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Sustaining Excellence: A Post-Nabh Accreditation Study of ICU Quality Dynamics

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Abstract

BACKGROUND

Accreditation plays a crucial role in maintaining the delivery of high-quality healthcare, particularly in high-risk settings such as intensive care units (ICUs). The National Accreditation Board for Hospitals and Healthcare Providers (NABH) is an established standard that assesses the quality and safety of healthcare. This research examines how NABH accreditation influences ICU quality indicators, staff adherence, and patient satisfaction at a tertiary care facility.

OBJECTIVE

This Study aims to analyse key quality indicators of the ICU post-NABH accreditation. Secondary objectives include evaluating staff perception and engagement with quality improvement efforts and measuring patient satisfaction with ICU care.

METHODOLOGY

A six-month observational study was carried out at a tertiary care hospital between September 2024 and February 2025, with an emphasis on intensive care units (ICUs) with more than ten beds. Fifty patients or families were chosen for a Patient Satisfaction Survey using a simple random sample approach.

Structured questionnaires assessed staff knowledge of accreditation standards and their adherence to these protocols. Key ICU quality indicators were collected from the Quality Assurance Department and compared to NABH standards to assess compliance. IBM SPSS Statistics Version 30 and descriptive statistics were used for data analysis.

RESULTS

The study found strong adherence to NABH protocols, with ICU infection control and procedural compliance rates exceeding 90%. Patient satisfaction was exceptionally high (98-100%) across most service parameters. However, challenges such as staffing shortages (77.8%) and inconsistent protocol adherence (77.8%) were identified. Needle stick injuries (mean: 3.92, SD: 2.10) and CAUTI (mean: 1.46, SD: 1.56) emerged as areas requiring further attention. Despite high satisfaction levels, 68% of patients reported paying out-of-pocket for treatment, indicating accessibility issues.

CONCLUSION

NABH accreditation significantly enhances ICU quality, safety, and patient satisfaction. To sustain these improvements post-accreditation, it is crucial to optimize staffing, provide ongoing training, address operational challenges, and improve financial accessibility for patients. This study provides insights into maintaining and improving ICU quality in a post-accreditation context.

Keywords:

NABH accreditation, ICU quality indicators, patient satisfaction, healthcare compliance, quality improvement, staff engagement, infection control.

INTRODUCTION

National accreditation system for hospitals ensures that hospitals, whether public or private, national or expatriate, play their expected roles in national health system.[1]

Quality has emerged as a crucial term for the current generation of medical professionals. Most hospitals and healthcare providers are classified and evaluated according to the quality and efficacy of their establishment. Established to oversee the accreditation process for healthcare organizations and institutions, the National Accreditation Board for Hospitals and Healthcare Providers (NABH) is an essential board of the Quality Council of India. Accreditation is the public recognition of healthcare institutions that satisfy NABH standards after an unbiased external assessment by a group of qualified assessors.[2]

The World Health Organization (2018) emphasizes that mechanisms for quality assurance, such as accreditation, are crucial for enhancing health systems, particularly in countries with limited resources. Various studies illustrate the positive impacts of accreditation on health care outcomes. The National Health Policy (NHP) of India serves as a foundational framework for the country's health system and its aims. Introduced in 1983 and updated in 2017, the NHP focuses on universal health coverage, equity, and the provision of high-quality healthcare services. A key element of this policy is the integration of quality accreditations.[3]

Accreditation serves as a systematic method for ensuring quality governance in hospitals and is based on the highest standards. India is not only establishing many state-of-the-art hospitals but is also experiencing an increase in the need for high-quality services and medical tourism. In 2006, India launched its accreditation system that aligns with standards acknowledged by ISQua.[4]

In India, the leading accreditation authority is the NABH, which is part of the Quality Council of India. The purpose of establishing the NABH was to improve the healthcare system and support ongoing quality enhancement and patient safety. As of March 2021, over 1299 hospitals in India had received accreditation, highlighting the significant role of accreditation within the healthcare sector. The accreditation process allows for an evaluation of the current setup, processes, and activities, transforming them into process maps, standard operating procedures (SOPs), and the standards and norms outlined by various accreditation bodies. It provides a set of goals and objectives that guide organizations toward achieving quality care, and failure to comply can result in the revocation of accreditation. The period after obtaining accreditation is critical, as the achievements realized during the accreditation process must be preserved. Once the foundational structure is established and the functions and activities are finalized and optimized, fostering a culture of continuous quality improvement should be prioritized within the organization.[5]

NEED FOR STUDY

- Accreditation has gained global endorsement to ensure adherence to predefined standards and drive continuous improvement in the pursuit of providing high-quality healthcare services.
- The significance of accreditation frameworks is examined in this study, particularly in the context of intensive care units (ICUs), where the complexity of patient conditions demands a meticulous focus on quality assurance.
- The hospital's image in this competitive scenario is impacted by the declining quality-of-care graph in various hospitals due to the failure to monitor quality indicators after accreditation.
- Compliance with standard policies and procedures is essential for all hospital areas, but it is especially crucial in the ICU, where patient trust and the hospital's credibility are directly related to the level of care provided.

OBJECTIVES OF THE STUDY

Primary Objective

1. To analyze the quality indicators of the ICU (post-NABH accreditation)

Secondary Objectives

1. To evaluate staff perception and engagement regarding quality improvement efforts.
2. To measure patient satisfaction with ICU Care

METHODOLOGY:

Source of the data: Primary data will be collected at Prabhakar Kore Hospital and MRC in the Belagavi District. Dr. Prabhakar Kore Hospital & MRC in Belagavi District.

Study Design: Hospital-based cross-sectional study.

Study Period: Six Months. (September 2024 -Feb 2025)

Sample Size: Accreditation is not a one-time process by VK Tadia et al. the sample size was 50.

Inclusion Criteria: Patient admitted ICU ≥ 10 days (2 weeks)

Exclusion Criteria: Patients who are willing to participate in the study.

RESULTS:

Table 1: Statistical Analysis of NABH Quality Indicators in ICU

Indicator	Mean	S.D	Min	Max
Needle Stick Injuries (NSI)	3.91667	2.10417	1	8
Central line associated blood stream injection	0.91667	0.92861	0	3
Incidence of Pressure	0.66667	0.8165	0	3
Catheter-associated Urinary Tract infection (CAUTI)	1.45833	1.5598	0	5
Ventilator-associated pneumonia (VAP)	0.33333	0.63702	0	2
Surgical Site Infection	2.5	1.74456	0	6
Fall Rate	1	0.9325	0	3
Reintubation Rate	0	0	0	0
Return to ICU	0	0	0	0

S.D is the standard deviation

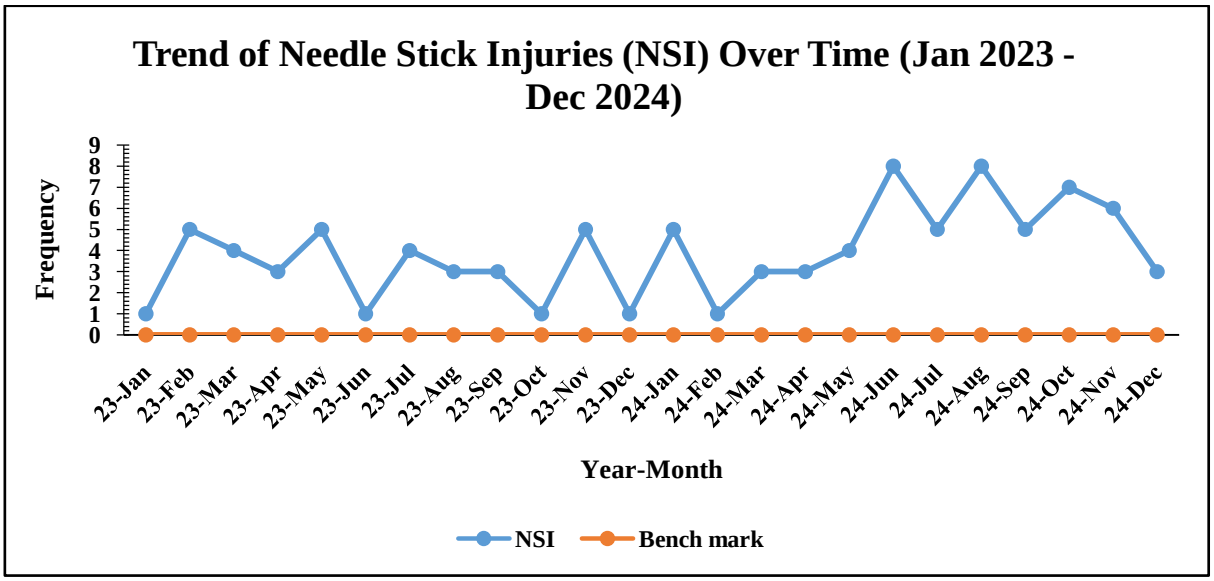
Table 1 presents a concise statistical overview of key NABH quality indicators monitored in the Intensive Care Unit (ICU), reflecting critical aspects of patient safety and clinical performance. Needle Stick Injuries (NSI) had a mean of 3.92 (SD: 2.10), with cases ranging from 1 to 8, pointing to moderate frequency and variability—emphasizing the need for ongoing staff training and safety practices. Central Line-Associated Bloodstream Infections (CLABSI) occurred occasionally, with a mean of 0.92 (SD: 0.93), while Pressure Sores were infrequent (mean: 0.67; SD: 0.82), indicating satisfactory skin care protocols. However, Catheter-Associated Urinary Tract Infections (CAUTI) showed greater fluctuation (mean: 1.46; SD: 1.56), underlining a potential target for improved infection control. Ventilator-associated pneumonia (VAP) remained rare (mean: 0.33; SD: 0.64), suggesting effective ventilator care practices. Surgical Site Infections (SSI) had a mean of 2.5 (SD: 1.74), reflecting notable variation and the importance of strengthened perioperative measures. The fall rate in the ICU (mean: 1.00; SD: 0.93) highlights the need for continuous patient safety vigilance. Notably, the complete absence of reintubation within 48 hours and ICU readmissions within 24 hours signifies robust clinical decision-making and effective discharge protocols, reinforcing the quality of ICU care.

Table 2: Monthly Trends of Healthcare-Associated Indicators (January 2023 – December 2024)

Year-Month	Indicators								
	NSI	**CLABSI**	**Pressure rate**	**CAUTI**	**VAP**	**SSI**	Fall Rate	Reintubation Rate	Return to ICU
23-Jan	1	1	0	2	1	2	1	0	0
23-Feb	5	1	1	5	0	2	0	0	0
23-Mar	4	0	0	3	0	4	2	0	0
23-Apr	3	2	1	0	0	5	0	0	0
23-May	5	3	0	4	0	1	1	0	0
23-Jun	1	1	0	1	0	3	2	0	0
23-Jul	4	1	1	2	0	2	0	0	0
23-Aug	3	1	0	3	1	5	0	0	0
23-Sep	3	2	1	0	0	6	1	0	0
23-Oct	1	1	0	1	2	4	2	0	0
23-Nov	5	1	0	4	0	1	3	0	0
23-Dec	1	1	1	4	0	5	1	0	0
24-Jan	5	3	2	0	2	0	1	0	0
24-Feb	1	0	3	1	1	0	2	0	0
24-Mar	3	0	1	0	0	2	0	0	0
24-Apr	3	0	0	0	0	1	0	0	0
24-May	4	1	2	1	0	4	0	0	0
24-Jun	8	0	0	0	1	0	2	0	0
24-Jul	5	0	1	0	0	1	1	0	0
24-Aug	8	0	0	1	0	3	2	0	0
24-Sep	5	2	1	1	0	2	1	0	0
24-Oct	7	1	0	1	0	1	0	0	0
24-Nov	6	0	0	1	0	3	0	0	0
24-Dec	3	0	1	0	0	3	2	0	0

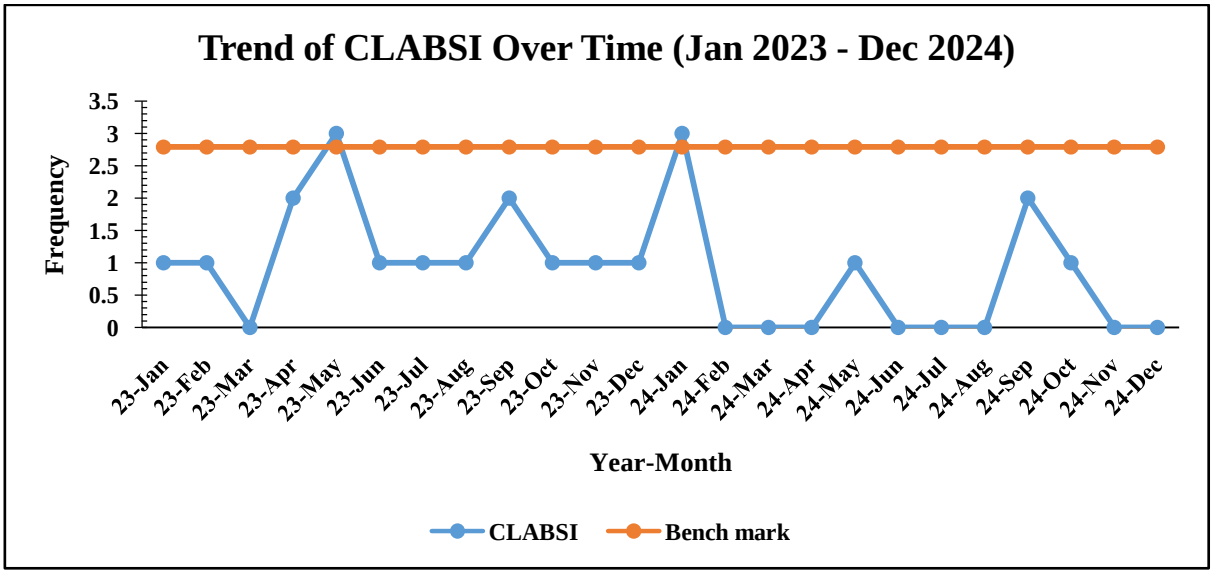
Table 2 shows fluctuations in various healthcare-associated indicators over the two years. Needlestick injuries (NSI) peaked in June and August 2024, while CLABSI cases were highest in May 2023 and January 2024. Pressure ulcer rates and CAUTI cases showed occasional spikes, particularly in February 2024 and May 2023, respectively. Surgical site infections (SSI) had the highest occurrence in September 2023, whereas ventilator-associated pneumonia (VAP) was infrequent but noted in January and October 2024. Overall, reintubation and return to ICU rates remained consistently low, indicating stable post-extubation and discharge outcomes.

Fig 1: Trend of Needle Stick Injuries (NSI) Over Time (Jan 2023 - Dec 2024)



NSI cases showed variation throughout the two years, peaking in June and August 2024 with 8 cases reported in each of those months. The fewest cases, amounting to 1 each, were noted in multiple months, such as January, June, and December 2023, along with February, April, and November 2024.

Fig 2: Trend of CLABSI Over Time (Jan 2023 - Dec 2024)



Central Line-Associated Bloodstream Infections (CLABSI) cases remained mostly low, with peaks in May 2023 and January 2024 (3 cases each). Several months, including March, February, April, and June 2024, reported zero cases.

DISCUSSION

This Study assessed the enhancement in ICU quality following NABH accreditation, as well as ICU quality metrics, patient demographics, satisfaction rates, and staff adherence to NABH accreditation standards. The results provide several important insights regarding ICU operations and the effectiveness of patient care.

ICU Quality Indicators and Patient Safety

The statistical analysis of ICU quality indicators highlights significant areas of patient safety and healthcare-associated complications. Needle stick injuries recorded a mean of 3.92, suggesting moderate occupational risk, necessitating stringent adherence to infection control protocols (CDC, 2020).[15]

The recorded rates of Central Line-Associated Bloodstream Infections (CLABSI) and Catheter-Associated Urinary Tract Infections (CAUTI), with average values of 0.92 and 1.46, respectively, underscore the persistent requirement for strong infection prevention measures, especially regarding catheter management and hygiene (WHO, 2019). (16) At the same time, the average incidence of Ventilator-Associated Pneumonia (VAP) at 0.33 and Surgical Site Infections (SSI) at 2.5 indicates a moderate infection risk that could be reduced through ongoing staff education and strict compliance with established NABH infection control protocols (NABH, 2021). The lack of reintubation and ICU readmissions within 24 hours signifies the successful application of discharge and extubation guidelines. [17]

Patient Demographics and Healthcare Accessibility

The demographic characteristics of ICU patients show that males (68%) had higher ICU admissions than females (32%), a trend consistent with previous studies that suggest higher healthcare-seeking behaviour among men (Gupta et al., 2020). The analysis of marital status shows that 82% of the ICU population are married individuals, which suggests that social support may have an impact on healthcare access and outcomes. Additionally, 50% of ICU patients were from rural areas, indicating equitable access to critical care services despite potential geographical and socioeconomic barriers.[19]

Financial accessibility is still a concern, with 68% of patients reporting out-of-pocket expenses and only 36% having health insurance. This finding aligns with national trends emphasizing the need for expanded insurance coverage and financial protection for critical care services (NFHS-5, 2021). The distribution of education levels, which shows that 26% of the population is illiterate and 24% only have primary education, further emphasizes the necessity of improving health literacy programs to enhance patient engagement and adherence to medical protocols.[20]

Patient Satisfaction and Healthcare Service Quality

The patient satisfaction survey findings show high levels of satisfaction in areas such as healthcare services, hygiene, and information provision, with nearly all respondents (98-100%) reporting positive experiences, which are consistent with the results.

Donabedian's 2005 study found that enhancing patient-centred care through NABH quality frameworks is a success when 100% satisfaction rates are observed in service availability, staff responsiveness, dignity, and respect. Despite this, affordability is still a concern, as 20% of patients find healthcare services pricey, requiring policy interventions to provide financial support and control costs.[21]

Staff Compliance with NABH Standards

The results indicated that ICU personnel showed a strong understanding of NABH protocols, with every participant (100%) acknowledging their knowledge of the pertinent ICU guidelines and expressing solid adherence to standard practices. However, 77.8% observed discrepancies in the actual enforcement, suggesting a gap between awareness and reality. A supportive work atmosphere was clear, as all respondents rated their motivation to follow NABH standards as either high or moderate. Still, significant challenges such as increased workload (25.9%) and considerable staff shortages (77.8%) were recognized as major obstacles to consistent compliance, underscoring the necessity for targeted approaches to enhance human resources and alleviate operational pressure (Kohn et al., 2000).[23]

Specific NABH compliance areas such as CPR protocol adherence (100%), infection control measures (100%), and ICU policy awareness (96.3%) indicate a well-regulated critical care environment. However, gaps in regular policy reviews (11.1% non-compliance) highlight the need for continuous quality improvement initiatives.

The high level of adherence to end-of-life care policies (92.6%) indicates that ethical and compassionate care practices are in line with international standards (Beauchamp & Childress, 2013).[24]

Operational Challenges and Future Directions

While ICU services show strong adherence to quality standards, some operational challenges persist that impact overall efficiency. A large percentage of participants (77.8%) noted that staff shortages remain a persistent issue. Previous studies have associated inadequate staffing levels with higher rates of patient complications and mortality, highlighting the critical need for an appropriate nurse-to-patient ratio to provide safe and effective care (Aiken et al., 2018). [25]

Inconsistencies in the implementation of standard protocols suggest that structured quality improvement programs are required for periodic retraining and reinforcement.

The study highlights concern about workload and burnout among ICU staff. Research suggests that excessive workload can contribute to medical errors, fatigue, and decreased job satisfaction, necessitating a balanced workforce distribution and the incorporation of stress management interventions (West et al., 2016). Enhancing staff recruitment and targeted well-being programs can improve compliance and patient outcomes by addressing these issues.[26]

A significant concern emphasized in the study is the financial burden faced by patients; with 68% reporting they had out-of-pocket expenses. Research has continually demonstrated that direct healthcare costs can serve as a significant barrier to receiving timely and comprehensive treatment, often deterring patients from pursuing necessary care (Wagstaff et al., 2018). Tackling this challenge by expanding health insurance programs and implementing financial assistance initiatives could improve equity and access to ICU services.[27]

CONCLUSION

This research highlights the beneficial impact of NABH accreditation on the quality of ICUs, patient safety, and overall satisfaction. The findings underscore the importance of adopting standardized protocols to decrease healthcare-related infections, enhance staff compliance, and elevate the overall experiences of patients in care settings. To sustain these improvements, further interventions must be taken to address persisting challenges like staffing shortages, financial burdens on patients, and occasional lapses in protocol adherence. In addition, the study emphasizes the necessity of a continuous quality enhancement strategy that includes periodic training, systematic policy reviews, and improved financial support mechanisms for patients. A more resilient ICU system can be maintained by strengthening these areas, allowing it to adapt to emerging healthcare challenges while maintaining high-quality care.

STRENGTHS AND LIMITATIONS

This study's significant strength is its comprehensive assessment of ICU quality dynamics after NABH accreditation, which incorporates key quality indicators, patient satisfaction levels, and staff compliance. The study presents valuable insights into critical care challenges and highlights areas that need targeted improvements. In addition, the utilization of diverse data sources, such as quantitative quality metrics and patient feedback, enhances the accuracy of the findings. However, it is important to acknowledge some limitations. The reliance on self-reported data from staff and patients may introduce bias. Future research should incorporate multi-centre studies with bigger sample sizes and quantitative performance evaluations to further confirm the conclusions drawn from this study.

RECOMMENDATIONS

- To sustain NABH-accredited ICU quality, hospital management should optimize staffing levels by recruiting adequate healthcare personnel and ensuring balanced workload distribution.
- To strengthen NABH standards and improve compliance, regular staff training and competency assessments are necessary.
- Strengthening infection control protocols through strict policy enforcement and real-time monitoring will help reduce ICU-related infections.
- Financial planning and resource allocation should be centred around enhancing health insurance coverage and decreasing patient out-of-pocket expenses.

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