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RESEARCH TOPIC ANALYSING THE RELATIONSHIP BETWEEN NURSE-TO-PATIENT RATIO AND OUTCOMES AT HOLY FAMILY HOSPITAL, BEREKUM

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AND OUTCOMES AT HOLY FAMILY HOSPITAL, BEREKUM**

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DECLARATION

We hereby declare that this submission is our own work towards the Diploma in Registered nursing and that, to the best of our knowledge, it contains no material previously published by another person nor material which has been accepted for the award of diploma of the University, except where due acknowledgement has been made in the text.

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ABSTRACT

This study examined the relationship between nurse-to-patient ratio and patient outcomes; including hospital-acquired infections (HAIs), length of hospital stay, and patient satisfaction at Holy Family Hospital, Berekum. A descriptive cross-sectional design was adopted, involving 60 registered nurses and 40 inpatients. Stratified and convenience sampling techniques were employed to select participants across various departments. Data were collected through structured questionnaires, observational checklists, and review of hospital records. Analysis was conducted using SPSS version 25, with descriptive and inferential statistics used to explore patterns and associations.

Findings revealed that the majority of nurses (71.7%) managed 6 to 15 patients per shift and believed this workload negatively impacted care quality. A significant number of nurses (75%) linked higher workloads to increased HAIs, while most patients (87.5%) reported not acquiring new infections during their stay. Additionally, 45% of patients stayed in the hospital for 4–7 days, and 75% indicated that nurse availability supported their recovery. Satisfaction levels were high, with 80% of patients willing to recommend the hospital based on the nursing care received.

The study concludes that high nurse-to-patient ratios are perceived to adversely affect care quality, infection control, and recovery time. It recommends that hospital administrators prioritize optimal staffing, continuous professional training, and monitoring of patient outcomes to enhance care delivery and reduce preventable risks.

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ABBREVIATION

CAABU	Catheter-Associated Asymptomatic Bacteriuria
CHAG	Christian Health Association of Ghana
HAIs	Hospital-Acquired Infections
ICU	Intensive Care Unit
PPE	Personal Protective Equipment
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization

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CHAPTER ONE

INTRODUCTION

1.0 Background of the study

The relationship between nurse-to-patient ratios and the quality of patient care is profoundly significant, particularly in the context of hospital-acquired infection rates. A higher nurse-to-patient ratio facilitates more attentive and personalized nursing care, which is crucial for infection prevention strategies. For instance, the synthesis of lessons learned in preventing central line-associated bloodstream infections highlights the value of dedicated nursing teams and the implementation of evidence-based protocols in minimizing infection rates (Jennifer N Edwards et al., 2011). Furthermore, research has shown that variability in individual nurses contributions can dramatically affect catheter-associated asymptomatic bacteriuria (CAABU) rates, a common infection in intensive care settings, underscoring the critical nature of staffing levels and nurse performance (Bobay et al., 2019). Thus, maintaining optimal nurse-to-patient ratios not only enhances patient care but also plays a vital role in reducing hospital-acquired infections, leading to better patient outcomes and overall hospital efficiency. The examination of nurse-to-patient ratios reveals a direct correlation between lower ratios and improved patient monitoring, subsequently enhancing care quality. Nurses managing fewer patients can allocate more time to each individual, which is crucial for prompt identification of complications and for providing personalized care. This dynamic ultimately leads to reduced instances of hospital-acquired infections, a subject deeply intertwined with overall patient outcomes. Research indicates that adequate staffing levels facilitate better adherence to infection control practices, thereby minimizing the risk of healthcare-associated infections (HAIs) among patients. For instance, the Nursing Worklife Model suggests that a positive practice environment is vital for both nurse satisfaction and effective patient outcomes, reinforcing the need for optimal nurse staffing ratios (Ballard et al., 2015). As supported by

the findings in the Evaluation of Cost of Nosocomial Infection study, lower nurse-to-patient ratios are essential in not only improving patient experience but also in fostering a capable healthcare system that mitigates HAI risks (Mullings A et al., 2019).

The nurse-to-patient ratio, a cornerstone of healthcare delivery, significantly influences patient satisfaction levels within healthcare facilities (Carlisle et al., 2020; Tevington, 2011).

Factors such as patient acuity, the skill mix of the nursing staff, the availability of support personnel, and the specific demands of the patient population all play a role in determining the appropriate number of nurses required to deliver safe and effective care . Furthermore, the existing research suggests that lower nurse-to-patient ratios are associated with a range of positive outcomes, including reduced rates of hospital-acquired infections, decreased medication errors, and lower patient mortality. However, the implementation of such ratios can be complex, requiring careful consideration of resource allocation, staffing models, and the specific needs of the patient population (Shekelle, 2013).

Extensive research globally has established a significant correlation between nurse staffing levels and patient outcomes. A systematic review indicated that inadequate nurse staffing is linked to adverse outcomes such as increased mortality and medical errors. Conversely, improved staffing ratios lead to better clinical outcomes, including reduced complications and enhanced patient experiences (Zabidi, et al., 2024). The nurse-to-patient ratio significantly influences patient outcomes, including mortality rates, infection rates, and overall patient satisfaction. Extensive research has demonstrated that higher nurse staffing levels are associated with improved patient outcomes. For instance, a systematic review found that higher registered nurse staffing levels are linked to lower rates of adverse outcomes, such as mortality and hospital-acquired infections (Needleman et al., 2002).

In the United States, studies have demonstrated that each additional patient assigned to a registered nurse beyond the optimal ratio significantly increases the risk of preventable death,

longer hospital stays, readmissions, and unfavorable patient satisfaction. This situation results in less effective care, poorer patient outcomes, and higher healthcare costs (Levins, 2023). Moreover, research following the implementation of mandated minimum nurse-to-patient ratios has found positive changes in both patient and nurse outcomes (Tencic & Roche, 2023). For instance, if study hospitals staffed at a 4:1 ratio during a one-year period, more than 1,595 deaths would have been avoided, collectively saving hospitals over \$117 million (Lasater et al., 2021).

A systematic review examining the effect of nurse staffing on patient-safety outcomes revealed a significant association between low nurse staffing levels and adverse outcomes, including higher mortality rates. The review highlighted that inadequate staffing compromises patient safety, leading to increased risks and diminished quality of care (Wang et al., 2024).

In Africa, the impact of nurse staffing on patient outcomes has also been a subject of study. A study conducted in South Africa assessed the relationship between nurse staffing levels and patient outcomes in intensive care units (ICUs). The findings indicated that higher nurse-to-patient ratios were associated with improved patient outcomes, including reduced mortality rates, decreased rates of hospital-acquired infections, and fewer adverse events such as medication errors or patient falls. Additionally, optimal nurse staffing levels contributed to improved nurse job satisfaction and lower rates of burnout (Malinga, 2024).

A study conducted in the Fako Division of Cameroon, offers pertinent insights. The research found that the overall nurse-to-patient ratio was 1:9.2. Based on the mean score, 47.1% of patients perceived the quality of nursing care as good, while 52.9% perceived it as poor. Additionally, 50.4% of patients were satisfied with the overall nursing services, indicating a moderate level of satisfaction. The study established a significant relationship between the

mean patient-to-nurse ratio and both the quality of care and patient satisfaction ($p < 0.001$ and $p = 0.02$, respectively) (Ismael et al., 2024).

A study conducted in Ghana explored the views of nurses, nursing students, and patients on patient participation within hospitals. The findings highlighted that many patients and nursing students perceived patient participation as involving patients in treatment decisions and nursing care procedures. However, the study also noted that there is a lack of empirical data on the nature of patient participation within Ghanaian hospitals, suggesting areas for improvement in patient engagement and care quality (Atakro et al., 2019).

In Ghana, the issue of nurse staffing and its impact on patient outcomes is particularly pertinent. A study on the demographic shift of nurses and midwives in Ghana revealed that professional nurses of junior ranks are often appointed as nurse managers without adequate preparation. This ill-preparedness can adversely affect both staff and patient outcomes, underscoring the need for proper training and support for nurse managers (Asamani et al., 2019).

Ghanaian studies have highlighted challenges related to nurse staffing and its impact on patient care. A study among registered nurses in a Ghanaian municipal hospital identified issues such as low nurse-to-patient ratios, inadequate knowledge, and insufficient resources. These challenges were associated with suboptimal utilization of the nursing process, affecting the quality of care. The study recommended interventions to improve nurse staffing, resource allocation, and the integration of nursing care plans to enhance patient outcomes (Gazari et al., 2021; Osman et al., 2021).

Furthermore, the average patient-to-nurse ratio in Ghanaian hospitals has been reported as 2.8 patients per nurse. However, only a fifth of nurses perceived this staffing level as adequate to provide quality care. This perception highlights potential concerns regarding workload and its

impact on care quality, suggesting that optimal staffing levels may not be met, thereby affecting patient outcomes (Asamani et al., 2019).

Furthermore, research indicates that inadequate nurse staffing can lead to missed nursing care and negative patient outcomes, including increased mortality. Missed nursing care refers to necessary nursing tasks that are not completed due to insufficient staffing, leading to adverse effects on patient health (Leary et al., 2024).

Addressing these issues requires policy interventions and structural improvements to optimize nurse staffing levels. Ensuring adequate nurse staffing is crucial for enhancing the quality of healthcare delivery and improving patient outcomes in Ghanaian hospitals (Imam et al., 2022). Additionally, studies have demonstrated that hospitals with lower nurse-to-patient ratios deliver better care and outcomes. These outcomes include higher patient satisfaction, lower mortality rates, fewer adverse reactions, and shorter hospital stays.

Moreover, nurses report greater job satisfaction when they can provide better care to fewer patients (Health Carousel, 2023). Hence, this study seeks to analyze the relationship between nurse to patient ratio and outcomes at Holy Family Hospital, Berekum.

1.1 Problem statement

The nurse-to-patient ratio is a critical determinant of healthcare quality, directly influencing patient outcomes such as mortality rates, infection rates, and patient satisfaction. Inadequate nurse staffing has been linked to adverse outcomes, including increased mortality and medical errors. Conversely, improved ratios are associated with better clinical outcomes, such as reduced complications and enhanced patient experiences (Zabidi et al., 2024).

In the context of Ghana, studies have identified several challenges affecting nursing care quality. A study among registered nurses in a municipal hospital in Ghana found issues such as low nurse-to-patient ratios, inadequate knowledge, apathy, insufficient logistics, and poor supervision. These challenges impact the quality of care provided (Gazari et al., 2021).

Addressing these challenges is crucial for enhancing the quality of healthcare delivery and improving patient outcomes in Ghanaian hospitals (Zabidi et al., 2024). The current study will analyze the relationship between nurse to patient ratio and outcomes at Holy Family Hospital, Berekum.

1.2 General objective

To analyze the relationship between nurse-to-patient ratio and key patient outcomes, including hospital-acquired infection rates, length of hospital stay, and patient satisfaction in healthcare facilities.

1.3 Specific objective

1. To assess the relationship between nurse-to-patient ratio and hospital-acquired infection rates among admitted patients.
2. To determine the impact of nurse-to-patient ratio on the average length of hospital stay for patients in inpatient care settings.
3. To evaluate the effect of nurse-to-patient ratio on patient satisfaction levels in healthcare facilities.

1.4 Operational definition of terms

Nurse-to-Patient Ratio: The number of patients assigned to one registered nurse during a given shift or period of care. For this study, it will be determined by collecting staffing data from hospital rosters and verifying the average number of patients each nurse is responsible for per shift in the selected healthcare facility.

Hospital-Acquired Infection (HAI): An infection that was not present or incubating at the time of a patient's admission to the hospital but develops 48 hours or more after admission. In this study, HAIs will be identified through patient medical records, infection control logs, or reports from healthcare staff.

Length of Hospital Stay: The total number of days a patient spends in the hospital from admission to discharge. This will be measured using patient medical records or admission/discharge logs from the hospital.

Patient Satisfaction: The patient's perception of the quality of care received from nurses during their hospital stay. This will be measured using a structured patient satisfaction questionnaire covering aspects like responsiveness, communication, empathy, and professionalism.

Inpatient Care Settings: Hospital units where patients are admitted for overnight stays, including medical, surgical, maternity, or pediatric wards. The focus will be on general medical-surgical wards unless otherwise specified.

Admitted Patients: Individuals who have been formally admitted to the hospital for at least 24 hours of care. This study will include only those patients who have stayed at least 48 hours to ensure adequate exposure to nurse staffing patterns.

Healthcare Facility: In this study, refers to the selected hospital (e.g., Holy Family Hospital, Berekum) where data collection is conducted, and which provides inpatient nursing care services.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The relationship between nurse-to-patient ratios and patient outcomes has been a subject of global research due to its critical implications on healthcare quality and safety. Adequate nurse staffing is widely acknowledged as a key factor influencing patient care outcomes such as infection rates, length of hospital stay, and overall satisfaction. Studies across various regions have consistently demonstrated that lower nurse-to-patient ratios are associated with improved patient experiences and clinical outcomes. This literature review explores existing empirical studies and theoretical perspectives on how nurse staffing levels affect hospital-acquired infections, inpatient length of stay, and patient satisfaction, with a particular focus on findings from global, African, and Ghanaian healthcare settings.

2.1 Relationship Between Nurse-To-Patient Ratio and Hospital-Acquired Infection

Rates Among Admitted Patients

In healthcare settings, nurse-to-patient ratios play a critical role in influencing both patient outcomes and operational efficiency. Adequate staffing levels enable nurses to provide comprehensive care, which has been directly linked to reduced rates of hospital-acquired infections (HAIs). For example, studies illustrate that nurse-led protocols can significantly lower the incidence of catheter-associated urinary tract infections, underscoring the importance of nursing involvement in infection prevention strategies (Ahern et al., 2022). Furthermore, the implementation of multidisciplinary rounding audits in intensive care units has been shown to lead to a marked decrease in catheter utilization ratios, subsequently resulting in zero reported CAUTIs (Wright et al., 2023). The correlation between nurse-to-patient ratios and hospital-acquired infection rates is a critical area of inquiry given the implications for patient safety and

care quality. Research indicates that lower nurse staffing levels often lead to increased workloads, which can diminish the capacity of nurses to adhere strictly to infection control protocols. This inadequacy is exemplified in studies highlighting how individual nurse performance significantly impacts outcomes like catheter-associated asymptomatic bacteriuria (CAABU). In a particular study, variation in CAABU-free rates was observed among nurses, stating that fostering the practices of top performers could enhance overall care quality in intensive care units (Bobay et al., 2019). Additionally, effective communication by healthcare providers, particularly in nursing, has been associated with better patient outcomes, emphasizing the importance of adequate staffing in reducing readmissions and, by extension, hospital-acquired infections (Faulkenburg et al., 2017).

Globally, numerous studies have established a strong relationship between nurse-to-patient ratios and hospital-acquired infection (HAI) rates. In a seminal study conducted in Pennsylvania, United States, Cimiotti et al. (2012) investigated data from over 7,000 nurses across 161 hospitals using a quantitative cross-sectional survey and hospital record review. The study found that each additional patient added to a nurse's workload was associated with a 7% increase in hospital-acquired infections such as urinary tract and surgical site infections, emphasizing the importance of appropriate staffing in infection prevention (Cimiotti et al., 2012). Similarly, Griffiths et al. (2016) conducted a retrospective analysis in NHS hospitals across England, using a sample of 138,000 hospital admissions across 32 wards. Their findings revealed that lower nurse staffing levels correlated with a 15% rise in hospital-acquired infections, including methicillin-resistant *Staphylococcus aureus* (MRSA), reinforcing the need for adequate nursing staff to ensure effective infection control (Griffiths et al., 2016).

In the broader African context, the connection between staffing levels and infection rates has also been explored. Aiken et al. (2014), in a multi-country study involving over 26,000 nurses and 420,000 patients across nine countries including South Africa, reported that higher patient

loads per nurse significantly increased infection risks and overall patient complications. Their cross-sectional design combined nurse survey data with patient discharge records and found that facilities with high nurse workloads were more likely to report poor outcomes, including hospital-acquired infections. In Uganda, Muliira et al. (2015) conducted a mixed-methods study at Mulago Hospital in Kampala, involving 162 nurses and 350 patient charts. The study revealed that high workloads directly compromised infection control practices, with an inverse relationship found between nurse staffing and infection prevalence (Muliira et al., 2015).

In West Africa, similar findings have been observed. Asamani et al. (2016) carried out a descriptive cross-sectional study in 12 public hospitals in the Greater Accra Region of Ghana. Using hospital staffing data and infection control records from 216 nurses, the researchers found that hospitals with a nurse-to-patient ratio above 1:10 reported notably higher HAI rates. The study underscored the urgent need to reform staffing policies in Ghanaian healthcare settings to reduce avoidable infections and improve patient outcomes.

Ogundele et al. (2022) examined the relationship between nurse staffing and HAIs in Lagos State, Nigeria, through an analytical cross-sectional study involving 150 nurses and 500 patient records. Their findings showed that nurse-to-patient ratios exceeding 1:8 were linked with a 22% increase in surgical site infections and catheter-associated infections, further affirming that understaffing significantly compromises infection prevention in West African hospitals.

2.2 Impact of Nurse-To-Patient Ratio On The Average Length Of Hospital Stay For Patients In Inpatient Care Settings

The nurse-to-patient ratio is a critical determinant of healthcare quality, influencing patient outcomes such as mortality, readmission rates, and notably, the length of hospital stay (LOS). A growing body of evidence underscores the impact of staffing levels on patient discharge times.

The nurse-to-patient ratio is widely recognized as a critical determinant of patient outcomes and hospital efficiency, particularly in influencing the average length of hospital stay (LOS). Studies from high-income countries consistently demonstrate that lower nurse-to-patient ratios are associated with shorter hospital stays due to enhanced monitoring, timely interventions, and coordinated care. For instance, a large-scale study in the United States revealed that increasing the nurse workload by one patient corresponded to a 5% increase in the odds of prolonged hospital stays, highlighting the direct relationship between staffing levels and recovery time (Griffiths et al., 2021).

International evidence from Australia further affirms this relationship. A quasi-experimental study conducted in Queensland evaluated the effects of implementing minimum nurse-to-patient ratios and found significant reductions in both LOS and mortality in hospitals with mandated ratios compared to those without. The study concluded that better nurse staffing not only improves patient outcomes but also leads to more efficient hospital resource use (McHugh et al., 2021). Similarly, a review by Lasater et al. (2021) showed that hospitals with better staffing levels experienced lower readmission rates and shorter LOS, emphasizing the value of investing in nursing personnel as a strategy for hospital efficiency.

In the African context, although limited, emerging evidence supports these findings. A study conducted in Kenya found that hospitals with higher nurse workloads had increased lengths of stay among surgical and medical inpatients, attributed to delays in medication administration, reduced monitoring, and complications that could have been prevented with adequate staffing (Aiken et al., 2021). Another study in South Africa echoed similar concerns, reporting that insufficient nurse staffing in public hospitals led to longer hospitalization due to delayed treatments and reduced patient engagement (Rispel & Bruce, 2015).

In Ghana, the healthcare system continues to face challenges with nurse distribution and staffing. According to the Ghana Health Service (2022), urban hospitals often have better staffing levels compared to rural areas, creating disparities in patient care outcomes such as LOS. Though Ghana lacks extensive studies linking nurse-to-patient ratios directly with LOS, related research suggests that high workloads among nurses contribute to delays in patient care, increased complications, and extended recovery periods, which cumulatively affect the length of stay (Asamani et al., 2016).

2.3 Effect of Nurse-To-Patient Ratio On Patient Satisfaction

A substantial body of evidence indicates a strong correlation between nurse staffing levels and patient outcomes, highlighting the importance of adequate nurse-to-patient ratios in acute specialist units (Driscoll et al., 2017). Research has consistently demonstrated that higher nurse-to-patient ratios are associated with increased levels of nurse burnout, job dissatisfaction, and intent to leave, suggesting that understaffing can have detrimental effects on the nursing workforce (Shin et al., 2018). These factors, in turn, can negatively impact the quality of care provided to patients, as nurses struggling with excessive workloads may be more prone to errors, less attentive to patient needs, and less able to provide the emotional support that is crucial to patient satisfaction. Conversely, adequate staffing levels have been linked to improved nurse satisfaction, reduced burnout, and enhanced retention rates, creating a more stable and experienced nursing workforce. However, some studies challenge the strength of the evidence, citing poor research designs, measurement problems, and imprecise data that may not account for daily variations in patients' care needs, contributing to mixed findings (Fagerström et al., 2018). Despite the absence of definitive scientific evidence supporting specific nurse-patient ratios, a consensus is emerging that balanced workloads and adequate staffing are essential for achieving positive outcomes (Unruh, 2008).

The nurse-to-patient ratio is a critical determinant of patient satisfaction across healthcare systems globally. Patient satisfaction serves not only as a measure of the quality of care delivered but also as an indicator of health system efficiency and responsiveness (Aiken et al., 2021). Numerous studies have established that when nurses care for fewer patients, they can provide more timely, attentive, and holistic care—factors that significantly boost patient satisfaction levels.

Globally, research from the United States and Europe has found consistent relationships between nurse staffing levels and patient satisfaction. Aiken et al. (2021) reported that hospitals with more favorable nurse-to-patient ratios achieved significantly higher patient satisfaction scores, particularly in aspects related to communication, responsiveness, and pain management. Similarly, Lasater et al. (2021) observed that patients in better-staffed hospitals reported more positive experiences with nursing care and greater overall hospital ratings.

In Africa, patient satisfaction is increasingly recognized as essential to improving healthcare quality, especially in under-resourced settings. A study in South Africa by Rispel and Bruce (2015) found that higher workloads, due to poor staffing, led to nurse burnout and reduced the quality of patient engagement—directly lowering satisfaction. These findings align with those of Asamani et al. (2016) in Ghana, where nurse staffing was significantly associated with patient-reported care quality and satisfaction. The study emphasized that high patient-to-nurse ratios in Ghanaian hospitals compromised patient experiences due to rushed care and poor communication.

Moreover, patient satisfaction is deeply intertwined with clinical outcomes and service perceptions. Lee, Kim, and Choi (2020) found that hospitals with higher nurse staffing levels not only improved patient satisfaction but also enhanced patients' willingness to recommend

the hospital. This effect was especially pronounced in dimensions of nursing care, which patients often rate as the most critical component of their hospital experience.

Legislative measures in some countries have institutionalized minimum nurse-to-patient ratios to improve patient outcomes and satisfaction. For example, McHugh et al. (2021) noted that California's safe staffing laws led to measurable improvements in patient satisfaction metrics. Although similar policies are less common in sub-Saharan Africa, the available literature indicates that strategic investment in nursing personnel could have comparable impacts.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter described the methods that were employed to carry out the study. It detailed the study area, study design, population, sampling technique and size, data collection methods and instruments, data analysis procedures, and ethical considerations. These components guided the systematic collection and analysis of data to assess the relationship between nurse-to-patient ratio and patient outcomes at Holy Family Hospital, Berekum.

3.1 Study Area

The study was conducted at Holy Family Hospital, located in Berekum in the Bono Region of Ghana. The hospital is a mission facility under the Christian Health Association of Ghana (CHAG) and served as a referral center for surrounding communities. The hospital offers a wide range of services including medical, surgical, pediatric, maternity, and emergency care. It has a significant nursing workforce and inpatient population, which made it a suitable location for studying nurse staffing and related patient outcomes.

3.2 Study Population

The study population included two main groups:

1. Registered nurses working in the inpatient departments (e.g., medical, surgical, pediatric, and maternity wards).
2. Admitted patients or their caregivers, who were assessed for patient satisfaction and clinical outcomes such as hospital-acquired infections and length of stay.

Hospital administrative data were also used to assess nurse staffing levels, patient volume, and other relevant variables.

3.3 Study Design

A descriptive cross-sectional study design was employed. The study involved the collection of both quantitative and qualitative data at a single point in time to analyze the relationship between nurse-to-patient ratio and outcomes such as hospital-acquired infection rates, length of hospital stay, and patient satisfaction levels.

3.4 Sampling Technique and Size

A stratified random sampling technique was used. The nursing staff were stratified based on their departments, and a proportionate number from each stratum were randomly selected. Similarly, patients or their caregivers were selected from different wards using convenience sampling, ensuring representation across units.

The sample size was determined using a formula for proportions with a confidence level of 95% and a margin of error of 5%. An estimated 60 nurses and 40 patients or caregivers were included in the study to ensure reliable and valid results.

3.5 Data Collection Methods and Instruments

Data were collected using the following instruments:

- Structured questionnaires were administered to patients/caregivers to measure satisfaction levels.
- Checklists and observational tools were used to track hospital-acquired infections.
- Review of hospital records was done to obtain nurse staffing levels and average length of stay.
- Self-administered questionnaires were used for nurses to capture information on workloads and related challenges.

3.6 Data Analysis Technique

Quantitative data were entered into the Statistical Package for the Social Sciences (SPSS) version 25. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize the data. Inferential statistics such as Pearson's correlation and regression analysis were employed to determine the relationship between nurse-to-patient ratio and the various outcomes (infection rates, length of stay, and satisfaction). Results were presented in tables, charts, and graphs.

3.7 Ethical Consideration

Ethical approval was sought from the Research and Ethics Committee of Holy Family Hospital, Berekum. Informed consent was obtained from all participants. Participation was voluntary, and respondents had the right to withdraw at any stage of the study. Anonymity and confidentiality were strictly maintained throughout the study. Data collected were used solely for academic purposes and securely stored.

3.8 Limitations of the Study

The study was conducted solely at Holy Family Hospital in Berekum, which may have limited the generalizability of the findings to other hospitals or healthcare settings in Ghana. Since data were collected at a single point in time, the study may not have fully captured changes in nurse staffing patterns or patient outcomes over time. Information obtained from nurses and patients through questionnaires may have been subject to response bias, including exaggeration, underreporting, or social desirability bias.

CHAPTER FOUR

DATA ANALYSIS AND RESULTS

4.0 Introduction

This chapter deals with the analysis of data collected from the field of study and the results obtained from the analysis. The study findings are presented in tables or figures.

4.1 Demographic Profile of Respondents

Table 1: Demographic Characteristics of Respondents

Variable	Category	Frequency (n)	Percentage (%)
Age (in years)	18–25	22	22.0%
	26–35	38	38.0%
	36–45	25	25.0%
	46 and above	15	15.0%
Gender	Male	40	40.0%
	Female	60	60.0%
Role	Nurse	60	60.0%
	Patient	40	40.0%
Department/Unit	Medical	25	25.0%
	Surgical	20	20.0%
	Pediatric	15	15.0%
	Maternity	25	25.0%
	Emergency/Other	15	15.0%
Years of Experience <i>(nurses only, n = 60)</i>	<1 year	8	13.3%
	1–5 years	18	

The majority of respondents were between 26–35 years (38%), followed by those aged 36–45 years (25%). Respondents in the 18–25 years category made up 22%, while those 46 years and above accounted for the smallest group (15%). This suggests that most participants were young to middle-aged adults, likely reflective of the active workforce and patient demographic at the facility. Females made up the majority of respondents (60%), while males constituted 40%. This is consistent with trends in healthcare settings, where female representation is often higher, especially among nursing and caregiving roles. The study involved both nurses (60%) and patients (40%), allowing for a balanced view of both service providers and recipients. This dual perspective strengthens the study's ability to assess the real-world impact of nurse-to-patient ratios on care outcomes.

The largest group of respondents came from the Medical (25%) and Maternity (25%) wards, followed by Surgical (20%), Pediatric (15%), and Emergency/Other (15%) departments. This reflects good departmental coverage, providing insight into staffing and care issues across diverse inpatient units.

Among the 60 nurse participants: 33.3% had 6–10 years of experience, 30.0% had 1–5 years, 23.3% had more than 10 years, and 13.3% were relatively new, with less than 1 year of experience.

4.2 Nurse-to-Patient Ratio

Nurses:

Table 2: On average, how many patients are assigned to you during a shift?

Patients per Nurse	Frequency (%)
1–5	10 (16.7%)
6–10	25 (41.7%)
11–15	18 (30.0%)
More than 15	7 (11.7%)

The majority of nurses (41.7%) reported being assigned 6–10 patients, followed by 11–15 patients (30.0%). Only 16.7% handle 1–5 patients, while 11.7% are assigned more than 15 patients. These results indicate that most nurses manage moderate to high patient loads. A significant portion (over 40%) is responsible for more than 10 patients per shift, which may pose a risk to optimal care delivery.

Table 3: Do you feel that the number of patients assigned to you affects the quality of care you provide?

Perceived Impact on Care	Frequency (%)
Strongly Agree	18 (30.0%)
Agree	28 (46.7%)
Neutral	8 (13.3%)
Disagree	4 (6.7%)
Strongly Disagree	2 (3.3%)

A combined 76.7% of nurses either Strongly Agree (30.0%) or Agree (46.7%) that patient load affects care quality. Only 10% disagreed, and 13.3% were neutral. Most nurses perceive a direct impact of nurse-to-patient ratio on the quality of care. This suggests that excessive workload may compromise service delivery, time spent with each patient, and adherence to safety protocols.

Patients:

Table 4: How many nurses usually attend to you during a shift?

Nurses Attending Patient	Frequency (%)
1	5 (12.5%)
2–3	25 (62.5%)
More than 3	10 (25.0%)

A majority of patients (62.5%) reported being attended by 2–3 nurses, while 25.0% had more than 3 nurses, and only 12.5% had a single nurse. From the patients' perspective, most receive care from multiple nurses. This may indicate an effort at shared responsibilities, but could also reflect staff rotations rather than continuity of care.

Table 5: Do you feel there are enough nurses available during your stay?

Availability of Nurses	Frequency (%)
Always	4 (10.0%)
Often	10 (25.0%)
Sometimes	16 (40.0%)
Rarely	7 (17.5%)

Never	3 (7.5%)
-------	----------

Only 10% of patients felt nurses were always available, and 25.0% said often. However, 40.0% said sometimes, and 25.0% (combined “rarely” and “never”) felt nurses were infrequently available. A substantial proportion of patients feel there is inadequate nurse availability during their hospital stay. This perception could stem from high nurse workloads, understaffing, or inefficient patient-nurse allocation.

4.3 Hospital-Acquired Infections (HAIs)

Table 6: Nurses’ Responses on Hospital-Acquired Infections (n = 60)

Question	Response	Frequency	Percentage (%)
Have you noticed a relationship between high workload and increased HAIs?	Yes	45	75.0
	No	15	25.0
How often do you encounter hospital-acquired infections in your ward/unit?	Very Frequently	6	10.0
	Frequently	12	20.0
	Occasionally	18	30.0
	Rarely	15	25.0
	Never	9	15.0

A majority of nurses perceive a direct link between high workload and increased HAIs, suggesting that staffing levels impact infection control. This supports the concern that nurse-to-patient ratio plays a role in infection prevention.

Most nurses encounter HAIs at least occasionally, with a notable portion experiencing them frequently. This indicates that HAIs are a recurring issue and infection control practices may need reinforcement.

Table 7: Patients' Responses on Hospital-Acquired Infections (n = 40)

Question	Response	Frequency	Percentage (%)
Did you develop any new infection during your hospital stay?	Yes	5	12.5
	No	35	87.5

Only a small percentage of patients reported acquiring infections, suggesting some level of infection control effectiveness, although underreporting is possible.

Table 8: Thematic Analysis of Infection Types Reported by Patients (n = 5)

Infection Type (Theme)	Frequency	Percentage (%)
Urinary Tract Infection (UTI)	2	40.0
Surgical Site Infection (SSI)	1	20.0
Respiratory Infection	1	20.0
Skin/Soft Tissue Infection	1	20.0

Among the few patients who reported developing infections during their hospital stay, UTIs were the most frequently mentioned, followed by surgical site, respiratory, and skin infections. This suggests a need for enhanced infection control practices, especially in post-operative and catheterized patients.

4.4 Length of Hospital Stay

Table 9: Nurses' Perception of Patient Stay and Nurse-to-Patient Ratio (n = 60)

Response	Frequency (n=60)	Percentage (%)
Strongly Agree	18	30.0%
Agree	25	41.7%
Neutral	10	16.7%
Disagree	5	8.3%
Strongly Disagree	2	3.3%

A majority of nurses (41.7%) agreed and 30.0% strongly agreed that higher nurse-to-patient ratios contribute to longer patient stays in wards. Only 11.6% (5 disagree, 2 strongly disagree) expressed doubt or disagreement with the idea. This suggests that nearly three-quarters (71.7%) of nurses believe that inadequate staffing negatively impacts how long patients remain admitted, implying a perceived connection between nurse workload and recovery efficiency.

Table 10: Patient Length of Hospital Stay (n = 40)

Length of Stay	Frequency (n=40)	Percentage (%)
1–3 days	10	25.0%
4–7 days	18	45.0%
More than 7 days	12	30.0%

The largest group of patients (45.0%) reported hospital stays of 4–7 days, followed by 30.0% who stayed more than 7 days. Only 25.0% of patients were discharged within 1–3 days.

These results indicate that most patients experience extended hospital stays, which may relate

to factors like illness severity, staff availability, and care quality—key areas influenced by staffing ratios.

Table 11: Patient Perception of Nursing Staff's Impact on Recovery (n = 40)

Response	Frequency (n=40)	Percentage (%)
Yes	30	75.0%
No	10	25.0%

A strong majority of patients (75.0%) believe that nurse availability contributed positively to their recovery. Only 25.0% did not associate their recovery with nursing staff availability.

4.5 Patient Satisfaction

Table 12: Patient Satisfaction Responses (n = 40)

Item	Response	Frequency	Percentage (%)
Availability of nurses when assistance was needed	Always	14	35.0
	Often	12	30.0
	Sometimes	8	20.0
	Rarely	4	10.0
	Never	2	5.0
Rating of quality of care provided by nurses	Excellent	15	37.5
	Good	14	35.0
	Fair	8	20.0
	Poor	3	7.5
Recommendation of hospital based on nursing care received	Yes	32	80.0
	No	8	20.0

A total of 35% of respondents indicated that nurses were always available when assistance was needed, while 30% said they were often available. Combined, this means 65% of patients had regular access to nursing support. However, 20% experienced only occasional assistance, and 15% reported rare or no availability, indicating a potential gap in round-the-clock nursing coverage.

Patient perceptions of care quality were generally positive, with 37.5% rating it as excellent and 35% as good. Only 20% found the care to be fair, and 7.5% rated it as poor. These figures suggest that while most patients are satisfied with the quality of nursing care, there is still room for improvement, particularly for the minority who felt underserved.

A strong 80% of patients stated they would recommend the hospital based on the nursing care they received. This reflects a high level of trust and overall satisfaction with the nursing services. The 20% who would not recommend the facility likely correspond to those who experienced lower availability or poorer care quality.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS, RECOMMENDATIONS

5.0 Introduction

This chapter discusses the key findings of the study in relation to existing literature, interprets their implications, and draws conclusions. It also provides recommendations based on the observed data. The study aimed to assess how nurse-to-patient ratios impact hospital outcomes at Holy Family Hospital, Berekum.

5.1 Discussions

5.1.1 Nurse-to-Patient Ratio

The study revealed that the majority of nurses (41.7%) were assigned 6–10 patients per shift, with 30.0% handling as many as 11–15 patients. Only a minority (16.7%) managed a smaller load of 1–5 patients. Correspondingly, 76.7% of nurses strongly agreed or agreed that high patient assignments negatively affect the quality of care delivered.

These findings align with global studies that emphasize the critical influence of nurse-to-patient ratios on patient care quality. For instance, Cimiotti et al. (2012) and Griffiths et al. (2016) demonstrated that each additional patient assigned to a nurse increases the likelihood of poor outcomes, including hospital-acquired infections and reduced care quality. Locally, Asamani et al. (2016) found that Ghanaian hospitals with ratios above 1:10 faced significantly higher HAI rates, reinforcing the view that overstretched nurses struggle to maintain safety and care standards.

From the patients' perspective, while 62.5% were attended by 2–3 nurses per shift, only 10% felt nurses were always available. About 25% of patients reported that nurses were rarely or never available. This perceived shortage supports findings by Rispel and Bruce (2015) and

Aiken et al. (2021), which highlighted that inadequate staffing disrupts continuity of care and weakens patient engagement, especially in African settings.

5.1.2 Hospital-Acquired Infections (HAIs)

The study found that 75.0% of nurses perceived a link between high workload and increased HAIs, with 60% encountering infections at least occasionally. Patient data showed that 12.5% developed new infections during admission, most commonly urinary tract infections.

These results are consistent with the literature. Ahern et al. (2022) and Wright et al. (2023) highlighted that sufficient nurse staffing enables adherence to infection control protocols, reducing catheter-associated and surgical site infections. Muliira et al. (2015), in Uganda, similarly reported that inadequate staffing directly undermines infection control practices. The Ghanaian study by Asamani et al. (2016) confirmed that hospitals with poor staffing recorded higher infection rates, showing that workload has practical implications for infection prevention in local contexts.

Although patient-reported infections were relatively low (12.5%), this may reflect underreporting or a lack of patient awareness. Nevertheless, the thematic data—highlighting UTIs and surgical site infections—echo the concerns raised in global and regional literature about nurse-sensitive infection types in understaffed environments.

5.1.3 Length of Hospital Stay

The findings also show that 71.7% of nurses believed that high nurse-to-patient ratios contribute to prolonged hospital stays. From the patient data, 45.0% stayed between 4–7 days, and 30.0% stayed more than 7 days. Furthermore, 75.0% of patients affirmed that nurse availability positively influenced their recovery.

These findings are supported by global studies such as Griffiths et al. (2021) and McHugh et al. (2021), which demonstrated that better staffing levels reduced hospital stay duration. In Australia, mandated minimum nurse ratios led to both reduced LOS and improved patient outcomes. In Africa, Aiken et al. (2021) and Rispel and Bruce (2015) found that high workloads led to delayed medication administration and less frequent monitoring, resulting in longer patient stays. In Ghana, GHS (2022) reported staffing imbalances that are likely to influence recovery time due to the time-sensitive nature of clinical care.

Thus, this study confirms that prolonged length of stay in local hospitals may be partially attributed to excessive nurse workloads, reflecting the broader regional and global trends in nurse staffing and hospital efficiency.

5.1.4 Patient Satisfaction

Patient satisfaction was generally high, with 65% of patients reporting that nurses were always or often available. Additionally, 72.5% rated care as excellent or good, and 80% were willing to recommend the hospital based on the nursing care they received.

These findings are consistent with the evidence presented in Chapter Two. Aiken et al. (2021) and Lasater et al. (2021) found that better staffing is associated with greater patient satisfaction, especially in areas such as responsiveness and communication. In South Africa, Rispel and Bruce (2015) reported reduced patient satisfaction in poorly staffed hospitals. In Ghana, Asamani et al. (2016) linked high patient-to-nurse ratios with poorer patient experiences.

The fact that 20% of respondents rated care as fair or poor, and 15% reported nurse unavailability, suggests there are still staffing-related gaps in care delivery. This aligns with literature that highlights how even small increases in nurse workload can lead to noticeable declines in patient satisfaction and trust.

5.2 Conclusions

The study found a clear association between nurse-to-patient ratios and patient outcomes at Holy Family Hospital, Berekum. Higher patient loads per nurse were linked to perceived declines in care quality, increased hospital-acquired infections, longer patient stays, and lower patient satisfaction. Both nurse and patient perspectives suggest that current staffing may not meet optimal standards for effective healthcare delivery.

5.3 Recommendations

Based on the findings, the following recommendations are proposed:

1. **Improve Staffing Levels:** Recruit additional nursing staff to achieve a safer nurse-to-patient ratio.
2. **Enhance Infection Control Training:** Conduct regular in-service training focused on infection prevention protocols.
3. **Strengthen Monitoring Systems:** Establish monitoring mechanisms to ensure appropriate staff distribution across shifts.
4. **Prioritize Patient-Centered Care:** Integrate patient feedback into nursing care evaluations to improve satisfaction.
5. **Policy Engagement:** Advocate for national nurse staffing standards aligned with WHO guidelines to enhance care quality and safety.

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QUESTIONNAIRE

Dear Participant,

You are invited to participate in a research study titled "Analyzing the Relationship Between Nurse-to-Patient Ratio and Outcomes at Holy Family Hospital, Berekum." This study aims to explore how the number of patients assigned to each nurse affects patient care outcomes, including infection rates, hospital stay duration, and satisfaction.

Participation is voluntary, and all responses will be treated confidentially and anonymously.

You are free to withdraw at any point during the study. Your consent to participate is appreciated. By proceeding with this questionnaire, you indicate that you understand the purpose of the study and voluntarily agree to participate.

Section A: Demographic Information

1. Age: _____
2. Gender: ☐ Male ☐ Female
3. Role: ☐ Nurse ☐ Patient
4. Department/Unit: _____
5. Years of Experience (for nurses): _____

Section B: Nurse-to-Patient Ratio

For Nurses:

1. On average, how many patients are assigned to you during a shift?

☐ 1–5 ☐ 6–10 ☐ 11–15 ☐ More than 15
2. Do you feel that the number of patients assigned to you affects the quality of care you provide?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

For Patients:

3. How many nurses usually attend to you during a shift?

☐ 1 ☐ 2–3 ☐ More than 3

4. Do you feel there are enough nurses available during your stay?

☐ Always ☐ Often ☐ Sometimes ☐ Rarely ☐ Never

Section C: Hospital-Acquired Infections (HAIs)

For Nurses:

1. Have you noticed a relationship between high workload and increased infection rates?

☐ Yes ☐ No

2. How often do you encounter hospital-acquired infections in your ward/unit?

☐ Very Frequently ☐ Frequently ☐ Occasionally ☐ Rarely ☐ Never

For Patients:

3. Did you develop any new infection during your stay at the hospital?

☐ Yes ☐ No

4. If yes, please specify the type of infection: _____

Section D: Length of Hospital Stay

For Nurses:

1. Do you think patients stay longer in wards with higher nurse-patient ratios?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

For Patients:

2. How long was your hospital stay?

☐ 1–3 days ☐ 4–7 days ☐ More than 7 days

3. Do you believe the availability of nursing staff contributed to your recovery time?

☐ Yes ☐ No

Section E: Patient Satisfaction

For Patients Only:

1. Were nurses available when you needed assistance?

☐ Always ☐ Often ☐ Sometimes ☐ Rarely ☐ Never

2. How would you rate the quality of care provided by nurses?

☐ Excellent ☐ Good ☐ Fair ☐ Poor

3. Would you recommend this hospital based on the nursing care received?

☐ Yes ☐ No



BANKERS:

Ghana Commercial Bank, Berekum
Agric Development Bank, Berekum
Fidelity Bank, Berekum

BEREKUM



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Our Ref.

Your Ref.

Date June 16, 2025

The Nursing Administrator
Holy Family Hospital
Berekum, Bono Region

Dear Administrator

PERMISSION TO CONDUCT RESEARCH

I wish to introduce to you the under listed names of final-year students of the College:

1. Boamah Ntim Francis
2. Boateng Kisiwaa Karen

As part of the pre-requisite for the award of Diploma in Nursing, they are to conduct a research study on the topic "Analyzing the relationship between Nurse to Patient ration and outcomes at the Holy Family Hospital, Berekum."

I would be grateful if you could assist them with any material or help they may need to accomplish the task.

Thank you.

Yours faithfully

Mr. Amos Owusu
Supervisor
For: Principal