Factors Influencing Pressure Ulcer Development and Perceived Barriers to Care among Nurses in Secondary Healthcare in Delta State, Nigeria

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ABSTRACT

The foremost Pressure ulcer care is the responsibility of health care professionals who are involved in patient care. The objective of this study was to assess the influencing factors to pressure ulcer development and nurses' perceived barriersto pressure ulcer care. This study used cross sectional survey design and Purposive sampling techniques. A sample size of 100 participants was determined using Taro Yamani's formula. Self-developed questionnaire was used. Descriptive statistics were used to analyze data with SPSS version 23. Criterion mean of 2.50 was used. Results showed that, a grand mean score of 3.58 confirmed heavy workload (mean value= 3.80), disproportionate nurse to patient ratio (mean value= 3.74), inadequate training and resource shortage were identified barriers to pressure ulcer care influences the level of pressure ulcer care by nurses. Key factors such as immobility (88.2%, mean value= 3.88), Friction/Shearing force (83.6%, mean value= 3.84), etc were identified factors influencing development of pressure ulcer. Therefore, addressing barriers by encouraging continuous professional development and training, adequate resource allocation and policy reforms can significantly improve patients' outcomes and prevent pressure ulcer development.

Keywords: *Barriers, Care, Nurses, Pressure ulcer, Pressure Injury, Prevention*

INTRODUCTION

Pressure ulcers (PUs), also known as bedsores or decubitus ulcers, remain a significant health care challenge, causing significant pain, discomfort, and increased health care costs. Pressure ulcers affect millions of individuals worldwide[1,2]. It accounts for 60,000 deaths worldwide[3,4]. Although preventable, theycontinue to occur, leading to increased morbidity, mortality, and health care costs[5]. Pressure ulcers remain a noteworthy concern among patients due to prolonged immobility, treatment-related side effects, and compromised health, causing pain, discomfort, and increased healthcare costs[6].

The disease process and treatment modalities have a huge impact on patients, which is complicated by other co-morbidities, affecting their quality of life[7]. This condition is developed when there is prolonged pressure on bony prominences, lying on rough and moist surfaces, immobility, poor diet, and lack of repositioning in bedridden patients [8,9]. PUs are graded based on the wound depth and number of affected tissue layers. This condition affects all age groups, but it is most common in immobile, geriatric patients, and those with severe acute and neurological conditions[10,11]. Over the years, pressure ulcer prevention strategies have been developed, but claims proved that complex drivers have influenced the high prevalence and incidence of pressure ulcers among patients.

Nurses are often the primary caregivers responsible for patient assessment, care planning, and implementation. They play a crucial role in preventing and managing PUs among patients[12-14], but various barriers hinder their efforts[15,16]. Despite the importance of their role, nurses encounter various barriers that hinder their ability to effectively prevent and manage PUs. Nurses are often faced with significant emotional stress resulting from the life-limiting nature of some illness situations of patients and other environmental factors, which can distract them from their focus on PUs prevention and care.

Studies claimed that some challenges are associated with heavy workload, as it could lead to limited time for patient assessments and inadequate skin care[17-20]. Furthermore, Morton & Thurman claimed that excessive workload can contribute to increased stress and fatigue, which can impair nurses' ability to provide quality care and make sound clinical judgments[21]. Moreover, inadequate staffing and lack of training are two interrelated factors that can significantly hinder effective pressure ulcer prevention. When healthcare facilities are understaffed, nurses are often overwhelmed with patient care responsibilities, limiting their ability to prioritize pressure ulcer prevention[18, 22,23]. According to Soriano, inadequate staffing can lead to increased workload where individual nurses find it difficult to allocate sufficient time for pressure ulcer prevention activities[24]. More so, when nurses are stretched thin, they may prioritize urgent tasks over preventive measures, such as regular skin assessments and repositioning. This leads to a higher risk of medical errors. In addition, fatigue and stress associated with inadequate staffing can increase the likelihood of errors, including mistakes in pressure ulcer prevention practices, resulting from lack of time for training; limiting knowledge and skills[25,26].

According to Tomas & Mandume, nurses who lack adequate training may have inadequate clinical judgment skills, might not be able to implement effective prevention strategies, or recognize early signs of pressure ulcer development[16]. Furthermore, ineffective intervention is one of the resulting effects of lack of training. Without proper training, nurses may use inappropriate or ineffective techniques to prevent pressure ulcers, such as incorrect positioning or inadequate skin care [27]. Sarikahya posited that lack of knowledge can lead to delayed identification of pressure ulcers, which can worsen the condition and increase the risk of complications[28].

Moreover, scholars have outlined some key organizational factors that can affect pressure ulcer prevention. Strong leadership commitment to pressure ulcer prevention is crucial. Leaders should prioritize this issue and allocate resources[29,30]. Leadership can ensure adequate staffing and empower nurses with tools like automated repositioning beds to promote patient mobility and prevent pressure ulcers. Moreover, an organizational culture of safety and quality care, where pressure ulcer prevention is valued, can significantly improve outcomes. Although, previous studies claimed that a note of the clear expectations and accountability for pressure ulcer prevention should be established at all levels of the organization, providing clear policies and procedures; with provision of evidence-based guidelines for pressure ulcer prevention can ensure consistency in care delivery[31-34]. More so, Ramalho et al. suggested that a clear protocol for risk assessment, skin care, and repositioning should be developed and disseminated to all nurses [35], while Gould *et al.* posited that regular review and update of pressure ulcer policies and procedures should be regularly done to reflect current best practices[6]. However, addressing the barriers and factors influencing the care of pressure ulcer and prevention practices is vital to enhancing pressure ulcer prevention and management. There has been inconsistent report with the identified barriers to pressure ulcer care among nurses in Nigeria. Thus, the objectives of the study was to:

I. Identify the perceived barriers to pressure ulcer care among nurses Secondary Healthcare in Delta State, Nigeria,
II. Determine the factors influencing the development of pressure ulcer Secondary Healthcare in Delta State, Nigeria.

Then, we hypothesized that there is no significant relationship between level of knowledge and barrier to pressure ulcer care among nurses in Secondary Healthcare in Delta State, Nigeria.

MATERIALS AND METHODS

The cross-sectional survey design was used to investigate influencing factors for pressure ulcer development and the barriers to pressure ulcer care among nurses Secondary Healthcare in Delta State, Nigeria. The two main General hospitals in the South Senatorial District in Delta State were used. These hospitals are significant as they are the major intermediate hospitals between the primary healthcare and the tertiary hospitals in the district. The target population for this study was the nurses currently working in these healthcare settings. From record, the total number of nurses working in the hospitals was 149.

However, using the Taro Yamani's formula, sample size of 100 nurses was calculated. Purposive sampling was used to recruit nurses working in the in-patient unit. Those excluded were those in the administrative arm, in out-patients, unavailable, and not willing to participate in the study.

The instrument for data collection was a researchers' developed structured questionnaire. The items in the questionnaire were generated from the literatures reviewed based on the objectives set for the study to elicit information from the subjects on the topic of study. The instrument has sections, A to D. Section A: Comprises the participants' demographic characteristics, Section B: Knowledge on pressure ulcer care among nurses, Section C: Perceived barriers to pressure ulcer care among nurses and Section D: Factors that influence the development of pressure ulcer among inpatient. The face and content validity of the questionnaire was carried out by experts in the field of Nursing Science in the Medical and Surgical Nursing Specialty. They examined the items in line with aim for the study and made necessary modifications and before the instrument was administered to the subjects of this study. A pilot study was done in another hospital not included in the study with Cronbach's Alpha co-efficient score of 0.72.

After due ethical approval, and seeking participant's consent, data collection was done. Data were coded and analyzed using Chi-square in Statistical Package for Social Sciences (SPSS version 23). Categorical variables were analyzed using frequency and percentages to conduct descriptive analysis. Results were presented in tables. Any calculated mean value greater than the criterion (cut-off of 2.50) mean was considered high/positive and lower was considered low/negative. Analysis was significant at p-value less than 0.05.

RESULTS

A total number of 100 questionnaires were retrieved, giving a total return of 100%.

Table 1: Demographic characteristics of the Nurses in Secondary Healthcare in Delta State, Nigeria

Variables n= 100	Frequency (f)	Percentage (%)
Age (years)		
21-30	18	18
31-40	45	45
41-50	31	31
51 and above	6	6
Gender		
Male	9	9
Female	91	91
Religion		
Christian	95	95
Muslim	5	5
Ethnicity		
Urhobo	56	56
Itsekiri	9	9
Ijaw	4	4
Isoko	31	31
Marital status		
Single	17	17
Married	63	63
Divorced	2	2
Widow	18	18
Educational qualification		
RN	32	32
Post basic	16	16
BNSc	47	47
MSc	5	5
Years of working experience (years)		
1-3	9	9
4-7	9	9
8-11	48	48
12-15	31	31
>16	5	5

Table 2: Nurse's perception of pressure ulcer care in Secondary Healthcare in Delta State, Nigeria

SA___ Strongly Agreed, A___ Agreed, D___ Disagreed, SD___ Strongly Disagreed

Perception of pressure ulcer care n= 100	SA f(%)	A f(%)	D f(%)	SD f(%)	Mean Value
Pressure ulcer care is the responsibility of health care professionals who are involved in patient care	48(48)	49(49)	3(3)	0(0)	3.45
Good knowledge and practice, and positive attitudes of nurses are necessary for pressure ulcer prevention	60(60)	40(40)	0(0)	0(0)	3.60
Pressure ulcer can be prevented by assessment measure	54(54)	44(44)	2(2)	0(0)	3.53
Braden scale is one of the risk assessment scale for pressure ulcer prevention	45(45)	55(55)	0(0)	0(0)	3.45
Turning patients position for every 2 hours is a significant nursing care for pressure ulcer prevention	64(64)	36(36)	0(0)	0(0)	3.64
Clean and dry skin, Proper hydration, and relieve of pressure can prevent pressure ulcer	63(63)	37(37)	0(0)	0(0)	3.63
Lifting up the patient without dragging is a correct nursing practice for preventing skin damage	74(74)	26(26)	0(0)	0(0)	3.74
Grand Mean					**3.58**

Criterion (cut-off) mean= 2.50.

Table 3: Perceived barriers to pressure ulcer care among nurses in Secondary Healthcare in Delta State, Nigeria

Barriers to pressure ulcer care n= 100	SA f(%)	A f(%)	D f(%)	SD f(%)	Mean Value
Inadequate knowledge of pressure ulcer prevention	69(69)	31(31)	0(0)	0(0)	3.69
Unfavourable or negative attitudes by the nurses	60(60)	40(40)	0(0)	0(0)	3.60
Disproportionate nurse to patient ratio	74(74)	26(26)	0(0)	0(0)	3.74
Lack of job satisfaction	56(56)	37(37)	7(7)	0(0)	3.49
Lack of universal guidelines and policies on prevention of pressure ulcer	70(70)	30(30)	0(0)	0(0)	3.70
Lack of evidence supported by research	51(51)	40(40)	9(9)	0(0)	3.42
Shortage of equipment and Limited resource	45(45)	36(36)	19(19)	0(0)	3.26
Lack of training and education	68(68)	32(32)	0(0)	0(0)	3.68
Shortage of time	46(46)	45(45)	9(9)	0(0)	3.37
Heavy workload for nurses	80(80)	20(20)	0(0)	0(0)	3.80
Grand Mean					**3.58**

Criterion (cut-off) mean= 2.50

Table 4: Factors That Influence the Development of Pressure Ulcer in Secondary Healthcare in Delta State, Nigeria

Variables n = 110	SA f(%)	A f (%)	D f(%)	SD f(%)	Mean value
Increased pressure	68(68)	32(32)	0(0)	0(0)	3.68
Friction and Shearing force	84(84)	16(16)	0(0)	0(0)	3.84
Immobility	88(88)	12(12)	0(0)	0(0)	3.88
Skin moisture	64(64)	36(36)	0(0)	0(0)	3.64
Malnutrition	56(56)	36(36)	8(8)	0(0)	3.48
Advanced age	75(75)	25(25)	0(0)	0(0)	3.75
Dehydration	55(55)	36(36)	9(9)	0(0)	3.46
Grand Mean					3.68

Test of Hypothesis

Table 5: Statistical relationship between level of knowledge and barriers to pressure ulcer care among nurses

Knowledge	Barriers to Pressure ulcer care		N	Chi-square	df	P-value
	Good	Poor				
High	92(94.8%)	5(5.2%)	97	0.012	1	0.001
Low	1(33.3%)	2(66.7%)	3			

$p<0.05$ is considered statistically significant

Table 5 above showed the statistical relationship between level of knowledge and pressure ulcer care among nurses in selected hospitals in Delta State. The results showed that majority of the nurses (94.8%) who had high level of knowledge demonstrated good pressure ulcer care. Also, majority of the nurses (66.7%) who had low level of knowledge demonstrated poor pressure ulcer care.

These results revealed that, there was a significant relationship between level of knowledge and pressure ulcer care among nurses in selected hospitals in Delta State (p=0.001). Since p 0.001< 0.05, therefore, the hypothesis which stated that there is no significant relationship between level of knowledge and pressure ulcer care among nurses was rejected.

DISCUSSION

This study explored nurses' perceived barriers to pressure ulcer care. An analysis of the demographic data from 100 participants revealed that the majority (45%) were aged between 31 and 40 years, followed by those aged 41 to 50 years (31%). The smallest group, comprising 6% of participants, was aged 51 years and above. Female nurses made up the majority, accounting for 91% of the respondents. In terms of education, the largest proportion (47%) held a Bachelor of Nursing Science (BNSc) degree, while Registered Nurses formed a significant part of the sample. Most participants had 8 to 11 years of work experience (48%), whereas a smaller percentage (5%) had more than 16 years of experience (see table 1).

The analysis (table 2) found that nurses displayed a positive perception of pressure ulcer care, with all responses exceeding the criterion mean. This implies that the nurses understood the importance of pressure ulcer prevention care and management. All the statements have mean values above the criterion mean (2.50), with a grand mean of 3.58, indicating high agreement. The highest-rated perception is "Lifting up the patient without dragging is a correct nursing practice for preventing skin damage" (Mean = 3.74). The lowest-rated perception is "Pressure ulcer care is the responsibility of healthcare professionals who are involved in patient care" (Mean = 3.45). This may indicate variability in the ownership accountability in the intra-professional relationship among nurses and inter-professional teamwork that needs reinforcement.

The perceived barriers to the prevention and practice of pressure ulcer care could be related to systemic problems that need urgent intervention. Organizational factors significantly influence the effectiveness of pressure ulcer prevention strategies. These factors can either facilitate or hinder the implementation of best practices and ultimately impact the health outcomes of patients [36,37]. The study identified heavy workloads (mean= 3.80), and disproportionalnurse to patient ratio (3.74) are vital challenges, showing staff shortages and high work demands on nurses. Nurses are often faced with heavy workloads due to the complexity of nursing care of patients. Nurses, who are often overburdened with patient care responsibilities, may struggle to allocate sufficient time to implement essential pressure ulcer prevention strategies.

The high patient-to-nurse ratios and the demand for careplanning, implementing intervention, evaluation of care and support reduce the time available for PUs prevention strategies, such as skin assessment and repositioning[16,38]. This can lead to compromised patient care and an increased risk of developing a pressure ulcer. Scholars have argued that the specific challenges associated with heavy workload include: limited time for patient assessments and insufficient time for repositioning, which can lead to delayed or inadequate skin care and stress and fatigue [17-20].

Furthermore, it is consistent with Morton &Thurman who suggested that excessive workload can contribute to increased stress and fatigue, thus, impair nurses' ability make sound clinical judgments[21].

Another identified barriers were inadequate knowledge and training (mean= 3.68) (table 3). Many nurses receive minimal training in identifying and managing the unique risks of pressure ulcers in patients[7,39]. Lack of training can impair the nurses' knowledge and skills in identifying and addressing risk factors, leading to suboptimal care[40,41]. Nonetheless, Sim et al. suggested that continuous learning and sustainability of nurses' knowledge play an important role in the long-term prevention of Pus[42]. When this occurs, nurses who lack adequate training may not be able to accurately assess patient risk, implement effective prevention strategies, or recognize early signs of pressure ulcer development[26]. Furthermore, Yan et al. claimed that ineffective intervention is one of the resulting effects of lack of training. Without proper training, nurses may use inappropriate or ineffective techniques to prevent pressure ulcers, such as incorrect positioning or inadequate skin care[27]. More so, Sarikahyaposited that lack of knowledge can lead to delayed identification of pressure ulcers, which can worsen the condition and increase the risk of complications[28]. Therefore, the result of this study indicates the need for an ongoing professional development and education.

Healthy skin acts as a barrier to protect the underlying tissues from injury and infection[43-45]. When skin integrity is compromised, it becomes more susceptible to pressure-related damage [46]. In the analysis, the relatively lower mean for 'shortage of equipment and limited resources' (mean= 3.26) suggests that while equipment is an issue, it might not be as important as the challenging situation of understaffing, though, addressing the barrier could improve the quality of care experienced by the patients. Limited resource is a significant factor contributing to the development of pressure ulcers[29,30, 47-49]. In line with Tshiamo, inadequate skin care intensified by limited resources can compromise the skin integrity of patients[50]. It was claimed by Glass et al. that a lack of essential supplies of materials necessary for skin care and poor incontinence management, including infrequent incontinence care and the use of harsh cleaners, can damage the skin and increase the risk of pressure ulcers[51]. Nonetheless, some key factors, such as insufficient resources and improper incontinent management, can facilitate the formation of pressure ulcers[20, 52,53].

The study findings suggested that the influencing factor to the development of pressure ulcer was well understood by the participants, with all factors scoring very high (see table 4). Some influencing factors such as 'immobility' (mean= 3.88) and 'friction and shearing force' (mean = 3.84) were considered to be the most critical contributors to the development of pressure ulcers. This results is consistent with the evidences that persistent long exposure to pressure or mechanical forces could lead to skin breakdown, resulting in ulcer formation, as this is most evidenced in the vulnerable elderly as a results of loss of skin elasticity and other co-morbidities [8,9,54].

Other factors such as dehydration (mean= 3.46) and malnutrition (mean= 3.48) indicated that the priority for them are less in this practice area; although they are seen as critical factors for at risk patients[54-58]. This calls for a better nutritional and hydration assessment of the patients when developing their care plans[59-63]. There is lack of guidelines (mean= 3.70) which suggests the need for standardized policies to ensure consistent and effective care practices. There is need for it to be highly emphasized, as it reiterates care protocols and interventions towards the use to pressure-relieving devices and maintenance of skin integrity.

CONCLUSION

This study highlighted the main systemic barriers to effective pressure ulcer care among nurses in several secondary care settings, including heavy workloads, inadequate training and lack of resources, high nurse-patient ratio (mean = 3.74) and insufficient resources have a significant impact on pressure ulcer prevention efforts. In addition, immobility (88.2%, mean = 3.88) and friction/shear forces (83.6%, mean = 3.84) were identified as major factors in the development of pressure ulcers. To improve patient outcomes and reduce the prevalence of pressure ulcers, it is essential to address these barriers through continuing professional education, better resource allocation and policy reforms. Implementing these measures will strengthen nurses' capacity to provide quality pressure ulcer care and improve overall health standards.

STRENGTH AND LIMITATIONS OF THE STUDY

This study has several strengths, including its focus on barriers to pressure ulcer prevention, which provides valuable information for improving nursing care. It contributes to evidence-based practice by identifying challenges and suggesting policy reforms, resource allocation, and improved training. The diversity of participants, consisting of nurses with different levels of experience and qualifications, increases the reliability and applicability of the study. The use of quantitative analysis through mean and percentage scores provides an objective assessment of barriers. In addition, the study laid the foundation for future research, encouraging further exploration of systemic challenges in pressure ulcer management. Overall, this will improve nursing practices and the quality of patient care.

However, the study relied on self-reported data, which may introduce bias. The sample size of 100 participants limits generalizability to other healthcare settings. Its cross-sectional design captures data at a single point in time, preventing any causal analysis. The lack of direct observation limits our understanding of current nursing practices. Institutional differences in policies, staffing, and resources may have influenced responses. In addition, the study did not explore other key factors such as management support and inter-professional collaboration. Future research with larger samples, longitudinal designs, and observational methods is needed to gain a more complete understanding of barriers to pressure ulcer care.

RECOMMENDATION FOR FUTURE STUDIES

Future studies should adopt a longitudinal approach to assess trends and causal relationships in pressure ulcer management. Expanding the sample size and including nurses from different care settings will improve generalizability.

Intervention studies should assess the impact of training programs, policy changes, and resource allocation on care outcomes. Qualitative research through interviews and focus groups can provide more in-depth information about nurses' experiences. Comparative studies across hospitals, regions, or countries will help identify best practices. Investigating these areas in future research will help improve nursing care strategies, improve patient outcomes, and contribute to the effective prevention and management of pressure ulcers.

DECLARATIONS

Authors Contributions

DB and OB conceived the research idea and wrote the first draft. All authors drafted and appraised the manuscript and approved for final submission for publication.

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Conflict of Interest

None was declared

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