

(RESEARCH ARTICLE)



## Assessment of quality indicators of nursing care and clients' satisfaction at federal medical centre Jigawa state, Nigeria

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### Abstract

**Background:** The challenges in Human Resources for Health Management and Development are global. It is particularly worst in sub Saharan Africa which has been strewn with crisis. Investments in the training of the much needed professionals do not seem to match requirement and therefore does not make the expected impact. A number of other factors have also been assigned to the low level of health worker concentration in areas where their services are needed in Africa. The quality of care that nurses provide is influenced by individual nurse characteristics such as knowledge and experience, as well as human factors such as fatigue.

**Aims:** The study aim was to Assess Quality indicators of Nursing care and clients' satisfaction at Federal Medical Centre Jigawa State, Nigeria.

**Methodology:** A Descriptive cross sectional design with quantitative and qualitative data collection approach was implemented in this study to Assess Quality indicators of Nursing care and clients' satisfaction at Federal Medical Centre Jigawa State, Nigeria. The population of the study comprises nurse managers and in-patients of Federal medical Centre, Birnin kudu, Jigawa State. Probability (stratified) sampling was used for quantitative aspect and census sampling for qualitative aspect. Four main tools were used for data collection. SPSS version 24 was used for data analysis.

**Results:** The results revealed that: In the result to assess the nursing care quality, 34% of the respondents were very comfortable of the helpfulness of nurses. 26.7% reported to be good as well as excellent by 23.3%. Significant percentages of the respondents (38.4%) were very comfortable on how nursing staffs respond to their calls, and only 5.8% reported to be poorly comfortable. Skills and competence of nursing were determined, and results show that 33.7% of the patients happen to be very good with how nurses are administering medicines and handling I.Vs. As high as 24.4% of the patients agreed that the coordination of care by the nurses as very good, while 23.3 reported to be excellent

**Conclusion:** There is uneven distribution of nurses. Hospital infection rates and mortality rates are important indicators of quality. There are so many strategies to improve quality of care. Clients are satisfied with quality of care they receive; however, a lot improvement can be made.

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**Keywords:** Assessment; Clients' Satisfaction; Indicators; Nursing care; Quality

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## 1. Introduction

### 1.1. Nurse Staffing Pattern

Staffing in the context of staffing patterns is a function of providing a team of nursing staff who can fulfill the nursing needs and demands of patients in a nursing unit (Malatji et al., 2017). Staffing patterns are the numbers and types or categories of staff assigned to a client/patient. The (Munch Nielsen et al., 2022). American Nurses Association [ANA] (2014) stated that adequate and efficient staffing patterns are not only essential for providing quality care, but are also important for health care providers' job satisfaction, prevention of burnout syndrome and work related stress. However, findings of a study conducted by (Antinaho et al., 2017) suggest that it is probably not possible to identify ideal staffing patterns or patient to nurse ratios if the quality of the working environment and workload are not considered, as these also appear to affect nurses in different ways. In their study Gaudine's and Thorne's (2012) reports that staffing patterns currently used, have contributed to work stress, emotions and physical burnout resulting in increased absenteeism and resignation which are indicators of staff dissatisfaction (Ratican et al., 2020). For several decades staffing patterns have been a major concern for health care organizations, amongst other reasons is the relocation of nurses to other countries leading to staff shortages (Kelly, 2011). Roussel, Russell, Swansburg, and Swansburg (2006:) concurs that current literature confirms that staffing patterns that accommodate higher patient to nurse ratios affect nursing staff negatively. This is demonstrated by increased emotional stress, physical exhaustion and high nurse turnover.

The high patient to nurse ratios and the profitability factor of private hospitals virtually dictates the type of staffing patterns that are used in these wards. As such, the current staffing patterns appear to require nursing staff to work longer shifts and more overtime work without choice (Stimpel, Douglas, & Aiken, 2012). Garrett (2008) reviewed various studies that compared nurse staffing patterns with patient outcomes and explored the relationship between fatigue and nursing staff errors.

Garrett (2008) reported that inadequate staffing patterns and unrealistic workloads placed an unnecessary burden on nursing staff, reduced the quality of care, led to excessive fatigue, unachievable expectations and incomplete tasks. Ball and Pike (2009), concur with Garret that more than 55% of nurses surveyed reported that they were too busy to provide the level of care required of them and their workload was directly related to patient-to-nurse ratios. In their report, Kalishand Lee (2011) support Garret and Ball and Pike's findings that when nurses are stressed and overwhelmed by staffing workloads, nursing quality deteriorates, leading to an increase in turnover rates. Nurse staffing decisions that are based on patient acuity have the potential to balance the nursing workload among the available nurses (Numataya et al., 2006). Patient acuity is based using on resources to validate proper staffing plans which include current national nursing standards and evidenced based practice. The American sentinel watch (2014) stated that patient acuity is an estimation used for nurse staffing allocations and budget, or the measurement of the intensity of nursing care required by a patient. An acuity based staffing system regulates the number of nurses on shift according to raw patient numbers (Habasevich, 2012). The workload and staffing pattern imbalances worsen the negative experiences of nurses and needs to be addressed and analysed in order to adjust staffing patterns (Lerman et al., 2012). According to Numataya et al. (2006) among other factors affecting the quality of nursing care, staffing levels are believed to be the most basic component with a direct bearing on nurses' experiences and patient care. The authors add that understaffing does not only impede the provision of the planned care but also may introduce human error that jeopardizes patient safety and negative staffing experiences. An examination of staffing patterns on scheduled unit staff nurses versus float pool nurses illuminated the fact that nursing staff experienced staff shortages, dissatisfaction within the work environment and challenging job assignments (Larson, Sendelbach, Missal, Fliss, & Gaillard, 2012). Dhurup, Van Zyl, and Mokhathi (2014) assert that staffing patterns and the loss of nursing staff, coupled with the distribution of those remaining has negatively affected nurses and the health care delivery system in South Africa. The International Council of Nurses (ICN, 2009) released the results of a survey conducted in collaboration with Pfizer which revealed that 46% of nurses indicated their workload was worse due to staff shortages as compared to five years ago. The researcher observed that staffing patterns in the surgical wards of the hospital did not accommodate high patient acuities of 1:6 with the current staffing patterns used and staff shortages.

Minimum staff ratios are determined by the type of patient care unit, patient care needs and patient acuity (Reiter, Harles, Pink, & Mark, 2012). As a private hospital, revenue generation is an important factor and as such nursing staffing costs are always under scrutiny. This results in nurses working long hours with no breaks as the staffing patterns are designed with a high patient-to-nurse ratio from 6 patients to one nurse during the week to 1:4 over weekends. According to the American Nurses Association's [ANA] (2014) study of 232,342 surgical patients done in Pennsylvania revealed that 4535 died within 30 days of discharge. The study also suggests that the differences in nurse-

to-patient ratios (4:1 vs 8:1) may have been a factor in these patients deaths [ANA] (2014). Some nurses complain on a continuous basis about staffing patterns and verbalize their dissatisfaction with the issue of staffing patterns and state that it should be addressed by management and policy makers as this is a problem not only for the nurses but also affect the quality of patient's care. It was, therefore, imperative to conduct this study as a need exists to develop recommendations for staffing patterns in the surgical wards of this private hospital. The researcher has identified a gap in this type of research, as nurses continuously complain of the staffing patterns and staff shortages. The researcher observed that nurses are challenged to maintain high quality care in the face of the present staffing patterns and staff shortages.

In a study on Nurses experiences regarding staffing patterns in the surgical wards of a private hospital in Gauteng South Africa, the findings of the study revealed one central theme which reflected that participants experienced the staffing patterns of the surgical wards negatively (Malatji et al., 2017b). Two main themes emerged as, nurses had negative experiences in the surgical wards as well as negative emotional experiences related to the staffing patterns (Malatji et al., 2017b). It is evident from the findings of the study that nurses are experiencing staffing patterns negatively (Malatji et al., 2017). Results of the study shows that the number of respondent's B per shift within each ward ranged from 2 to 3 making nurse-patient ratio of 1:14 or 1:9. The percentage bed occupancy in each of the 28 bedded ward ranged from 75.0 - 92.8%. It was observed that morning and afternoon duty shifts were 8 hours each while the night duty is 12 hour duration. When respondents A were asked about the adequacy of nursing staff per shift, 75% believed that nurses were not adequate, 15% believed they were adequate while 10% were undecided on this.

### 1.2. Quality of Nursing care indicators

Quality indicators are used worldwide to monitor, assess and report the quality of care provided in healthcare settings by measuring specific health care structures (e.g., staffing), processes (e.g., patient referrals) or outcomes (e.g., nosocomial infections) that reflect quality of care (Favez et al., 2020). Hospital readmissions are common, costly, and potentially preventable. Little is known about the association between available skilled nursing facility (SNF) performance measures and the risk of hospital readmission (Huijben et al., 2019).

In a study to measure the association between SNF performance measures and hospital readmissions among Medicare beneficiaries receiving post acute care at SNFs in the United States, Of 1 530 824 patients discharged, 357 752 (23.3%; 99% CI, 23.3%-23.5%) were readmitted or died within 30 days; 72 472 died within 30 days (4.7%; 99% CI, 4.7%-4.8%), and 321 709 were readmitted (21.0%; 99% CI, 20.9%-21.1%). The unadjusted risk of readmission or death was lower at SNFs with better staffing ratings. SNFs ranked lowest (19.2% of all SNFs) had a 30-day risk of readmission or death of 25.5% (99% CI, 25.3%-25.8%) vs 19.8% (99% CI, 19.5%-20.1%) among those ranked highest. SNFs with better facility inspection ratings also had a lower risk of readmission or death (Neuman et al., 2014). Quality indicators used in the management of nursing services include Hospital infection rates, mortality rates, incidence of nosocomial infections, incidence of falls from bed and medication errors are very relevant nursing care indicators

### 1.3. Patients Satisfaction with Quality of Care

Patient satisfaction is a concrete criterion for evaluation of health care and therefore quality of nursing care (Gezer & Arslan, 2021). It provides crucial information for healthcare managers by providing important resources for processes such as those involved in measuring patients' expectations and satisfaction with nursing care quality, improving nursing service quality through identification of areas of failure and planning and implementing necessary training (Karaca & Durna, 2019) Evaluation of health care involves defining the objectives of care, monitoring healthcare inputs, measuring the extent to which the expected outcomes have been achieved and assessing the extent of any unintended or harmful consequences of the intervention (Gezer & Arslan, 2021). Nursing care is one of the major components of healthcare. Patients' satisfaction with nursing care has become an established as the most important predictor of the overall satisfaction with hospital care and an important goal of any healthcare organization (Wudu, 2021). Measuring patients' satisfaction with nursing care could be effective in improving nursing service quality by facilitating the creation of standards for care while monitoring both results and patients' perceptions of quality (Zhang et al., 2022). The nurses have a central role in offering emotional and psychological support to patients and their families in all settings, such as supporting the patient through diagnosis and ensuring optimum care given to them. Besides the provision of technical care, nurses must have the qualified professional knowledge, attitudes and skills, providing the informational, emotional and practical supports (Alsaqri, 2016). Increasing competition in every field today also affects the health care industry. The most important competitive advantage of health service providers is to provide quality health services (Zhang et al., 2022) The need for increased quality of healthcare services has been identified via health related information and advances in technology, changes in expectations and opinions about health care, an increase in individuals' involvement in their health care and increased cost and competitiveness in the health sector (Freitas, Silva, Minamisava, Bezerra, & Sousa, 2014). The quality and adequacy of healthcare services can be measured based on views and satisfaction of

patients and their relatives (Merkouris et al., 2019). Patients' opinions are the best source that can tell the providers of what is important, that is why this information can be used in healthcare planning and evaluation (Lotfi et al., 2019). All these changes and developments in the healthcare field require restructuring of all healthcare services, including nursing, through questioning the quality of treatment services (Karaca & Durna, 2019)

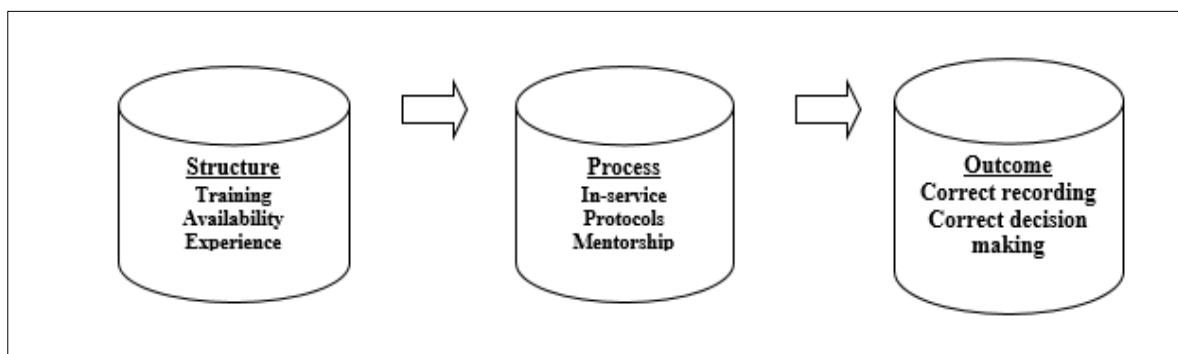
#### 1.4. Theoretical Framework

##### 1.4.1. Donabedian Model

The **Donabedian model** is a conceptual model that provides a framework for examining health services and evaluating quality of health care (Voyce, 2015). According to the model, information about quality of care can be drawn from three categories: "structure," "process," and "outcomes (Donabedian, 1988). Structure describes the context in which care is delivered, including hospital buildings, staff, financing, and equipment. Process denotes the transactions between patients and providers throughout the delivery of healthcare. Finally, outcomes refer to the effects of healthcare on the health status of patients and populations (Voyce, 2015).

Avedis Donabedian, the father of the conceptual framework, utilizes three essential factors to evaluate a system, namely:

- Structure
- Process
- Outcome

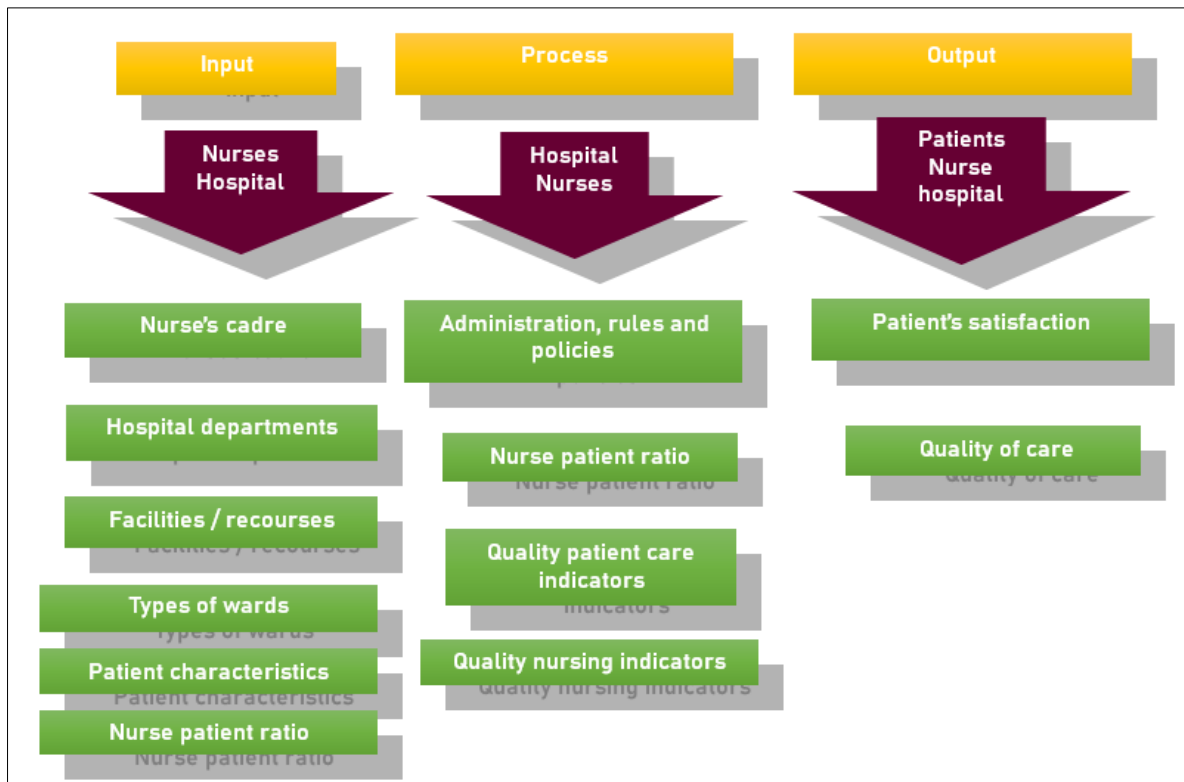


**Figure 1** The Donabedian model

##### 1.4.2. Application of Donabedian Conceptual Framework (Donabedian 1988).

Structure includes all of the factors that affect the context in which care is delivered. This includes the physical facility, equipment, and human resources, as well as organizational characteristics such as staff training and payment methods. These factors control how providers and patients in a healthcare system act and are measures of the average quality of care within a facility or system. Structure is often easy to observe and measure and it may be the upstream cause of problems identified in process (Voyce et al., 2015). The structure denotes the attributes of the setting in which the care occurs Donabedian (1988). For the purpose of this study the attributes of the process will be the staffing pattern, nurse to patient ratio, staff qualification and experience, the skill level of nursing staff and certification levels of nursing staff (Voyce et al., 2015). Process is the sum of all actions that make up healthcare. These commonly include. Processes can be further classified as technical processes, how care is delivered, or interpersonal processes, which all encompass the manner in which care is delivered (Donabedian, 2003). Process is that which is actually done in giving care Donabedian (1988). Process is the actual performance to achieve the outcome, and it can be seen here as the in-service training, updates and protocols available for training, supervision and mentorship on its use. Process includes measure methods of patient assessment and nursing interventions. Nursing job satisfaction is also considered a process indicator (Sloane et al., 2018). Output indicators reflect patient outcomes that are determined to be nursing-sensitive because they depend on the quantity or quality of nursing care. These include things like pressure ulcers and falls. Other types of patient outcomes are related to other elements of medical care and are not considered to be nursing-sensitive – these include things like hospital readmission rates and cardiac failure.

According to Donabedian (1988) this three-part process of quality assessment will be possible only if there is a likelihood that good structure is in place, which increases the likelihood of a good process and ultimately increases the likelihood of good outcomes.



**Figure 2** Three-part process of quality assessment

## 2. Methodology

### 2.1. Study Design

A descriptive cross sectional design with both quantitative and qualitative (generic) data collection approach was implemented in this study to explore the relationship between nurse staffing Pattern, patient care quality indicators and safety in Federal Medical Centre, Birnin kudu, Jigawa State.

Correlation research is a type of research method that involves observing two or more variables in order to establish a statistically corresponding relationship between them. The aim of correlation research is to identify variables that have some sort of relationship do the extent that a change in one creates some change in the other. This type of research is descriptive.

### 2.2. Study Area/ setting

Jigawa state is one of the 36 states that constitute the Federal Republic of Nigeria. It is situated in north-western part of the country between latitude 11.00°n-13.00°n and longitudes 8.00°e-10.15°e, Kano and Katsina states border Jigawa to the west, Bauchi state to the East and Yobe state to the North-east. To the North, Jigawa shares an international border with Republic of Niger, which is a unique opportunity for cross- border trading activities. Government readily took advantage of this by initiating and establishing a free trade zone at the border town of Maigatari. The State was created on Tuesday 27<sup>th</sup>, 1991.(Akin and Okechukwu, 2015)The State is mainly populated by Hausa Fulani and the Mangawa and the predominant religion of the people is Islam. The State has 27 Local Government Areas and 5 Emirate Councils. Jigawa State has a population of over 4,348,649 which represent 3.34% of the Nigerian population(Okechuku, 2015). The State has an organised Health system, which covers the entire five Emirates Councils of Jigawa State health care services delivery under the affiliation of State Ministry of Health. There are two (2) tertiary hospitals i.e. Federal Medical centre, B/kudu

Federal Medical Centre (F.M.C.) Birnin kudu was established in the year 2000. It has over ten (10) departments. The department of nursing services is the largest. It manages over 400 human resources for health that include; nurses, midwives, community health extension workers (CHEW), health attendants, and casual workers. The department works in collaboration, with other clinical departments. The nursing services department is the central point as per the

infection prevention and control (IPaC) activities; prevention of all diseases The department directly coordinates and supervises through its ward managers, the activities of all nurses and midwives providing nursing care in the following in-patient ward/units; male and female medical-surgical wards, pediatrics Medical and Surgical ward, the special baby care unit (SCBU), Maternity, postnatal and antenatal ward, and six (6) outpatient clinics including adult and pediatric accident and emergency units (A/E, E.P.U.), theatre, anesthesia unit, Tuberculosis and H.I.V clinics, and other specialty clinics. The department serves as a clinical training ground for nursing, midwifery, and public health students. The students come from various colleges of nursing, and midwifery, and universities, including foreign universities. The continuing education unit of the department is responsible for coordinating all the students' clinical teaching, mentoring, and coordinates clinical presentations, research, and training for all personal under the nursing services in the hospital (Suleiman 2018). The compound office of the department oversees and reports to the Head of Department nursing, all the hospital clinical and non-clinical activities and events that occurred in the evening, and at night hours or during public holidays, and/or weekends. The Head of the nursing services department is a member of the Top Management Committee (T.M.C) of the institution and the committee is responsible for planning and decision-making. There are one hundred and sixty six (166) nurses in the hospital, 460 beds. The bed occupancy rate is 65%.

### 2.3. Sample Size determination for nurses

Two sample were used in this study nurses and patient For qualitative data, 20 nurse managers were used from FMC B/Kudu to fill the questionnaire on opinion of nurse managers on quality indicators. Out of 20 ward managers, 10 participated in key informant interview when saturation was reached

### 2.4. Sampling Technique

Probability (Stratified) sampling was used. This technique was chosen because it gives equal chance for all the elements/participants. The participants were drawn from various units of the institution

### 2.5. Tools and Instruments

Four (4) instruments were used for data collection

- **Checklist for records:** Roster containing staff names, rank and duties, according to the hospitals senses during the period of the data collection
- **Key Informant Interview Guide:** designed by the researcher to get information. This contains the sociodemographic characteristics and the ward managers' opinion on strategies to improve quality of care. It composes five (5) themes as the following: 1-Safety of care of patient, 2-Timeliness of provision of care to patients, 3-Effectiveness and efficiency in care provision, 4- Providing unbiased nursing care and 5- patient centered care.

Opinion of ward managers on Quality indicators tool adapted from source (Rossaneis 2014) Percentage was used here. Above 50% means that the factors is a strong nurse sensitive indicator of quality

### 2.6. Patient Satisfaction Tool

It mainly measured the client's satisfactions with nursing care quality questionnaire for patients adopted from (Laschinger et al 2005). It's a Likert scale ranging from (4) Excellent (3) Very good (2) Good (1) Fair 1 and (0) Poor, the aggregate scoring system is <2.5 poor satisfaction >2.5 good satisfaction

### 2.7. Method of Data analysis

For Quantitative data, Data obtained through the questionnaire was appropriately cleaned to ensure accuracy and consistency. Coded data was transported to Statistical Package for the Social Sciences (SPSS) Version 24.0 for cleaning, information obtained through designed questionnaire and data was presented using descriptive statistic in the form of a frequency distribution, percentages, and regression analysis.

For the qualitative aspect, data were coded and transcribed, summarized and manually analysed.

### Scoring for inferential statistics on degree of correlation:

- **Perfect:** If the value is near  $\pm 1$ , then it said to be a perfect correlation: as one variable increases, the other variable tends to also increase (if positive) or decrease (if negative).
- **High degree:** If the coefficient value lies between  $\pm 0.50$  and  $\pm 1$ , then it is said to be a strong correlation.

- **Moderate degree:** If the value lies between  $\pm 0.30$  and  $\pm 0.49$ , then it is said to be a medium correlation.
- **Low degree:** When the value lies below  $\pm .29$ , then it is said to be a small correlation.
- **No correlation:** When the value is zero.

### 3. Results

**Table 1** Staffing Patterns and Nurse patient ratio at various wards

Ward	No of Nurses	No. of beds/patients	Nurse patient ratio
Male ward	18	26	0.7
Female ward	16	24	0.7
Paediatric ward	17	15	1.1
Maternity	18	10	1.8
Rapid response	10	12	0.8
Accident and emergency	20	15	1.3
Emergency paediatric unit	16	15	1.1
Gynae emergency	10	10	1.0
SCBU	12	8	1.5
Orthopaedic ward	13	10	1.3

From the Table 1, Data on the staffing patterns/ skills mix at various units was recorded. The result revealed that accident and emergency ward recorded the highest number of nurses (20), followed by male ward and maternity with total number of 18 nurses each; while paediatric ward found to possess 17 nurses. In female ward and emergency paediatric unit, a total of 16 nurses were identified. Wards specifically the orthopaedic ward, SCBU, gynae and rapid response recorded less than 15 nurses in each respective wards. Maternity ward has the highest Nurse: patient ratio of 1.8, while Male and Female wards have the lowest ratio of 0.7

**Table 2** Opinion of Nurse Managers on Quality Indicators used in the management of nursing services

Quality indicators	Very relevant	Relevant	Moderately relevant	Not relevant (%)
	F%	F%	F%	F%
General Institutional Indicators				
Hospital infection rate	20 (100.0)	00	00	00
Hospital mortality rate	20 (100.0)	00	00	00
Hospital occupancy rate	8 (40.0)	00	5 (25.0)	7 (35.0)
Average hospital stay	9 (45.0)	00	9 (45.0)	2 (10.0)
Nursing Care indicators				
Incidence of nasocomial infections	17 (85.0)	2 (10.0)	00	1 (5.0)
Incidence of falls from bed	15 (75.)	3 (15.)	1 (5.0)	1 (5.0)
Medication errors	15 (75.0)	5 (25.0)	00	00
Non-compliance in the nursing records	18 (90.0)	2 (10.0)	00	00
Hours of training of nursing professionals	18 (90.0)	2 (10.0)	00	00
Workplace-induced injuries among the nursing staff	15 (75.0)	00	3 (15.0)	1(5.0)

Nursing turnover rate	14 (70.0)	00	5 (25.0)	1 (5.0)
Personnel Management Indicators				
Distribution of nurses/bed	18 (90.0)	1 (5.0)	00	1 (5.0)
Nursing staff absenteeism rate	18 (90.0)	1 (5.0)	1 (5.0)	00
Customer satisfaction with nursing services	19 (95.0)	1 (5.0)	00	00

**Table 2** In the assessments of quality indicators used in the management of nursing services Hospital infection and mortality rates appears to be very relevant with 100%. 85% of the respondents show that an incidence of nasocomial infections is crucial indicators While 75% responded that an incidence of falls from bed and medication errors are very relevant. 90% of the respondents suggest that non-compliance in the nursing recorded as well as hours of training nursing professionals tend to be very relevant nursing care indicators. Workplace induced injuries among the nursing staffs agreed by the 75% of respondents to be very relevant tool as nursing care indicator. 70% responded that nursing turnover rate is strongly relevant. However, 95% responded customer satisfaction with nursing services to be very relevant

#### 4. Discussion

Quantitative of the 172 samples however, majority were at the age range of 31-40 years, those at the age above 50 years and below 20 years respectively. This further explained that people at the age group of 31-40 visits hospital frequently more than any other age groups. The highest frequency was recorded at tertiary level of education with significant proportion. This explains that majority of the respondents in this study are educated and therefore, the information obtained in this study is strongly reliable.

##### 4.1. Staffing pattern

In comparison with the number of bed/patients in each ward, the male and female ward with the highest number of beds/patients (26 and 24) possess very low staffing pattern with a nurse: patient ratio of 0:7, and 0:8 ratio was observed in rapid response unit. This indicates that, in these wards, each nurse will attend to more than 8 patients at a time. This is in dispersion with Suresh and Ritu (2020) and international nurse staffing norms which recommend that the nurse: patient ratio of 1:3 in teaching hospitals and 1:5 in general hospitals should be used as standard requirement of nurse: patients. Dhurup, Van Zyl, and Mokhathi (2014) assert that staffing patterns and the loss of nursing staff, coupled with the distribution of those remaining has negatively affected nurses and the health care delivery system. This further explains that, as the number of patients in a given ward increase, the number of nurses required must also increase and vice versa. To define it mathematically, the number of nurses is directly proportional to the number of patients. This will pave a way towards the maintaining the standard requirement of nurse to patient ratio pattern in a hospital settings and at the same time, quality of care.

##### 4.2. Opinion of nurse managers on quality indicators

In the assessments of quality indicators used in the management of nursing services Hospital infection and mortality rates appears to be very relevant general institutional indicators in the management of nursing services in a hospital. These findings indicate that, mortality and hospital infection rate can be used as relevant criteria to reliably assess the degree of nursing services management. This finding is consistent with the results of research conducted by (Mariana 2015). 85% of the respondents show that an incidence of nasocomial infections are crucial indicators to determine the carefulness of the nursing practices in a hospital. While 75% responded that an incidence of falls from bed and medication errors are very relevant. This is in line with (Rossaneis et al., 2015) who opined that incidence of falls indicate poor quality of care.

##### 4.3. Strategies to improve quality of nursing care

The response of nurse managers suggested various ways to improve effectiveness and efficiency of care. Punctuality of staff and Effective organization of staff through roster contributes to timely nursing care. This answer is in line with principles of management according to (Antinaho et al., 2017) Provision of facility crèche, punishing late comers and Prioritizing work to be done as well as staff motivation are the key factors to improve timely provision of care. These strategies as suggested by PV are also part of principles of Motivation. (Peršolja, 2021)



PI stated that provision of adequate equipment, implementing new policies in patient care and regular update of knowledge through Seminars /workshops and conferences will ensure effectiveness and efficiency of nursing care(Molina-mula & Gallo-estrada, 2020)Prioritizing patient's needs, involving patient relations and where necessary, provision of individualized patient care through the use of nursing process. Application of nursing process in the provision of care, as suggested by PVII is a current trend in nursing practice.

#### **4.4. Patient's satisfaction with quality of nursing care**

In the assessment of patient satisfaction with nursing care, 33.7% of the respondents show an excellent and very good satisfaction on clarity of nurses' explanations about tests, treatments and what to expect. This is consistent with findings of(Ham et al., 2015) who stated that explanation improves client satisfaction. On the other hand, only 20% reported to be good. Only 2.3% reported to be poorly satisfied. 36% of the respondents show a very good satisfaction on how nurses prepare patients for tests and operation, and excellent satisfaction were reported by 27% only. In the data gathered on the ease of getting information by the patients, 30 and 28% shows that they are very good and excellently convinced.12.9 and 1.2 reported to be fair and poorly satisfied. In the same vein, 25.6% convinced to be very good. About 37.2% of the respondents reported a very good satisfaction on the nurses' attention to their conditions, and 18.6% excellently satisfied, and 24.5% were good.A study indicated that people who perceived themselves as being healthy were more likely to be satisfied with access to care (Karaca & Durna, 2019)

The research questions were answered using descriptive statistics of frequency and percentage.

- There was high number of staff in some units and low in some other units. It means there is uneven distribution of staff nurses. Nurse: Patient ratio needs is below the international standard.
- Hospital infection and mortality rates appear to be very relevant quality indicators.
- Strategies to improve quality of care, among others include punctuality of staff, effective organization of staff through roster contributes to timely nursing care, Proper/Flexible roster with efficient supervision and monitoring help to ensure that nursing care is rendered in good time.
- Clients were satisfied with the quality of nursing care they received from nurses.

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## **5. Conclusion**

On the basis of the findings of this study, the following conclusions were drawn. There is uneven distribution of nurses. Hospital infection rates and mortality rates are important indicators of quality. There are so many strategies to improve quality of care. Clients are satisfied with quality of care they receive; however, a lot improvement can be made. There is a relationship between educational qualification of nurses and perceived quality of care

### *Recommendations*

Based on the findings from this study, the following recommendations were made:

- Ward managers should ensure proper distribution of staff nurses and adequate Nurse: Patient ratio is needed
- Government/policy makers should base their policy on staffing needs and identified quality indicators
- Community members should ensure quality care is provided to them. Where clients are not satisfied with the quality of care they receive, they should report it to appropriate authority

### *Original contribution to the knowledge*

- We now know that quality indicators specific to nursing
- Various strategies on how to improve quality of care have been identified

### *Suggestion for further study*

- Nurses level of job satisfaction in Federal Medical Centre, Birnin kudu, Jigawa State needs to be studied
- Quality of hospital work environment has not been adequately studied
- There is need to study the hospital infection and mortality rates

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## Compliance with ethical standards

### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

### *Statement of ethical approval*

Ethical clearance was obtained from Jigawa State Ministry of Health and the Management of Federal Medical centre Birnin-kudu Jigawa State.

### *Statement of informed consent*

Informed consent of the participants was obtained and they have the legitimate right to withdraw from the research at any time. Ethical clearance was sought for, and obtained from the Research and Ethics Committee of Federal Medical Center Birnin kudu, Jigawa State before commencement of the study. A letter of introduction was obtained from the Department of Nursing Sciences, Ahmadu Bello University Zaria. Permission to carry out the study was obtained from Heads of Department of Nursing services and health information management. Permission to carry out the study will be sought from ward in - charges where the study took place. Finally, the nature and objectives of this study was explained to each participant and assurance of confidentiality and anonymity given, to obtain an-evidence based, informed, written consent for participation in the study by way of signing or thumb printing the consent form. Participation was completely voluntary at no cost to them. Any individual who did not consent to participate in the study was exempted. The respondents' right to voluntary participation and right to withdraw at any stage of the study or absolute refusal to participate in the study was emphasized and duly respected and did not affect the care or treatment they received in the health facility in any way.

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## References

- [1] A, B. A. I., & Okechukwu, I. (2015). CENSUS POLITICS IN NIGERIA : AN EXAMINATION OF 2006 POPULATION CENSUS. 9(3), 47–72.
- [2] Alsaqri, S. (2016). Patient Satisfaction with Quality of Nursing Care at Governmental Hospitals, Ha'il City, Saudi Arabia. *Journal of Biology, Agriculture and Healthcare*, 6(10), 128–142.
- [3] Antinaho, T., Kivinen, T., Turunen, H., & Partanen, P. (2017). Improving the quality of Registered Nurses (RNs') working time use data.
- [4] Clarke, S. P., & Donaldson, N. E. (2008). Nurse Staffing and Patient Care Quality and Safety Identifying Nurse-Sensitive Outcomes. *Agency for Healthcare Research & Quality*, 1–25.
- [5] Favez, L., Zúñiga, F., Sharma, N., Blatter, C., & Simon, M. (2020). Assessing nursing homes quality indicators' between-provider variability and reliability: A cross-sectional study using iccs and rankability. *International Journal of Environmental Research and Public Health*, 17(24), 1–15. <https://doi.org/10.3390/ijerph17249249>
- [6] Gezer, D., & Arslan, S. (2021). Patient satisfaction on nursing care: the case of in day surgery. *Cukurova Medical Journal*, 46(2), 663–669.
- [7] Ham, H.-S., Peck, E. H., Moon, H. S., & Yeom, H.-A. (2015). Predictors of Patient Satisfaction with Tertiary Hospitals in Korea. *Nursing Research and Practice*, 2015, 1–6. <https://doi.org/10.1155/2015/749754>
- [8] Huijben, J. A., Wieggers, E. J. A., de Keizer, N. F., Maas, A. I. R., Menon, D., Ercole, A., Citerio, G., Lecky, F., Wilson, L., & Cnossen, M. C. (2019). Development of a quality indicator set to measure and improve quality of ICU care for patients with traumatic brain injury. *Critical Care*, 23(1), 1–13.
- [9] Ka, A., & Sa, K. (2020). An Approach for Patient Classification and Nurse Staffing in Nigerian Hospitals : A Concept Paper. 1(2), 1–6.
- [10] Karaca, A., & Durna, Z. (2019). Patient satisfaction with the quality of nursing care. *Nursing Open*, 6(2), 535–545. <https://doi.org/10.1002/nop2.237>
- [11] Lotfi, M., Zamanzadeh, V., Valizadeh, L., & Khajehgoodari, M. (2019). Assessment of nurse–patient communication and patient satisfaction from nursing care. *Nursing Open*, 6(3), 1189–1196.

- [12] Malatji, M., Ally, H., & Makhene, A. (2017a). Nurses experiences regarding staffing patterns in the surgical wards of a private hospital in Gauteng South Africa. *Health SA Gesondheid*, 22, 325–332. <https://doi.org/10.1016/j.hsag.2017.04.002>
- [13] Malatji, M., Ally, H., & Makhene, A. (2017b). ScienceDirect Nurses experiences regarding staffing patterns in the surgical wards of a private hospital in Gauteng South Africa. *Health SA Gesondheid*, 22, 325–332. <https://doi.org/10.1016/j.hsag.2017.04.002>
- [14] Molina-mula, J., & Gallo-estrada, J. (2020). Impact of nurse-patient relationship on quality of care and patient autonomy in decision-making. *International Journal of Environmental Research and Public Health*, 17(3). <https://doi.org/10.3390/ijerph17030835>
- [15] Munch Nielsen, C., Hjorthøj, C., Arnfred, B. T., & Nordentoft, M. (2022). Patient outcomes of flexible assertive community treatment compared with assertive community treatment. *Psychiatric Services*, appi-ps.
- [16] Neuman, M. D., Wirtalla, C., & Werner, R. M. (2014). Association between skilled nursing facility quality indicators and hospital readmissions. *Jama*, 312(15), 1542–1551.
- [17] Peršolja, M. (2021). Congruence of Nurse Staffing and Activities with Patient Needs. *Medical Education for the 21st Century* [Working Title]. <https://doi.org/10.5772/INTECHOPEN.96589>
- [18] Ratican, S., Antenucci, R., & Ratican, C. (2020). IDENTIFYING JOB SATISFACTION AND EMPLOYMENT TRENDS DURING THE COVID 19 PANDEMIC. 3(2), 12.
- [19] Rossaneis, M. A., Gabriel, C. S., Haddad, M. do C. L., da Costa Melo, M. R. A., & Bernardes, A. (2015). Health Care Quality Indicators: the Opinion of Nursing Managers of Teaching Hospitals. 20(4), 790–796.
- [20] Services, H., & Statistics, M. (2014). Staffing situation of primary health care facilities in Federal Capital Territory , Nigeria : implication for attraction and retention policies Department of Health Policy and Management , Faculty of Public Health , University of Department of Health and . 84–90. <https://doi.org/10.5251/ajsms.2014.5.2.84.90>
- [21] Sloane, D. M., Smith, H. L., McHugh, M. D., & Aiken, L. H. (2018). Effect of Changes in Hospital Nursing Resources on Improvements in Patient Safety and Quality of Care: A Panel Study. *Medical Care*, 56(12), 1001–1008. <https://doi.org/10.1097/MLR.0000000000001002>
- [22] Voyce, J. (2015). A Donabedian model of the quality of nursing care from nurses ' perspectives in a Portuguese hospital : a pilot study. December. <https://doi.org/10.1891/1061-3749.23.3.474>
- [23] Voyce, J., Gouveia, M. J. B., Medinas, M. A., Santos, A. S., & Ferreira, R. F. (2015). A Donabedian model of the quality of nursing care from nurses' perspectives in a Portuguese hospital: A pilot study. *Journal of Nursing Measurement*, 23(3), 474–484. <https://doi.org/10.1891/1061-3749.23.3.474>
- [24] Wudu, M. A. (2021). Predictors of adult patient satisfaction with inpatient nursing care in public hospitals of Eastern Amhara Region, Northeastern Ethiopia, 2020. *Patient Preference and Adherence*, 177–185.
- [25] Zhang, J., Cao, Y., Su, M., Cheng, J., & Yao, N. (2022). The experiences of clinical nurses coping with patient death in the context of rising hospital deaths in China: a qualitative study. *BMC Palliative Care*, 21(1). <https://doi.org/10.1186/S12904-022-01054-8>