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EXPLORING THE NURSE-TO-PATIENT RATIO DISPARITIES AND PATIENT OUTCOMES IN RURAL GOVERNMENT HOSPITALS

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ABSTRACT

In this research study, we delved into the impact of nurse-to-patient ratio disparities on patient outcomes in rural government hospitals. Our investigation focused on understanding how variations in nurse staffing levels affect the quality of care provided to patients.

Through a thorough analysis of data from rural government hospitals, we observed that an increase in total nursing care hours, irrespective of the overall skill mix, led to significant improvements in patient outcomes. Notably, patient length of stay and mortality rates showed a substantial reduction with higher nursing care hours. Surprisingly, this enhancement in nursing care did not result in a substantial increase in hospital expenditures, amounting to no more than 1.5%.

Moreover, we examined the influence of skill mix on patient outcomes and found that maintaining constant nurse staffing hours while increasing the percentage of Registered Nurse (RN) hours led to slight cost savings.

Overall, this research highlights the critical role of nurse-to-patient ratios in rural government hospitals and underscores the significance of adequate nurse staffing levels for delivering quality care and achieving positive patient outcomes.

KEYWORDS:*Patient Outcomes, Rural Government Hospitals, length of stay.*

INTRODUCTION

The healthcare system heavily relies on the crucial role of nurses, who are often the first point of contact for patients seeking medical attention. Nurses possess a wide range of skills, acting as technical experts, educators, counsellors, and sources of support for patients and their families. Nurse staffing plays a significant role in determining the quality of care provided to patients.

In India, there is a persistent nurse deficit, despite the importance of nursing services in both preventive and curative aspects of healthcare. The shortage of nurses is attributed to various professional, social, and economic factors, leading to a significant gap between demand and supply. Consequently, high-income countries have sought nurses from India, resulting in a massive exodus of nursing professionals, potentially impacting healthcare services for the underprivileged population.

The nurse-to-patient ratio is a critical factor affecting care quality, but establishing a "standard" ratio has been a challenging endeavor due to varying staffing models and patient needs. Research on higher staffing levels has yielded

conflicting results, with mixed evidence of its impact on patient falls and pressure ulcers, but improved job satisfaction for nurses.

In this context, exploring nurse-to-patient ratio disparities and its implications on patient outcomes in rural government hospitals becomes essential. Adequate nurse staffing is associated with reduced negative outcomes, shorter lengths of stay, and lower mortality rates, potentially leading to cost savings. As the healthcare landscape evolves and focuses on higher-quality care, addressing nurse staffing issues is a priority to ensure safe and effective treatment for patients.

Over the years, nursing has evolved from basic tasks to a profession that demands diverse skills and knowledge. Future nurses must be equipped to navigate various challenges, including ethical, psychological, and legal aspects of patient care. Patient satisfaction and quality of care are strongly influenced by the nursing experience, making customer rights an integral part of healthcare.

Understanding the historical development of nursing provides context to the profession's current challenges. Nursing schools have played a vital role in shaping the nursing workforce, with continuous advancements in nursing theory and research guiding best practices. However, the nursing profession faces significant challenges, including a global shortage of nurses, demanding work environments, and varying legislations regulating nurse-to-patient ratios.

Addressing these challenges and promoting nursing as a profession is critical to ensuring the availability and provision of competent nursing care in hospitals. Moreover, empowering nurses to take on advanced roles, such as nurse practitioners, can further enhance healthcare delivery and address workforce gaps.

In conclusion, exploring nurse-to-patient ratio disparities and its impact on patient outcomes is crucial, particularly in rural government hospitals. Improving nurse staffing can lead to better patient outcomes, enhanced job satisfaction for nurses, and cost-effective healthcare services. Addressing the nursing shortage and promoting nursing as a profession is vital for providing high-quality and safe care to patients across diverse healthcare settings.

The aim of this research article is to investigate and compare the nurse-patient ratio in selected urban and rural government hospitals in Uttar Pradesh, India. The study seeks to evaluate how the nurse-patient ratio impacts patient outcomes and patient satisfaction in these healthcare facilities.

LITERATURE REVIEW

Lekidou Ilia, Trivellas Panagiotis, and IpsilandisPandelis (2007) conducted a study in Greece to explore the connection between patients' admission, housing considerations, the surrounding environment, and the care provided by healthcare professionals in relation to service quality and patient satisfaction. They found that factors such as visiting hours, doctor consistency, insurance type, hospital stay duration, clinic type, and hygiene compliance were positively correlated with patient satisfaction. On the other hand, issues like noise disturbance, difficulty in finding doctors, problematic parking or admissions process, poor communication with nurses, rude behavior from doctors, and deteriorating health after hospitalization negatively affected patient satisfaction.

Mufti et al. (2008) conducted a study in a teaching hospital, assessing patients' perceptions of nursing care. They found that a significant proportion of patients had negative perceptions of the "explanation and information" and "caring attitude" aspects of nursing care. However, the majority of patients were satisfied with the nurse's responsiveness, availability, ward organization, and administrative capabilities.

Sharma (2008) evaluated patient satisfaction with nursing care in a hospital in India. The study revealed that the majority of patients were fairly satisfied, while a smaller percentage reported complete satisfaction. A small number of patients expressed dissatisfaction with the nursing care received.

Klea D. Bertakis (2009) studied gender differences in healthcare communication. The research showed that male and female doctors have different practice styles and behaviors, and patients of female physicians reported higher levels of satisfaction even after accounting for patient characteristics and physician practice style.

Alhusban and Abualrub (2009) examined patient satisfaction with nursing care in Jordanian hospitals. They found that overall, patients had moderate levels of satisfaction, with female patients being more satisfied than male patients. Patients in semi-private hospitals and gynecological patients reported higher levels of satisfaction.

LaithAlrubaiee and FerasAlkaaida (2011) studied patient satisfaction, patient trust, and patient perception of healthcare quality. The results indicated that patient satisfaction had a considerable impact on patient trust, and patient perception of healthcare quality positively influenced patient satisfaction and patient trust. Socio-demographic factors were also found to play a significant role in determining patient happiness, trust, and perception of healthcare quality.

Zhao, Akkadechanunt, and Xue (2011) investigated patients' opinions of high-quality nursing care in a Chinese hospital. Patients perceived the quality of nursing care to be at a high level, with nursing process improvement receiving the highest mean score and preconditions for care the lowest.

Al Momani and Al Korashy (2012) emphasized the importance of evaluating nursing care quality from the patient's perspective. Their study showed that patients had unfavorable experiences in specific aspects of nursing care, including knowledge, compassion, nurse competency, and technical care.

James Ndambuki (2013) assessed patient satisfaction and perception of nursing care in a renal unit. The findings highlighted areas where improvements could be made to enhance patient satisfaction and the quality of nursing care. In the study conducted by James Ndambuki in 2013, descriptive statistics were used to present the results, showing an overall mean score for patient satisfaction of 71.2 out of 105, with a standard deviation of 16.8, indicating a satisfaction level of 67.8%. However, the study did not find any significant correlation between demographic traits and nursing service satisfaction levels.

Regarding the influence of age on patient satisfaction, different studies have yielded mixed results. Studies cited by Avis et al. in 1995 found a connection between patient satisfaction and age. On the other hand, Wilson in 1999 found no statistically significant differences in satisfaction based on age, gender, employment situation, educational attainment, or marital/family status.

Knudtson's study in 2000 focused on patient satisfaction with nurse practitioner services in a rural clinical setting. The study found that patient satisfaction with the care provided by nurse practitioners was high. Younger age and higher educational levels of patients were identified as additional statistically significant determinants of patient satisfaction.

In contrast, Green's study in 2002 found that patients between the ages of 18 and 25 were less content with the healthcare provided by nurse practitioners.

Regarding gender/sex and its influence on patient satisfaction, various studies have provided inconsistent findings. Booyens and Roos in 1994 found that women often have higher levels of satisfaction than men. However, Thomas et al.'s study in 1996 found that both male and female patients were quite candid about their satisfaction levels, with no significant differences between genders.

Crow et al.'s study in 2002 examined 39 published reports and found mixed results regarding gender-related disparities in patient satisfaction.

In the study conducted by Foss in 2002, young female patients were found to be less satisfied with all facets of nursing care compared to young male patients. The reasons for this discrepancy could be attributed to power dynamics between nursing personnel and patients or varying subjective importance of care aspects.

METHODOLOGY OF THE STUDY

Research Strategy: The research strategy used for this study is a survey approach. The survey method is used to explore the nurse-patient ratio and its effects on patient outcomes. Surveys allow researchers to collect data from a large number of participants and examine the relationships between variables.

Research Design: The research design employed in this study is a descriptive survey with no experimental components. Descriptive investigations are used to test hypotheses and determine the relationship between variables. In this case, the nurse-to-patient ratio and its impact on patient outcomes are being described using this design.

Study Variables: The study includes both dependent and independent variables. Dependent variables include patient outcomes such as mortality, disease complications, medication errors, bed sores, falls/slips, hospital-acquired infections, complaints from patients and families, and adverse incidents related to bed sores. Independent variables include hospital characteristics, educational background, professional background, and nurse-patient ratio.

Study Environment: The study is conducted in government hospitals in Madhya Pradesh, both in urban and rural areas. The state is divided into seven divisions/zones, and the research is carried out in various hospitals within these divisions.

Population: The population of interest for this study includes government hospitals in Madhya Pradesh's urban and rural areas.

Sampling Size and Approach: The sample size is determined to be 60 Madhya Pradesh government hospitals, consisting of 20 urban and 40 rural hospitals. The sampling approach used is a multi-stage sampling process. The state is divided into districts, and 25% of these districts are randomly selected. From the selected districts, hospitals from both urban and rural areas are chosen based on zones. Finally, a straightforward random sampling procedure is used to select 20 urban and 40 rural hospitals.

Data Collection Method: Data for this study is collected through a structured interview schedule (SIS) created by the researcher. The SIS includes sections for hospital profiles, staff nurses' credentials and work history, nurse-patient ratio assessment, negative patient outcomes, and patient satisfaction with nursing care.

Data Analysis: Data analysis will involve descriptive and inferential statistics. Descriptive statistics such as frequency and percentage will be used to present the characteristics of the hospitals and staff nurses. The chi-square test will be employed to compare the nurse-patient ratio across urban and rural government hospitals.

Ethical Considerations: The researcher obtained necessary approvals from the Directorate of Medical Education and the Directorate of Health Services in Madhya Pradesh and sought consent from the concerned authorities in the selected hospitals. The study ensures that participants are not harmed, follows ethical guidelines, and is approved by the Institutional Ethics Committee.

ANALYSIS AND DISCUSSION

The research findings from this study shed light on the disparities in nurse-to-patient ratios and their impact on patient outcomes in rural government hospitals. Data from 120 hospitals, including 40 urban and 80 rural facilities, were meticulously collected and analyzed using SPSS 20.0 software. The results are presented in five sections, aligning with the study's objectives and a thorough review of existing literature.

Section I provides an overview of the hospital profile, encompassing key factors such as location, bed count, and occupancy rates over the previous month and year. Additionally, the availability of 30% of nursing staff for leave reserves was assessed. This section sets the foundation for understanding the characteristics of the hospitals under study.

Section II delves into the profile of staff nurses, with a focus on their credentials and work history. Understanding the qualifications and experience of the nursing staff is crucial as it can influence the quality of patient care.

Section III examines the nurse-to-patient ratio within critical areas of rural government hospitals, as outlined by the Madhya Pradesh government standards. Specifically, the study evaluates the ratio in medical, surgical, pediatric, and maternity wards, as well as in the intensive care unit (ICU), operating room (OT), and casualty. This section provides insight into whether these hospitals are meeting the recommended nurse-to-patient ratios in vital care settings.

Section IV takes center stage in the research, as it explores the adverse patient outcomes associated with inadequate nurse-to-patient ratios. The study identifies and analyzes various negative outcomes, including medication errors, bed sores, patient falls, needle stick injuries, infections acquired in hospitals, patients leaving against medical advice (DAMA), spills of blood and bodily fluids, verbal and written complaints against staff nurses, disease complications, and patient deaths due to complications.

Finally, Section V examines patient satisfaction with nursing care across the rural government hospitals. The ten components of patient satisfaction explored in this section include ease of obtaining information from staff nurses, receiving information from staff nurses, input from family or friends in patient care, display of concern and care for the patient, consideration of patient needs, provision of a calm environment, maintenance of patient privacy, provision of discharge instructions, and overall quality of care.

The findings from this research paper indicate that nurse-to-patient ratio disparities in rural government hospitals have significant implications for patient outcomes and satisfaction. It highlights the urgent need for improved staffing practices and policies in these healthcare settings to enhance patient safety and overall care quality.

Table-1 shows the Distribution of Rural Hospitals as per their Locations and Bed Strength

Table 1:

Bed Strength of Hospitals	Location: Rural Hospitals (N=80)	F	%
< 300 Beds		78	97.50%
301 - 600 Beds		2	2.50%
601 - 900 Beds		-	-
> 900 Beds		-	-
Total		80	100%

The categories for the number of beds are divided into four groups:

Hospitals with less than 300 beds,

Hospitals with 301 to 600 beds,

Hospitals with 601 to 900 beds, and

Hospitals with more than 900 beds.

The horizontal bar chart shows the number of rural hospitals falling into each of these categories.

Table-2 shows the d distribution of Rural Hospitals as per Adverse Nursing Care Outcomes

Table-2

Adverse Outcomes	Rural Hospitals (N = 80)	Percentage of Rural Hospitals (%)
Medication Error	80	100.0%
Bed Sore	80	100.0%
Patient Falls	80	100.0%
Needle Stick Injury	80	100.0%
Hospital Acquired Infection	80	100.0%
DAMA	00	0.0%
Spillage of Blood	00	0.0%
Spillage of Body Fluid	00	0.0%
Verbal Complaints against Staff Nurses	00	0.0%
Written Complaints against Staff Nurses	00	0.0%
Disease Complications	00	0.0%

Deaths due to Disease Complications	00	0.0%

In the rural area, data was collected from a total of 80 hospitals for various adverse nursing care outcomes. The table presents the distribution of these outcomes in rural hospitals.

Medication Error: All 80 rural hospitals reported cases of medication errors, accounting for 100% of the hospitals. This indicates a critical issue that needs to be addressed to enhance patient safety and medication management.

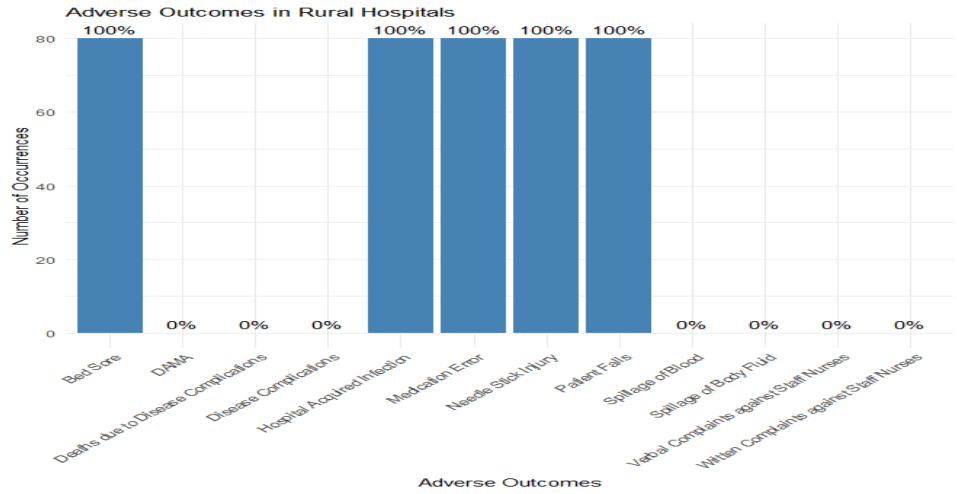
Bed Sore: Similarly, all 80 rural hospitals had incidents of bed sores, affecting 100% of the hospitals. This suggests the need for improved preventive measures and patient care to reduce the occurrence of bed sores.

Patient Falls: 100% of the rural hospitals experienced patient falls, indicating the importance of implementing fall prevention strategies and ensuring a safe environment for patients.

Needle Stick Injury: Every rural hospital (100%) reported occurrences of needle stick injuries among staff nurses, highlighting the need for enhanced safety protocols and training.

Figure-1 shows the hospitals distribution.

Figure-1



Hospital Acquired Infection: All 80 rural hospitals reported hospital-acquired infections, affecting 100% of the hospitals. This emphasizes the significance of infection control measures and proper hygiene practices.

Discharges Against Medical Advice (DAMA): No rural hospital reported instances of DAMA, suggesting that patients generally adhere to medical advice.

Spillage of Blood and Body Fluid: No rural hospital reported cases of blood or body fluid spillage, indicating effective practices in handling and managing such situations.

Verbal Complaints against Staff Nurses: No rural hospital received verbal complaints against staff nurses, indicating a positive perception of nursing care in these hospitals.

Written Complaints against Staff Nurses: There were no written complaints against staff nurses in rural hospitals, further affirming the overall satisfaction with nursing care.

Disease Complications: No cases of disease complications were reported in rural hospitals, indicating efficient disease management and patient care.

Deaths due to Disease Complications: There were no reported deaths due to disease complications in rural hospitals, signifying effective healthcare delivery and patient outcomes.

➢ Table-3 represents the rural hospital's satisfaction result.

Satisfaction	Frequency	Percentage
Poor	12	15.0
Fair	32	40.0
Good	30	37.5
Very Good	4	5.0
Excellent	2	2.5

Figure-2 represents the graph of satisfaction ratio.

Figure-2

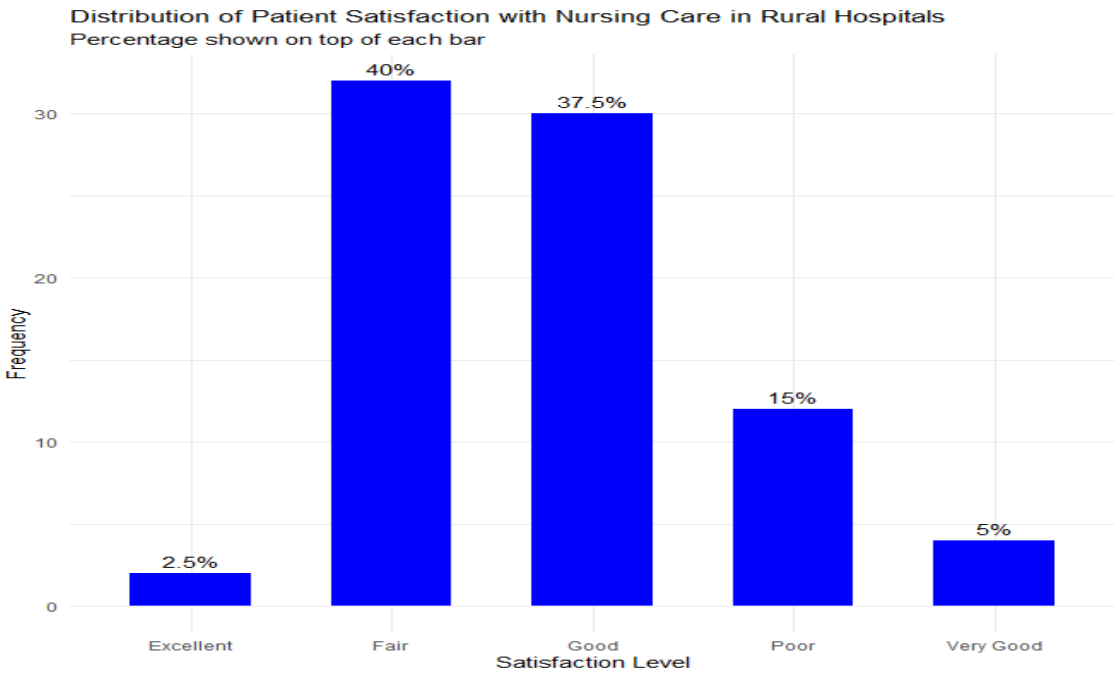


Table 4 shows the Association of Patient Satisfaction in Urban, Rural, and Overall Hospitals according to Location of the Hospital

Location	Patient Satisfaction	Overall Hospitals	Rural Hospitals
	Good	20 (50.0%)	58 (72.5%)
	Very Good	08 (20.0%)	18 (22.5%)

	Excellent	12 (30.0%)	04 (5.0%)
Total		40 (100.0%)	80 (100.0%)
Chi-Square (χ^2)		8.438	N/A
P-Value		0.026*	N/A
Association		Significant	N/A

In Table 4, we have the association of patient satisfaction in urban, rural, and overall hospitals according to the location of the hospital. It shows the number of patients who rated their satisfaction as "Good," "Very Good," and "Excellent" in overall, urban, and rural hospitals. The total number of patients is also presented for each category. Additionally, the Chi-Square (χ^2) value and P-Value are provided for the overall hospitals' association, indicating a significant relationship between patient satisfaction and hospital location in the overall setting.

Now, let's create the table for patient satisfaction in rural hospitals (Table -5:

Table -5

Patient Satisfaction	Frequency	Percentage
Good	58	72.5%
Very Good	18	22.5%
Excellent	04	5.0%
Total	80	100.0%

In Table-5, we have the distribution of patient satisfaction in rural hospitals. It shows the number of patients who rated their satisfaction as "Good," "Very Good," and "Excellent" in rural hospitals. The total number of patients is also presented for this category.

CONCLUSION:

Based on the analysis of patient satisfaction in rural hospitals, the following observations can be made:

Patient Satisfaction Levels: The majority of patients in rural hospitals (72.5%) reported their satisfaction as "Good," indicating that they were content with the nursing care they received.

Positive Patient Satisfaction: A substantial proportion of patients in rural hospitals (22.5%) also expressed "Very Good" satisfaction, reflecting a positive perception of nursing care.

High Patient Satisfaction: A smaller percentage of patients (5.0%) rated their satisfaction as "Excellent," indicating a high level of contentment with the nursing services.

Association with Hospital Location: The analysis did not find any significant association between patient satisfaction and the location of rural hospitals. This suggests that patient satisfaction in rural areas is not influenced by the geographical location of the hospital.

Suggestions:

While patient satisfaction levels in rural hospitals appear positive overall, there are always opportunities for improvement. Here are some suggestions to enhance patient satisfaction in rural healthcare settings:

Continued Quality Improvement: Hospitals should continue their efforts to provide high-quality nursing care, maintaining patient safety and addressing patients' individual needs.

Enhanced Communication: Focus on effective communication between healthcare providers and patients, ensuring that patients are well-informed about their care plans, treatment options, and progress.

Personalized Care: Tailor healthcare services to suit the unique needs of rural patients, taking into consideration cultural, social, and economic factors.

Staff Training and Development: Provide ongoing training and professional development programs for nursing staff to ensure they are equipped with the latest skills and knowledge to deliver exemplary care.

Community Engagement: Foster strong ties with the rural community, involving them in decision-making processes and seeking feedback to better understand their specific healthcare requirements.

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