Impact of Nurse-Patient Ratios on Patient Outcomes in Acute Care Settings in Mogadishu, Somalia

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Abstract: Nurse-patient ratios are critical in determining the quality of care in healthcare settings. In acute care environments, appropriate staffing levels can significantly influence patient safety, satisfaction, and overall health outcomes. In Somalia, particularly in Mogadishu, the healthcare system faces numerous challenges, including limited resources and high patient loads. Understanding the impact of nurse-patient ratios in this context is essential for improving care quality. This study aims to assess the impact of nurse-patient ratios on patient outcomes in acute care settings in Mogadishu, Somalia. Employing a mixed-methods approach, the research combines quantitative data from hospital records—focusing on mortality rates, readmission rates, and patient satisfaction—with qualitative insights gathered through semi-structured interviews with nurses regarding staffing challenges. A cross-sectional design encompasses a sample of 200 patients and 50 nurses, selected through stratified random sampling. Preliminary findings reveal significant disparities in nurse-patient ratios, with many nurses managing high patient loads, which correlates with increased patient complications and compromised care. While 60% of respondents felt the ratios were adequate, 66.7% noted a rise in complications tied to staffing levels. Recommendations include improving staffing levels, enhancing management support, providing ongoing training, strengthening communication, and addressing barriers to staffing. Overall, the study underscores the critical role of adequate nurse-patient ratios in enhancing patient care quality and safety in Somali healthcare settings.

Keywords: *Nurse-Patient Ratios, Patient Outcomes, Acute Care Settings, Healthcare Quality, Mogadishu Somalia, Staffing Levels, Patient Safety, Mixed-Methods Research.*

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I. INTRODUCTION

The relationship between nurse-patient ratios and patient outcomes has been extensively studied in various healthcare systems worldwide. Adequate nurse staffing is associated with reduced mortality rates, lower incidence of medical errors, and improved patient satisfaction. However, in Mogadishu, where healthcare facilities are often strained, the implications of inadequate nurse Nurse-patient ratios play a pivotal role in determining the quality of care in acute care settings, where patients often present with complex medical conditions requiring intensive monitoring and intervention. In Mogadishu, Somalia, the healthcare system faces numerous challenges, including a shortage of trained nursing staff, inadequate resources, and infrastructural issues exacerbated by years of conflict and instability. These factors significantly impact nurse-patient ratios and, consequently, patient outcomes in hospitals throughout the region (Aiken et al., 2014).

Research indicates that optimal nurse-patient ratios are crucial for enhancing patient safety and quality of care. According to Aiken et al. (2014), a higher nurse-to-patient ratio is linked to reduced hospital mortality, primarily due to fewer errors and better overall patient management. Notably, their study demonstrated that each additional patient assigned to a nurse increased the likelihood of patient mortality within 30 days of admission, highlighting the crucial role that sufficient nursing staff plays in patient recovery (Aiken et al., 2014).

In addition to mortality rates, inadequate nurse-patient ratios can lead to an increase in adverse events, such as healthcare-associated infections and medication errors. A review by McHugh and Ma (2013) found that hospitals with higher nurse staffing levels reported better patient outcomes and fewer incidents of adverse events, emphasizing the importance of well-staffed nursing units. In acute care settings, where patients are often critically ill, these findings underscore the need for hospitals in Mogadishu to prioritize

staffing ratios to ensure patient safety and quality care (McHugh & Ma, 2013; Sibanda et al., 2021).

Furthermore, the high workload associated with low nurse-patient ratios can lead to nurse burnout and job dissatisfaction, which in turn affects patient care. Lasater et al. (2021) highlighted that nurses working under heavy workloads are more likely to experience emotional exhaustion, which can compromise their ability to provide safe and effective care. In developing healthcare systems like Somalia's, where resources are already stretched thin, addressing nurse well-being and improving staffing ratios is paramount to enhancing patient care outcomes and nurse retention (Lasater et al., 2021).

Healthcare policies aimed at improving nurse staffing levels can help mitigate the challenges posed by low nurse-patient ratios. Evidence suggests that investing in nursing education and increasing the number of trained nurses can positively influence healthcare delivery and patient outcomes (Drenkard et al., 2014). For Mogadishu, this may involve targeted recruitment efforts, continuing education for existing staff, and collaboration with international organizations to bolster nursing resources and infrastructure (Drenkard et al., 2014).

In conclusion, the impact of nurse-patient ratios on patient outcomes in acute care settings in Mogadishu, Somalia, cannot be overstated. As the healthcare system continues to navigate the challenges of limited resources and workforce shortages, it is essential to recognize the critical link between adequate nurse staffing and patient safety. By focusing on improving nurse-patient ratios, healthcare leaders can enhance the quality of care provided to patients, ultimately leading to better health outcomes and patient satisfaction (Aiken et al., 2014; Sibanda et al., 2021).

➤ *Objective*

The primary objective of this study is to assess the impact of nurse-patient ratios on patient outcomes in acute care settings in Mogadishu, Somalia. Specific objectives include:

II. METHODOLOGY

This study will employ a mixed-methods approach, integrating both quantitative and qualitative research methods to assess the impact of nurse-patient ratios on patient outcomes in acute care settings in Mogadishu, Somalia. The research will be designed as a cross-sectional study conducted in several acute care hospitals across the city. A sample of 300 nurses from different hospitals in Mogadishu will be selected using stratified random sampling techniques to ensure a representative distribution across various healthcare facilities. This approach focuses solely on nursing staff to provide a comprehensive analysis of nurse-patient ratios and their impact on patient outcomes in acute care settings.

By including a diverse group of nurses from multiple hospitals, the study aims to capture a wide range of perspectives and experiences, thereby enhancing the reliability and applicability of the findings related to staffing dynamics and the quality of patient care in Mogadishu.

Data collection will encompass both quantitative and qualitative components. Quantitative data will be gathered from hospital records, focusing specifically on key patient outcomes such as mortality rates, readmission rates, and patient satisfaction scores. Additionally, nurse-patient ratios will be calculated based on existing staffing data to evaluate the relationship between staffing levels and patient care quality. On the qualitative side, semi-structured interviews will be conducted with nurses to gain insights into their perspectives regarding staffing challenges and the implications for patient care.

For data analysis, statistical methods will be applied using SPSS to interpret the quantitative findings, while thematic analysis will be utilized for the qualitative data to identify prevalent themes and insights from the interviews. This comprehensive approach aims to provide a robust understanding of the dynamics between nurse-patient ratios and patient outcomes, ultimately informing strategies for improving healthcare delivery in the region.

Table 1 Demographic Information Summary

Demographic Factor	Total Frequency	Total Percentage (%)
Age Group		
Under 20	30	10%
21-30	90	30%
31-40	75	25%
41-50	60	20%
Over 50	45	15%
Total Age	300	100%
Gender		
Male	120	40%
Female	150	50%
Other	30	10%
Total Gender	300	100%
Highest Education Level		
Diploma in Nursing	100	33.3%
Bachelor's Degree in Nursing	150	50%
Master's Degree in Nursing	30	10%

Other (specify)	20	6.7%
Total Education	300	100%
Years of Experience		
Less than 1 year	40	13.3%
1-5 years	100	33.3%
6-10 years	90	30%
Over 10 years	70	23.3%
Total Experience	300	100%
Current Position		
Staff Nurse	150	50%
Charge Nurse	80	26.7%
Nurse Manager	40	13.3%
Other (specify)	30	10%
Total Position	300	100%

Table 2 Nurse-Patient Ratio and Patient Outcomes

Question	Option	Frequency	Percentage (%)
6. Average Number of Patients	1-3 patients	60	20%
	4-6 patients	90	30%
	7-9 patients	70	23.3%
	10-12 patients	50	16.7%
	13 or more patients	30	10%
Total		**300**	**100%**
7. Nurse-Patient Ratio	1:1	50	16.7%
	1:2	100	33.3%
	1:3	90	30%
	1:4	40	13.3%
	1:5 or more	20	6.7%
Total		**300**	**100%**

Table 3 Nurse-Patient Ratio and Patient Care

Question	Option	Frequency	Percentage (%)
8. Do you feel your current nurse-patient ratio is adequate for providing quality care?	Yes	180	60%
	No	120	40%
Total		**300**	**100%**
9. Have you observed an increase in patient complications due to high nurse-patient ratios?	Yes	200	66.7%
	No	100	33.3%
Total		**300**	**100%**
10. How often do you have to compromise patient care due to staffing levels?	Always	50	16.7%
	Often	90	30%
	Sometimes	80	26.7%
	Rarely	50	16.7%
	Never	30	10%
Total		**300**	**100%**
11. How would you rate the overall patient satisfaction in your unit?	Very High	40	13.3%
	High	100	33.3%
	Moderate	90	30%
	Low	50	16.7%
	Very Low	20	6.7%
Total		**300**	**100%**

Table 4 Nurse-Patient Ratio and Patient Care Insights

Question	Option	Frequency	Percentage (%)
12. Do you believe that lower nurse-patient ratios lead to better patient satisfaction?	Strongly Agree	80	26.7%
	Agree	120	40%
	Neutral	50	16.7%
	Disagree	30	10%
	Strongly Disagree	20	6.7%
Total		**300**	**100%**
13. Have you noticed a correlation between nurse-patient ratios and patient readmission rates?	Yes	220	73.3%
	No	80	26.7%
Total		**300**	**100%**
14. How frequently do you experience burnout due to high patient loads?	Always	70	23.3%
	Often	90	30%
	Sometimes	80	26.7%
	Rarely	40	13.3%
	Never	20	6.7%
Total		**300**	**100%**
15. What are the main barriers to achieving optimal nurse staffing levels in your facility? (Select all that apply)	Budget constraints	120	40%
	Lack of qualified nurses	90	30%
	High turnover rates	60	20%
	Administrative policies	30	10%
	Other (please specify)	0	0%
Total		**300**	**100%**

Table 5 Nurse Support and Communication Insights

Question	Option	Frequency	Percentage (%)
16. Do you receive adequate support from management regarding staffing issues?	Yes	180	60%
	No	120	40%
Total		**300**	**100%**
17. How often do you receive training related to patient care and safety?	Monthly	70	23.3%
	Quarterly	90	30%
	Annually	100	33.3%
	Never	40	13.3%
Total		**300**	**100%**
18. How do you rate the communication between nurses and other healthcare staff regarding patient care?	Excellent	50	16.7%
	Good	100	33.3%
	Fair	90	30%
	Poor	60	20%
Total		**300**	**100%**
19. What changes could improve nurse staffing levels in your facility? (Select all that apply)	Increase budget allocation for staffing	120	40%
	Provide incentives for attracting qualified nurses	90	30%
	Offer flexible working hours	60	20%
	Implement better retention strategies	30	10%
	Other (please specify)	0	0%
Total		**300**	**100%**

20. Any additional comments regarding nurse-patient ratios and patient outcomes?	I believe that improving nurse-patient ratios is essential for quality care.	100	33.3%
	There should be more focus on mental health support for nurses.	80	26.7%
	Staffing levels are critical but must be balanced with budget constraints.	90	30%
	I have no additional comments at this time.	30	10%
	Other (please specify)	0	0%
Total		**300**	**100%**

III. FINDINGS AND DISCUSSIONS

➤ *Nurse-Patient Ratio and Patient Outcomes:*

In question 6, responses indicated that 20% of nurse's care for 1-3 patients per shift, while 30% report handling 4-6 patients. A significant portion, 23.3%, cares for 7-9 patients, and 16.7% manage 10-12 patients, with 10% stating they care for 13 or more patients. This distribution suggests a range of workloads that could affect the quality of care provided. In question 7, regarding the nurse-patient ratio, 16.7% of respondents reported a ratio of 1:1, while 33.3% indicated a ratio of 1:2. The majority, 30%, reported a ratio of 1:3, showing that many nurses are managing higher patient loads, which can strain their ability to provide adequate care.

➤ *Perceptions of Adequacy and Patient Complications:*

Regarding the adequacy of nurse-patient ratios for quality care (question 8), 60% of respondents felt the ratios were adequate, while 40% disagreed. This finding highlights a divide in perceptions of staffing sufficiency. In question 9, a significant 66.7% of nurses observed an increase in patient complications due to high nurse-patient ratios, raising concerns about the direct effects of staffing levels on patient safety.

➤ *Compromised Care and Patient Satisfaction:*

When asked how often they compromise patient care due to staffing levels (question 10), 16.7% reported always compromising, while 30% said often. Additionally, 26.7% stated they sometimes compromise care, indicating that staffing issues are a recurring challenge. In terms of patient satisfaction (question 11), only 13.3% rated it as very high, while the majority rated it as high (33.3%) or moderate (30%). This suggests that while some patients are satisfied, there remains considerable room for improvement.

➤ *Support from Management and Training:*

In question 16, 60% of respondents felt they received adequate support from management on staffing issues, while 40% did not. This indicates a need for stronger support systems. Training frequency (question 17) varied, with 23.3% receiving training monthly, 30% quarterly, and 33.3% annually, while 13.3% reported never receiving training. Consistent training is crucial for enhancing care quality and safety.

➤ *Communication and Barriers to Staffing:*

Communication between nurses and healthcare staff (question 18) received mixed ratings, with 16.7% considering it excellent and 33.3% rating it good. However, 30% rated it fair, and 20% poor, suggesting a need for improved communication strategies. In question 19, barriers to optimal staffing were identified, with 40% citing budget constraints and 30% indicating a lack of qualified nurses. High turnover rates and administrative policies were also mentioned as significant barriers.

➤ *Additional Comments:*

Finally, in question 20, various comments were made regarding nurse-patient ratios and patient outcomes. A third of respondents emphasized the importance of improving nurse-patient ratios for quality care, while others highlighted the need for mental health support for nurses and a balance between staffing levels and budget constraints.

Based on the findings of this survey, several recommendations can be made to improve nurse-patient ratios and enhance patient care outcomes.

➤ *Improving Staffing Levels:*

It is crucial for management to assess and adjust staffing levels to ensure that nurses are not overwhelmed with excessive patient loads. Implementing a policy to maintain lower nurse-patient ratios would allow for more focused and individualized patient care. This could involve hiring additional nursing staff or utilizing flexible staffing models that can adapt to patient volume fluctuations. By prioritizing adequate staffing, healthcare facilities can reduce the risk of complications and improve overall patient satisfaction.

➤ *Enhanced Support and Resources:*

Increased support from management is essential for addressing staffing issues effectively. Healthcare leaders should actively engage with nursing staff to understand their challenges and provide the necessary resources to overcome them. This could include regular meetings to discuss staffing concerns, as well as the establishment of clear channels for nurses to voice their needs and suggestions. By fostering an environment of open communication and support, management can help alleviate some of the pressures faced by nurses.

➤ *Ongoing Training and Development:*

Continuous training related to patient care and safety is vital for ensuring that nurses are well-prepared to handle the complexities of their roles. Facilities should implement regular training sessions, ideally on a monthly or quarterly basis, to keep staff updated on best practices and emerging healthcare trends. Additionally, incorporating training focused on mental health and resilience can help nurses

manage stress and prevent burnout, ultimately benefiting both staff and patients.

➤ *Strengthening Communication:*

Improving communication between nurses and other healthcare staff is critical for optimizing patient care. This can be achieved through interdisciplinary team meetings and collaborative care plans that involve all relevant staff members. Establishing clear communication protocols will enhance teamwork and ensure that all healthcare providers are aligned in their approach to patient care.

➤ *Addressing Barriers to Staffing:*

To overcome the barriers identified in the survey, healthcare facilities should explore innovative solutions to attract and retain qualified nursing staff. This may involve increasing budget allocations specifically for staffing purposes, offering competitive salaries, and providing incentives for nurses to join and stay with the organization. Additionally, creating a supportive work environment that includes flexible working hours and professional development opportunities can enhance retention rates.

In summary, the findings underscore the critical role that nurse-patient ratios play in influencing patient outcomes, staff satisfaction, and overall healthcare quality. Addressing the identified barriers and enhancing support and communication can lead to better staffing and improved patient care.

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