



## Knowledge and Perception of Nurses on use of Braden Scale in Predicting Patients' Pressure Ulcer Risks in Selected Hospitals in Ondo State

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**Background:** The burden of a pressure ulcers on hospitalized patients is becoming unbearable leading to a prolonged hospital stays. Braden Scale is one of the most intensively studied risk assessment scales used in identifying the risk of developing a pressure injury. **Aim:** The purpose of this study was to explore the knowledge and perception of nurses on the Braden scale in the prevention of pressure ulcer. **Methods:** A cross-sectional descriptive type of non-experimental design was used for this study to assess the knowledge and perception of nurses on the use of the Braden scale in predicting pressure injury risk. The researcher's designed questionnaire with the reliability of cronbach alpha value of 0.83 and 0.71 for nurses' knowledge and perception on Braden scale respectively was used as the tool for data collection. **Results:** Results showed that the majority of nurses have good knowledge of Braden scale but had poor perception towards its use in predicting pressure ulcer. The hypotheses revealed that there is no significant relationship between the years of clinical experience of nurses and their knowledge on the Braden scale;  $p = 1.66$ . Furthermore, there was a significant relationship between nurses' knowledge and their perception on the use of the Braden scale in identifying patients at risk of developing pressure ulcer  $p = .002$ . **Conclusion:** In conclusion, the use of the Braden scale is essential in the assessment of patient at risk of developing a pressure ulcer, hence, nurses should be motivated to use the Braden scale and its printed copies to be made available in each ward of the hospitals in Ondo State.

**Keywords:** Braden scale, Pressure injury, Risk Nurses, Perception.

### Introduction

The Braden Scale is one of the most intensively studied risk assessment scales used in identifying the risk of developing a pressure injury. A pressure injury, previously (and still) known as pressure sore or pressure injury is defined as a localized injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear (National pressure ulcer advisory panel, 2014). Pressure injury significantly limits many aspects of an individual's well-being, including general

health and physical, social, financial, and psychological quality of life (Baranoski & Ayello, 2012). Hospital-acquired pressure ulcers result in significant patient harm, including pain, expensive treatments, and increased length of institutional stay and, in some patients, premature mortality. In the United States, nearly 1 million people develop pressure ulcers annually, while approximately 60,000 acute care patients die from related complications (Lyder, Metersky, Hunt & Kliman, 2012). A retrospective secondary

analysis of database studies has shown that an estimated 3.5–4.5% of all hospitalized patients are developing potentially preventable, hospital-acquired pressure ulcers, despite heightened awareness (Lyder *et al.*, 2012). The prevalence of pressure ulcer was 3.22% in a study conducted in six university hospitals in Nigeria among patients with a mean age of 47.04±21.23 years (AAbiru Wadu, Gugsa & Yosef, 2017).) Pressure ulcer development has been attributed to poor quality of nursing care and inadequate preventive practice by nurses especially when preventive measures are not implemented early during the period of hospitalization (Chamanga, 2011). The preventive measures of pressure ulcer include the use of effective risk assessment tools to know which patient is at risk. A vast majority of nurses use a special scoring system to evaluate patient's risk of developing a pressure ulcer. The most preferred tool is the Braden scale for predicting pressure ulcer risk (Fife, Otto, Capsuto, Lyssy, Murphy, *et al.*, 2001).

The Braden scale used for predicting pressure ulcer risk is composed of six subscales intended to measure the clinical determinants of either intense and prolonged pressure (Activity, Mobility, Sensory perception) or tissue tolerance to pressure (nutrition, moisture, friction and shear). Each subscale includes a title, and each subscale and each level has a key concept descriptor and a one-or-two phrase sentence descriptor of qualifying attributes. Five of the subscales are rated from 1 (least favourable) to 4 (most favourable). The friction and shear subscale is rated from 1 to 3. A total of 23 points is possible. A lower numerical score means the patient is at higher risk for developing pressure ulcer (US National library of medicine, 2009). The maximum attainable score is 23 while the minimum attainable score is 6 and the critical cut-off score for high risk is 16 (Gordon, Gottschlich, Helvig, Marvin, Reginald & Richard, 2014).

The Braden Scale is one of the most intensively studied risk assessment scales

used in identifying the risk of developing a pressure injury. It is the joy of every in-patient and their relatives to be discharged early and have a hospital stay free of complications. This expectation is often cut short when their hospital stay is complicated with pressure sore (Uba, Alih, Keveer & Lola, 2015). There is a need to reduce the incidence of pressure sores to a minimal in every hospital by the use of the most effective risk assessment tool, the Braden scale. Hence, this study is to assess the knowledge and utilization of the Braden scale among nurses towards the prevention of pressure ulcer.

Pressure ulcer development remains a significant complication among patients at risk. Litigation against nurses due to hospital-acquired pressure sores has been on the increase in both acute and long term care of the patient, thereby posing challenges for nurses (Mosby, Heitkemper & Dirksen, 2004). Prevention of pressure ulcer requires the use of a very effective scoring system to evaluate the patients at risk (Defloor, 2004).

The main factor responsible for the development of pressure injury is excessive and prolonged pressure on the tissue thus preventing adequate blood supply to the areas. Pressure ulcer development is believed to occur most of the time as a result of nurses' negligence of the aforementioned categories of patients, that is, when nurses do not utilize the appropriate scoring scale (Mosby, *et al.*, 2004). Most times when patients are bedridden and malnourished, they are prone to development of pressure ulcer. All these are determined using an effective scoring system or scale. Aside from positioning, skin care, and health education, pressure ulcer risk assessment is also important to prevent the occurrence of pressure ulcer (Kallman & Suserud, 2009). Braden scale is the most validated skin assessment tool developed for clinical pressure ulcer risk assessment (Denby & Rowlands, 2010).

Hence, there is a need to assess the knowledge on the Braden scale among nurses in the prevention of pressure ulcer.

### Research questions

- What is the level of knowledge of nurses on Braden scale?
- What is the perception of nurses on the use of Braden scale in identifying patients at risk of developing pressure injury?

### Hypotheses

- There is no significant relationship between the years of clinical experience of nurses and their knowledge on the Braden scale.
- There is no significant relationship between nurses' knowledge and their perception of the use of the Braden scale in identifying patients at risk of developing a pressure injury.

### Theoretical review: Imogene King's goal attainment theory

Imogene King's theory of goal attainment (1968) was derived from her conceptual framework. King's framework shows the relationship of operational system (individual), interpersonal systems (groups such as nurses, patients), and social systems (such as education system, health system).

She selected 15 concepts from the nursing literature (self, role, perception, communication, interaction, growth and development, stress, time, personal space, organizing, status, power, authority and decision making) as essential knowledge for use by nurses. Ten of these concepts were selected (self, role, perception, communication, interaction, transaction, growth and development, stress, time and personal space) as essential knowledge for use in concrete nursing situations.

King's theory offers insight into nurses' interactions with individuals and groups within the environments. This process

describes the nature and standard for nurse-patient interaction that lead to goal attainment. It highlights the importance of a client's participation in decision making that influences care and focuses on both the process and outcome of care.

Nurses and patients in a health care organization interrelate with one another, that is, perceive one another, act and react, interact and transact. In this process, presenting conditions are recognized, goal-related decisions are made and motivation to exert control over events to achieve goals occurs (King, 1968).

The nurse must understand the given aspect of all three systems. On admission, the nurse must interact with the patient and assess the risk for pressure sore development. She identifies patients at risk through this means and provides time to care for them. The nurse must have a positive attitude towards the prevention of pressure sores to achieve this.

Moreover, effective communication and interaction with the patient must be done to enhance their cooperation about the preventive measures. The goal of all these is to ensure the prevention of pressure sores and maintain optimal health of the patient. The goal of nursing process interaction is the transaction which leads to the attainment of goals set in relation to health promotion, maintenance and recovery from illness (King, 1975).

### Methods and Materials

A cross-sectional descriptive type of non-experimental design was used for this study to assess the knowledge and perception of nurses on the use of Braden scale in the predicting pressure injury risk. The settings that was used for this study was selected hospitals in Ondo State which are University of Medical Sciences Teaching Hospital, Akure and University of Medical Sciences Teaching Hospital, Ondo.

University of Medical Sciences Teaching Hospitals Akure and Ondo are owned by Ondo State Government. University of medical sciences teaching hospital, Akure is located at Hospital road along with Mega Primary school, Irowo street, Akure. University of medical sciences Ondo is located at Laje road, Ondo Town. It is part of a comprehensive medical village that provides world-class, tertiary specialized surgical, medical and emergency care which adheres to the best international practices within the integrated healthcare system which commence services on 28th November 2013. These hospitals have numerous health practitioners in various health fields. They attend to medical and surgical cases. They do diagnostic investigations with highly technical machines. They have well-structured buildings for admission. These health institutions serve as training and clinical experience settings for nursing and medical students. All registered nurses working in the surgical, medical and Orthopaedic wards of the hospitals were used in this study

### Sampling

Using Taro Yamane's formula (1967) to calculate the sample size  
 $n = N / (1 + Ne^2)$

The total population of nurses working in medical and surgical wards of the University of medical sciences teaching Hospital, Akure is 57

The total population of nurses working in surgical, medical and orthopaedic wards of the University of medical sciences teaching Hospital, Ondo is 63 (Hospital records and statistics department)

$$N = 57 + 63$$

$$= 120$$

$$N = 120 / (1 + 120 \times 0.05^2)$$

$$n = 92.31 \approx 92$$

The sample size for University of medical sciences teaching hospital, Akure =  $(57/120) \times 92$

$$= 43.7 \approx 44$$

The sample size for University of medical sciences teaching hospital, Ondo =  $(63/120) \times 92$

$$= 48.3 \approx 48$$

### Sampling Technique

The sampling technique that was used was convenient sampling. All the available nurses were utilized for this study in each selected ward of both hospitals.

### An instrument for Data Collection

The instrument used for data collection was a self-developed questionnaire to assess the knowledge and perception of nurses on the use of the Braden scale in predicting pressure injury risk in selected hospitals in Ondo state. Face validity of the instruments was ascertained by an expert in the field of Adult Health Nursing while the reliability of the instrument has Cronbach alpha coefficient value of 0.83 and 0.71 for nurses' knowledge and perception on Braden scale respectively using a pilot test that was carried out in University of Medical Sciences Teaching Hospital Ondo annex with 9 questionnaires distributed to nurses working in the hospital.

### Method of Data Collection

Before questionnaires were administered to the nurses, informed consent was taken from willing participants. Questionnaires were administered and collected as soon as they finished filling them.

### Method of Data Analysis

The data collected from the participants at the end of the study were processed using a statistical package for social science (SPSS), version 23. Numerical data were expressed on frequency distribution tables and percentages. Descriptive statistics was used to answer the research questions. The hypotheses were tested using chi-square at 0.05 level of significance.

### Ethical Consideration

A proposal of the study was submitted to the Health Research and Ethics Committee of Ondo State Ministry of Health, Akure, for ethical clearance which was obtained with reference number NHREC/18/08/2016. Letter

of introduction was taken by the researcher to the hospital management for approval in order to gain access to the hospital. Informed consent was obtained from all interested participants and all information gotten was treated with confidentiality. The rights of the participants were respected.

**Data Analysis**

The analysis is based on 92 completed questionnaires received from respondents on the knowledge and perception of nurses on the use of the Braden scale in predicting pressure injury risk.

**Table 1: Socio-Demographic Distribution of the Respondents**

Variables		N	%
<b>AGE (YEARS)</b>	20-29	50	54.3
	30-39	20	21.7
	40-49	13	14.1
	50 and above	9	9.9
		92	100
<b>GENDER</b>	Male	28	30.4
	Female	64	69.6
		92	100
<b>EDUCATIONAL STATUS</b>	RM	16	17.4
	RN	28	30.4
	RM/RN	18	19.6
	BNSc	29	31.5
	Others	1	1.1
		92	100
<b>YEARS OF EXPERIENCE</b>	0-4	48	52.2
	5-9	14	15.2
	10-14	16	17.4
	15-19	14	15.2
		92	100

From table 4.1 above,50(54.3%) of the respondents are within the age range of 20-29 which actually shows the highest among the respondents closely followed by 20(21.7%) of the age range 30-39. However, 13(14.1%) and 9(9.9%)of the respondents are of the age range “40-49” and “50 and above” respectively. The majority of the respondents 64(69.4%) are female, while 28(30.4%) are male. Less than one-quarter of the respondents 29(31.5%) had a degree in nursing science which is also the highest of all the participants closely followed by 28(30.4%) had RN. In addition, about half of the respondents 48(52.2%) had years of experience ranging from 0-4 which is the least range of years of experience while the rest respondents had more years of experience.

**Table 2: Assessment of Nurses' Knowledge on Braden Scale**

Items	Yes	No	Remark
Braden scale is a tool developed in 1987 by Barbara Braden and Nancy Bergstorm for measuring patient's risk of developing pressure injury.	77 (83.7)	16 (15.3)	Adequate
The aim of the scale is to help professionals, especially nurses, in the evaluation of the patient with respect to the development of pressure injury risk.	76 (82.6)	16 (17.4)	Adequate
Sensory perception, mobility, activity, moisture, nutrition, and friction and shear are the subscales that constitute the Braden scale.	79 (85.9)	13 (14.1)	Adequate
Braden scale estimates each of the categories on the scale of 1 to 4, with the exception of the category of "friction and shear", which is estimated on the scale of 1 to 3 giving a total of 23 points.	77 (83.7)	15 (16.3)	Adequate
Top points means there is less risk for the development of pressure injury and vice versa.	74 (80.4)	18 (19.6)	Adequate
Total assessment of risk on the Braden scale is very high when it is 9 or less.	71 (72.2)	21 (22.8)	Adequate

51-100 (Adequate), less than 50% (Inadequate)

The responses for each of the items in the questionnaire are presented in Table 4.2

The majority of the respondents 77(83.7%) agreed that the Braden scale is a tool developed in 1987 by Barbara Braden and Nancy Bergstorm for measuring a patient's risk of developing a pressure injury. 76(82.6%) said yes that the scale aims to help professionals, especially nurses, in the evaluation of the patient with respect to the development of pressure injury risk, 79(85.9%) said sensory perception, mobility, activity, moisture, nutrition, and friction and shear are the subscales that constitute the Braden scale, 77(83.7%) believed that Braden scale estimates each of the categories on the scale of 1 to 4, except for the category of "friction and shear", which is estimated on the scale of 1 to 3 giving a total of 23 points, 74(80.4%) of the respondents agreed that top points mean there is less risk for the development of pressure injury and vice versa and 71(72.2%) of the respondents believed that total assessment of risk on the Braden scale is very high when it is 9 or less. This points to the fact that the majority of the respondents have adequate knowledge of the use of the Braden scale.

**Table 3: Assessment of Nurses perception on the use of Braden Scale**

Items	Strongly Agree	Agree	Neutral	Strongly Disagree	Disagree	Remark
The use of Braden scale is important for the prevention of pressure injury	44 (47.8)	39 (42.4)	6 (6.5)	3 (3.3)	-	Fairly good
Braden scale scoring should be regularly carried out on all patients during their stay in hospital	36 (39.1)	32 (34.8)	19 (20.7)	3 (3.3)	2 (2.2)	Fair
Continuous assessment of patients using Braden scale is time consuming and not necessary	17 (18.5)	17 (18.5)	26 (28.3)	27 (29.3)	5 (5.4)	Poor
My clinical judgment is better than Braden scale scoring	13 (14.1)	26 (28.3)	40 (43.5)	10 (10.9)	3 (3.3)	Poor

Less than 30 =Poor, 31-40 = fair, 41-50 = fairly good, 51 and above = Good



Table 3 assesses the perception of nurses on the use of the Braden scale in identifying patients at risk of developing a pressure injury.

More than half 57(62.0%) and 30(36.6%) of the respondents “strongly agreed and agreed” that the Braden scale is a good tool to assess the risk for pressure injury respectively, 44(47.8%) and 39(42.4%) “strongly agreed and agreed” that the use of Braden scale is important for the prevention of pressure injury, 36(39.1%) and 32(34.8%) of the respondents “strongly agreed and agreed” that Braden scale scoring should be regularly carried out on all patients during their stay in hospital.

However, 27(29.3%) and 5(5.4%) “strongly disagreed and disagreed” that the continuous assessment of patients using the Braden scale is time-consuming and not necessary, while 10(10.9%) and 3(3.3%) “strongly disagreed and disagreed” that their clinical judgment is better than Braden scale scoring. The general results revealed poor perceptions of respondents concerning the Braden Scale.

**Hypothesis One:** There is no significant relationship between the years of clinical experience of nurses and their knowledge on the Braden scale.

**Table 4:** Significant relationship between the years of clinical experience of nurses and their knowledge on the Braden scale

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.481 <sup>a</sup>	4	.166
Likelihood Ratio	8.922	4	.063
Linear-by-Linear Association	.081	1	.776
N of Valid Cases	92		

Sig P<0.05

Table 4 shows Pearson Chi-Square statistic,  $\chi^2 = 6.481$ , and  $p > 1.66$ ; at 0.05 level of significance The null hypothesis is accepted, since  $p > 0.05$ . This implies that there is no significant relationship between the years of clinical experience of nurses and their knowledge on the Braden scale.

**Hypothesis Two:** There is no significant relationship between nurses’ knowledge and the perception of nurses on the use of the Braden scale in identifying patients at risk of developing a pressure injury.

**Table 5:** Significant relationship between nurses’ knowledge and their perception on the use of Braden scale in identifying patients at risk of developing pressure injury

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.644 <sup>a</sup>	3	.002
Likelihood Ratio	12.076	3	.007
Linear-by-Linear Association	12.816	1	.000

Sig P<0.05

Table 5 shows Pearson Chi-Square statistic,  $\chi^2 = 14.644$ , and  $p < .002$  at 0.05 level of significance. The null hypothesis is rejected, since  $p < 0.05$ . This implies that there is a significant relationship between nurses’ knowledge and their perception of the use of

the Braden scale in identifying patients at risk of developing a pressure injury.

**Discussion of Findings**

After a careful analysis of the data sampled, it was discovered that out of 92 participants

sampled, the majority fall between the ages of 20-29 years. 69.6% are female, 31.5% had Bachelor's degree in Nursing Science and 52.2% has 0-4 years of clinical experience.

It was deduced from the findings that nurses have a generally good level of knowledge on the Braden scale because 83.7% of the respondents agreed that the Braden scale is a tool developed in 1987 by Barbara Braden and Nancy Bergstrom for measuring patient's risk of developing a pressure injury. This negates the finding from a study carried out by Rajaa (2016) to assess the knowledge of nurses on the Braden scale in Baghdad Teaching Hospital, India. He stated that 87% of nurses did not know that Braden Scale is a tool developed by Barbara Braden and Nancy Bergstrom for measuring a patient's risk of developing a pressure injury.

Also, 85.9% of nurses from this study, know that sensory perception, mobility, activity, moisture, nutrition, and friction and shear are the subscales that constitute the Braden scale. 83.7% of nurses are aware that the Braden scale estimates each of the categories on the scale of 1 to 4, except for the category of "friction and shear", which is estimated on the scale of 1 to 3 giving a total of 23 points. 80.4% of the respondents also know that top points mean there is less risk for the development of pressure injury and vice versa while 72.2% of the respondents believed that total assessment of risk on the Braden scale is very high when it is 9 or less. This is also in contrast with the study conducted by Rajaa (2016), who stated that 64% of nurses did not know that the total assessment of risk on the Braden scale is very high when the score is 9 or less.

This study also revealed a fairly good perception of nurses towards the use of the Braden scale in predicting pressure injury risk. 62.0% and 36.6% of the respondents "strongly agreed and agreed" that the Braden scale is a good tool to assess the risk for pressure injury and also 47.8% and 42.4% "strongly agreed and agreed" that the use of the Braden scale is

important for the prevention of pressure injury. 39.1% and 34.8% of the respondents "strongly agreed and agreed" that Braden scale scoring should be regularly carried out on all patients during their stay in hospital. This is in line with a study conducted in the Philippines by Maravilla (2016), using a descriptive correlational design to assess the attitude of nurses towards the use of Braden scale of, 47% of nurses agreed that Braden scale scoring should be regularly carried out on all patients during their stay in hospital. But this negates the study of Cho and Noh (2010) that showed most nurses applied the Braden Scale to 11.26% of total hospital days considering that the Braden Scale was instructed to be employed to all hospital days.

Also from this study, 18.5% and 18.5% of the respondents respectively "strongly agreed and agreed" that the continuous assessment of patients using the Braden scale is time-consuming and not necessary. However, 29.3% and 5.4% "strongly disagreed and disagreed" that the continuous assessment of patients using the Braden scale is time-consuming and not necessary this perception is considered poor. This is because whatever care a nurse rendered and is providing quality service to the patient should not be considered to be time-consuming rather effort should be geared towards patient satisfaction. This finding is contrary to the study conducted by Maravilla (2016) where 46% of nurses believe that the Braden scale is not time-consuming.

More also, 14.1% and 28.3% of nurses in this study "strongly agreed and agreed" that their clinical judgment is better than the Braden scale scoring. This perception also is considered to be poor because though clinical judgment is good but the era of patient rights is now when the consumer of health care could question whatever anybody does to care for them. Rather depending solely on clinical judgment, nurses should base their care on evidence. The use of the Braden scale is an evidence based tool to prevent pressure injury to patients. However, 43.5% neither to agree nor disagree that their clinical judgment is



better than the Braden scale scoring. This is in line with the study of Maravilla (2016) that 36% of nurses are uncertain if their clinical judgment is better than the Braden scale assessment.

The hypotheses findings revealed that there is no significant relationship between the years of clinical experience of nurses and their knowledge on the Braden scale, and also, that there is a significant relationship between nurses' knowledge and their perception on the use of the Braden scale in identifying patients at risk of developing a pressure injury.

### Conclusion

This study revealed that nurses have generally good knowledge of Braden scale but their perception of its use seems to be poor compared to the knowledge. There is no significant relationship between the years of clinical experience of nurses and their knowledge on the Braden scale while there is a significant relationship between nurses' knowledge and their perception of the use of the Braden scale in identifying patients at risk of developing a pressure injury. Nurses still need to improve their perception of the use of the Braden scale in predicting pressure injury risk in order to improve their professional practice as regards the Braden scale and prevention of pressure injury among hospitalized patients.

### Recommendations:

- Provision of Braden scale in a clearly printed format in each ward of the hospitals in Ondo state
- In-service training and refresher courses on the Braden scale and its importance should be designed for nurses. This will provide them with updated knowledge and improve their perception on Braden scale use.

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