.539	129
Level of Practice	8.85	2.35	49.25	10.68	2.18	58.41	8.38	

Table 3 presents the statistical comparison of pre-test and post-test scores to evaluate the effectiveness of the self-structured teaching programme on the knowledge and practice of staff nurses regarding the use of the Braden scale.

For knowledge, the pre-test mean score was 11.36 (44.55%), which significantly increased to 23.53 (85.11%) in the post-test. The computed t-value of 11.53 at DF=129 indicates a highly significant difference, confirming that the teaching programme had a substantial impact on improving knowledge.

Similarly, in terms of practice, the pre-test mean score was 8.85 (49.25%), which improved to 10.68 (58.41%) after the intervention. The t-value of 8.38 also indicates a statistically significant improvement in practice levels post-intervention.

Overall, these findings affirm that the self-structured teaching programme was effective in enhancing both knowledge and practice among nursing officers regarding the Braden scale for pressure sore prevention and assessment.

Correlation between level of knowledge and practice regarding use of Braden scale on pressure sore

The Figure 3 illustrates the correlation between the level of knowledge and level of practice of nursing officers during the pre-test and post-test phases.

In the pre-test, both knowledge and practice levels were moderate, with the mean knowledge score around 11.36 and mean practice score around 8.85. Their corresponding mean percentages were 44.55% for knowledge and 49.25% for practice. This reflects a foundational understanding and limited application of the Braden scale before the educational intervention.

In the post-test, a clear and substantial increase is observed in both variables. The mean knowledge score rose to 23.53 (85.11%) and mean practice score to 10.68 (58.41%). This suggests that the enhancement in knowledge through the structured teaching programme positively influenced the level of practice as well.

The visual correlation displayed in the chart supports the idea that improvement in knowledge is associated with an increase in practical application. While the knowledge level showed a more pronounced rise, the upward trend in practice also validates the effectiveness of the intervention. The consistent difference between knowledge and practice suggests that while theoretical understanding can be quickly enhanced, practice improvement might require repeated reinforcement and clinical application.

Association between pre-test level of knowledge and practice with selected demographic variables

The chi-square test was used to examine the association between post-test knowledge levels and selected demographic variables of staff nurses. The analysis showed a significant association with gender ($\chi^2 = 8.47$, $p<0.05$) and working experience ($\chi^2 = 16.16$, $p<0.05$) as the calculated chi-square values exceeded the table value. However, no significant association was found between post-test knowledge and age, educational status, or area of working, as their respective chi-square values were below the table value (12.592) at 6 degrees of freedom. This indicates that gender and years of experience may influence the knowledge gained after the teaching programme, while age, qualification, and work area do not show a statistically significant effect.

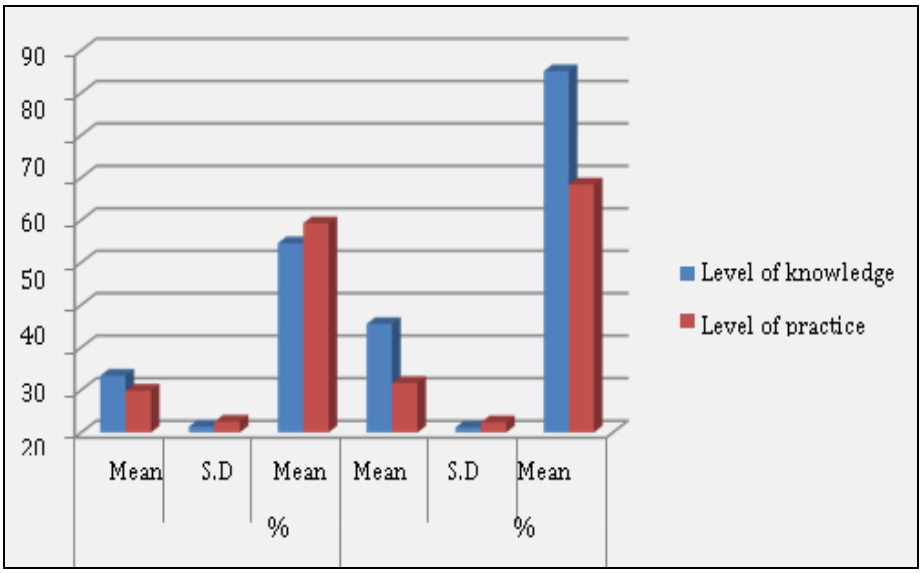

Fig 3: Correlation between level of knowledge and practice

Discussion

The present study assessed the effectiveness of a structured teaching programme on the knowledge and practice of staff nursing regarding the use of the Braden scale for pressure sore prevention. The findings demonstrated a substantial improvement in both knowledge and practice scores in the post-test phase, confirming the effectiveness of the intervention. These results are consistent with the findings of several related studies.

In a study conducted by Suma K, Sanjay *et al*. (2021), a structured teaching programme led to a marked improvement in nursing students' knowledge regarding the use of the Braden scale. Their study showed that 94% of the participants achieved good knowledge scores in the post-test, as compared to only 8% in the pre-test, with a significant gain of 34.12% in knowledge. Similarly, in the present study, 98.33% of nursing officers scored in the 'good' category post-intervention, as compared to none in the pre-test, clearly reflecting the positive impact of structured educational sessions. The increase in mean knowledge score from 11.36 (44.55%) to 23.53 (85.11%) further supports this alignment [11].

Likewise, the findings resonate with the results of Gagandeep Kaur *et al*. (2021), who reported that 96.7% of staff nurses demonstrated very good knowledge post-intervention, compared to 73.3% with only good knowledge in the pre-test. Their study highlighted a significant effect of the structured teaching programme and also noted a statistically significant association between knowledge and age, which was similarly observed in the present study in terms of working experience and gender. Both studies thus reinforce the role of structured instructional strategies in improving clinical competencies among nursing professionals [12].

On the other hand, Yoo, Sung-Hee *et al*. (2020) focused on inter-rater reliability among nurses in using the Braden scale and the pressure ulcer classification system. While their study did not involve a teaching intervention, it revealed variability in accurate tool usage, particularly in the 'moisture' component, and emphasized the need for institutional training and standardization. These findings indirectly support the current study by underscoring that structured education and regular reinforcement are essential not only for knowledge acquisition but also for ensuring consistency and accuracy in clinical practice [13].

Taken together, the comparison with these studies affirms that structured teaching programmes are highly effective in enhancing both theoretical knowledge and practical application of the Braden scale. The present study contributes further evidence by demonstrating improved practice scores, which increased from a mean of 8.85 (49.25%) in the pre-test to 10.68 (58.41%) in the post-test, although the change in practice was slightly more moderate compared to knowledge gain. This suggests that ongoing clinical reinforcement and hands-on sessions may be necessary to solidify practice-related improvements over time.

Conclusion

The present study aimed to evaluate the effectiveness of a self-structured teaching programme on the knowledge and practice of staff nurses regarding the use of the Braden scale in pressure sore prevention and management. The findings clearly indicate that the structured teaching intervention was successful in enhancing both knowledge and practical competencies among the participants. A notable improvement was observed in the post-test scores, suggesting that focused educational strategies can significantly strengthen clinical understanding and the application of assessment tools such as the Braden scale.

Furthermore, the study highlights the importance of continuous professional development and training for staff nurses, especially in critical care and high-risk settings where the early identification of pressure ulcer risk is essential. The positive association between certain demographic variables and post-intervention knowledge underscores the need for tailored educational approaches based on the professional background and experience of nursing personnel.

Overall, the study concludes that structured teaching programmes are an effective method for improving the quality of nursing care related to pressure sore assessment

and can serve as a valuable component in clinical training protocols to enhance patient safety and care outcomes.

Conflict of Interest
Not available

Financial Support
Not available

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