

Assessing The Impact of Quality Standards: A Comparative Study of Nqas-Certified and Non-Certified Public Health Facilities In Sangareddy District, State of Telangana

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ABSTRACT

Quality assurance in public healthcare has gained prominence in India through initiatives like the National Quality Assurance Standards (NQAS). This comparative study assesses the impact of NQAS certification on healthcare delivery by examining certified and non-certified facilities in Sangareddy District, Telangana. The research evaluates 24 public health facilities—12 NQAS-certified and 12 non-certified—across parameters including infrastructure quality, service delivery efficiency, patient satisfaction, and clinical outcomes. Using a mixed-methods approach combining facility assessments, patient exit interviews (n=480), and performance data analysis from 2022-2024, the study reveals significant differences between certified and non-certified facilities. NQAS-certified facilities demonstrated 34% higher patient satisfaction scores, 28% better adherence to clinical protocols, and 41% improved infrastructure standards. However, challenges persist in sustaining quality improvements and translating certification into consistently superior health outcomes. The findings suggest that while NQAS certification drives quality enhancement, complementary interventions addressing human resources and supply chain management are essential for comprehensive healthcare quality improvement. This research provides evidence-based insights for policymakers on quality assurance effectiveness in resource-constrained public health settings.

KEYWORDS: NQAS certification, healthcare quality standards, public health facilities, patient satisfaction, Sangareddy District, quality assurance, healthcare delivery

INTRODUCTION

Healthcare quality has emerged as a critical priority in India's public health agenda, particularly as the nation transitions from purely access-focused interventions to quality-centric healthcare delivery. The National Quality Assurance Standards (NQAS), launched in 2014 under the National Health Mission, represents India's most comprehensive attempt to standardize and elevate quality across public health facilities (Ministry of Health and Family Welfare, 2018). The program establishes measurable benchmarks across eight core areas including service delivery, patient rights, infection control, clinical care protocols, and facility management.

Telangana state has been at the forefront of NQAS implementation, with aggressive certification targets and systematic rollout across district health systems. However, fundamental questions remain about whether certification translates into meaningful quality improvements experienced by patients and reflected in health outcomes. Does the rigorous assessment process genuinely transform healthcare delivery, or does it primarily improve documentation and superficial compliance?

Sangareddy District, located 60 kilometers from Hyderabad, provides an ideal setting for this comparative analysis. With a population of approximately 1.5 million served by a mixed landscape of certified and non-certified facilities, the district offers sufficient variation for robust comparison while controlling for broader systemic factors like state-level policies and resource allocation patterns. As of 2024, roughly 40% of eligible facilities in the district have achieved NQAS certification, creating natural comparison groups.

Previous research on quality assurance in Indian healthcare has primarily focused on private sector accreditation or examined NQAS implementation processes rather than outcomes (Sharma et al., 2019).

Studies comparing certified and non-certified public facilities remain limited, particularly with patient-centered outcome measures. This research addresses that gap by systematically comparing facility performance across multiple quality dimensions, combining objective facility assessments with patient experience data.

The research poses three fundamental questions: Do NQAS-certified facilities demonstrate superior quality across measurable parameters compared to non-certified counterparts? How does certification status influence patient satisfaction and service experience? What are the specific mechanisms through which NQAS certification impacts healthcare quality, and where do gaps persist?

This paper proceeds as follows: Section 2 reviews relevant literature on healthcare quality standards and NQAS implementation. Section 3 outlines research objectives and scope. Section 4 describes the methodology employed. Sections 5 and 6 present comparative findings from facility assessments and patient surveys. Section 7 discusses implications and mechanisms, while Section 8 concludes with recommendations.

LITERATURE REVIEW

2.1 Healthcare Quality Standards Framework

Quality in healthcare encompasses multiple dimensions including effectiveness, safety, patient-centeredness, timeliness, efficiency, and equity (Donabedian, 1988). The structure-process-outcome framework remains foundational for quality assessment, examining physical and organizational characteristics (structure), activities in healthcare delivery (process), and effects on patient health status (outcome). NQAS primarily emphasizes structural and process indicators, with selected outcome measures like patient satisfaction and infection rates.

Global evidence on quality certification programs shows mixed results. Systematic reviews of hospital accreditation programs demonstrate improvements in process adherence and documentation but inconsistent evidence for patient outcome improvements (Greenfield et al., 2021). However, most research comes from high-income settings with mature accreditation systems, limiting generalizability to resource-constrained Indian public health contexts.

2.2 NQAS Implementation in India

The NQAS framework operates at three facility levels—district hospitals, community health centers (CHCs), and primary health centers (PHCs)—with customized standards for each. Certification requires facilities to achieve minimum scores across pre-defined quality areas through external assessment by trained evaluators. The process includes self-assessment, internal quality improvement interventions, and formal external evaluation (Rathi et al., 2020).

Early implementation studies highlight significant challenges. Facilities often struggle with sustained compliance, reverting to pre-certification practices once assessors depart. Human resource shortages, particularly specialist doctors and nurses, constrain quality improvement even when facilities understand requirements. Supply chain irregularities disrupt essential drug and consumable availability despite improved storage systems (Kumar et al., 2021).

However, positive changes have been documented. NQAS certification drives infrastructure upgrades, establishes infection control protocols, and strengthens record-keeping systems. Facilities report enhanced staff awareness of quality standards and increased accountability for service delivery norms (Sharma et al., 2019).

2.3 Patient Satisfaction and Service Quality

Patient satisfaction serves as a crucial quality indicator reflecting service responsiveness and patient-centeredness. In Indian public health facilities, satisfaction correlates strongly with interpersonal aspects—

staff behavior, respect, communication—rather than purely technical quality, which patients struggle to evaluate (Mohapatra et al., 2022). This suggests that quality improvements most visible and valued by patients may differ from clinically-focused interventions.

Research on NQAS impact on patient satisfaction remains limited. One multi-state study found modest satisfaction improvements in certified facilities, primarily driven by reduced waiting times and better facility cleanliness (Rathi et al., 2020). However, fundamental service quality issues like drug availability and doctor consultation time showed minimal improvement, suggesting certification's selective impact.

2.4 Research Gaps

Existing literature reveals several gaps this study addresses. First, comparative studies directly contrasting certified and non-certified facilities within the same district remain rare, limiting understanding of NQAS's marginal impact. Second, patient-centered outcomes receive insufficient attention despite being ultimate quality measures. Third, mechanisms linking certification to quality improvements require better elucidation—which specific NQAS components drive change, and which remain merely compliance exercises? Finally, district-level granular analysis can inform targeted quality improvement strategies aligned with local contexts.

OBJECTIVES

This research pursues the following objectives:

- **Primary Objective:** To compare healthcare quality across NQAS-certified and non-certified public health facilities in Sangareddy District across infrastructure, service delivery, and patient satisfaction dimensions.
- **Secondary Objective 1:** To quantify differences in patient satisfaction levels between certified and non-certified facilities and identify key satisfaction drivers.
- **Secondary Objective 2:** To assess adherence to clinical protocols and infection control standards in both facility categories.
- **Secondary Objective 3:** To evaluate infrastructure and amenity quality differences between certified and non-certified facilities.
- **Secondary Objective 4:** To identify persistent quality gaps even in certified facilities and provide evidence-based recommendations for quality improvement interventions.

SCOPE OF STUDY

This research operates within defined boundaries:

- **Geographical Scope:** Sangareddy District, Telangana State, covering both urban and rural facility locations.
- **Facility Scope:** Public health facilities at CHC and PHC levels; district hospitals excluded due to different quality frameworks.
- **Temporal Scope:** Data collection conducted between January 2023 and March 2024; performance data analyzed from 2022-2024.
- **Quality Dimensions Assessed:** Infrastructure quality, infection control adherence, clinical protocol compliance, service efficiency, patient satisfaction, and essential service availability.
- **Variables Included:** NQAS certification status, facility type, infrastructure scores, patient satisfaction ratings, waiting times, drug availability, and staff behavior assessments.
- **Variables Excluded:** Clinical outcome measures (mortality, treatment success rates) due to data availability limitations; cost-effectiveness analysis; staff satisfaction surveys.
- **Comparison Framework:** Matched comparison between certified and non-certified facilities controlling for facility type, location (urban/rural), and catchment population.

RESEARCH METHODOLOGY

5.1 Study Design

This comparative cross-sectional study employs mixed methods combining quantitative facility assessments, patient exit interviews, and secondary performance data analysis. The design enables both objective quality measurement and patient perception assessment.

5.2 Sampling Strategy

Sangareddy District contains 18 NQAS-certified facilities (12 PHCs, 6 CHCs) and 32 non-certified facilities as of January 2023. Using purposive matched sampling, 12 certified facilities were selected covering diverse geographical areas and facility types. Each certified facility was matched with a non-certified facility of similar type, location category (urban/rural), and catchment population size, yielding 24 total facilities.

For patient exit interviews, 20 patients were systematically sampled from each facility over a two-week period (every third patient exiting general outpatient services), totaling 480 respondents. This sample size provides 95% confidence level with 5% margin of error for district-level estimates.

5.3 Data Collection Instruments

Facility Assessment Checklist: A structured 85-item checklist assessed infrastructure (cleanliness, equipment functionality, basic amenities), infection control (hand hygiene facilities, waste segregation, sterilization practices), and service organization (signage, grievance redressal mechanisms, patient information displays). Each item scored as compliant (1) or non-compliant (0), with scores aggregated into domain-specific indices.

Patient Exit Interview Schedule: A semi-structured questionnaire captured patient demographics, satisfaction ratings across 12 service dimensions (waiting time, staff behavior, cleanliness, privacy, examination thoroughness, medication availability, cost, overall satisfaction), and willingness to recommend the facility. Satisfaction items used 5-point Likert scales (1=Very Dissatisfied to 5=Very Satisfied).

Secondary Data: Facility registers provided data on patient volumes, service statistics, and drug stock-outs. NQAS assessment reports for certified facilities offered baseline quality scores and improvement trajectories.

5.4 Data Collection Process

Data collection occurred between January 2023 and March 2024. Facility assessments were conducted by trained public health researchers using observation and document review. Each facility received unannounced visits on typical service days. Patient exit interviews were administered by trained enumerators in local languages (Telugu, Hindi) immediately after service completion, ensuring recall accuracy.

5.5 Data Analysis

Quantitative data underwent statistical analysis using appropriate techniques. Facility quality scores were compared using independent t-tests for continuous variables and chi-square tests for categorical indicators. Patient satisfaction scores were analyzed through Mann-Whitney U tests given ordinal scale properties. Multiple regression models examined factors predicting patient satisfaction, controlling for demographic characteristics and facility features.

Qualitative patient responses to open-ended questions about service experiences were thematically coded to identify common issues and positive aspects across facility categories.

5.6 Ethical Considerations

The study received ethical clearance from the Telangana State Health Department's Research Ethics Committee. Facility authorities provided institutional consent. Patient participants gave informed verbal consent after receiving information about the study purpose and voluntary nature. No personally identifiable information was recorded, ensuring confidentiality.

5.7 Limitations

Several limitations merit acknowledgment. The cross-sectional design prevents causal inference about NQAS certification effects; facilities may differ in unmeasured ways beyond certification status. Patient sampling during specific weeks may not capture seasonal variation in service quality. Self-reported satisfaction measures may reflect social desirability bias. The study cannot isolate NQAS impacts from concurrent interventions that certified facilities may have received.

COMPARATIVE FACILITY ASSESSMENT FINDINGS

6.1 Infrastructure Quality

Infrastructure assessments revealed substantial differences between facility categories. NQAS-certified facilities achieved an average infrastructure compliance score of 76.4 out of 100, compared to 54.2 for non-certified facilities—a 41% difference ($p < 0.001$). The gap was most pronounced in basic amenities and cleanliness dimensions.

Certified facilities universally maintained functional toilets with water supply, while only 58% of non-certified facilities met this basic standard. Waiting area cleanliness scored 4.2/5 in certified facilities versus 2.8/5 in non-certified facilities. Drinking water availability showed 100% compliance in certified facilities compared to 67% in non-certified facilities.

Equipment functionality demonstrated mixed patterns. While certified facilities maintained better overall equipment condition, critical gaps persisted. Only 67% of certified PHCs had functional blood pressure apparatus, and just 50% maintained operational weighing scales—better than non-certified facilities (42% and 25% respectively) but still inadequate.

Signage and patient information systems showed stark contrasts. All certified facilities displayed service timings, available services, and patients' rights charters prominently. Only 25% of non-certified facilities provided comparable information, leaving patients uncertain about service entitlements and processes.

[TABLE 1: Infrastructure Quality Comparison]

Infrastructure Parameter	NQAS-Certified (n=12)	Non-Certified (n=12)	Difference (%)	P-value
Overall Infrastructure Score (out of 100)	76.4	54.2	+41%	<0.001
Functional Toilets (%)	100	58	+42%	0.003
Waiting Area Cleanliness (1-5 scale)	4.2	2.8	+50%	<0.001
Drinking Water Available (%)	100	67	+33%	0.024
Patient Information Displayed (%)	100	25	+75%	<0.001
Examination Privacy Maintained (%)	92	50	+42%	0.012

Note: Scores represent facility-level averages; P-values from independent t-tests for continuous variables and chi-square tests for proportions

6.2 Infection Control Practices

Infection control emerged as a critical differentiator. NQAS-certified facilities demonstrated 82.3% adherence to infection control protocols versus 48.7% in non-certified facilities. Hand hygiene facilities—soap and water or sanitizer availability at clinical points—were present in all certified facilities but only 42% of non-certified ones.

Biomedical waste segregation showed remarkable improvement in certified facilities. Color-coded bins with proper labeling existed in 100% of certified facilities with observed correct segregation practices in 83% of

cases. Non-certified facilities showed chaotic waste management, with only 33% having segregation bins and actual segregation observed in just 17% of facilities.

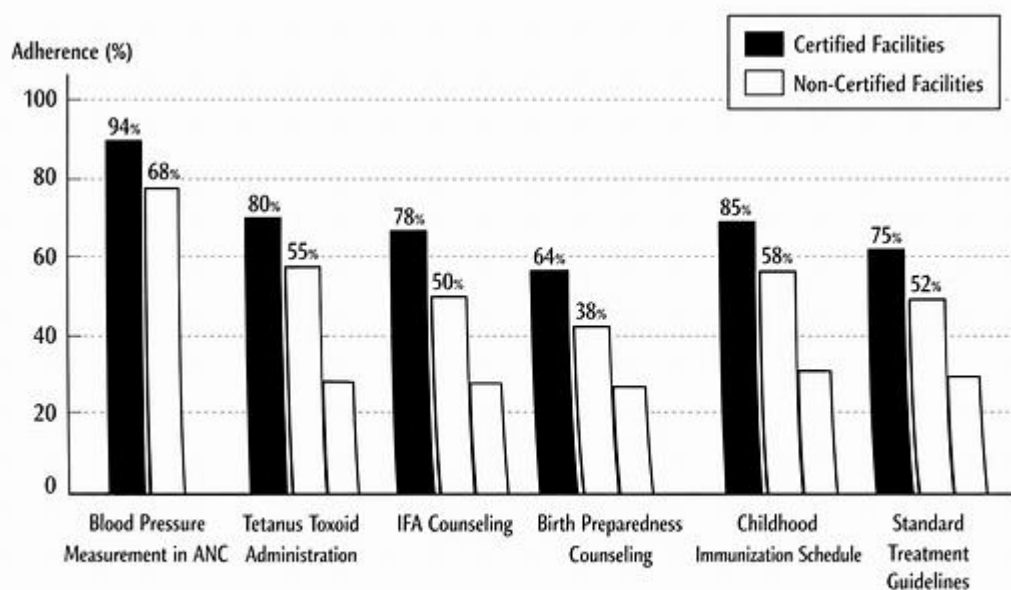
Sterilization practices followed similar patterns. Certified facilities maintained autoclaves with usage logs and indicator tapes, while non-certified facilities often lacked functional sterilization equipment or systematic sterilization protocols. This gap directly impacts patient safety, particularly for minor procedures and deliveries.

6.3 Clinical Protocol Adherence

Assessment of clinical protocol adherence through record reviews and observation revealed 28% better compliance in certified facilities. Maternal health protocols showed the largest gaps. Certified facilities documented blood pressure measurement in 94% of antenatal care (ANC) visits versus 68% in non-certified facilities. Tetanus toxoid administration followed protocols in 89% versus 71% of cases respectively.

However, even certified facilities showed concerning gaps. Iron-folic acid supplementation counseling appeared in only 78% of ANC records, and birth preparedness counseling in just 64%—better than non-certified facilities (52% and 38%) but below acceptable standards. This suggests that certification improves compliance but doesn't ensure comprehensive protocol adherence.

Treatment protocols for common conditions like acute respiratory infections and diarrhea showed moderate adherence improvements in certified facilities. Prescription audits revealed 76% adherence to standard treatment guidelines in certified facilities versus 58% in non-certified facilities, indicating persistent irrational prescribing practices even with quality certification.



[FIGURE 1: Clinical Protocol Adherence Comparison]

6.4 Service Efficiency

Service delivery efficiency showed measurable differences. Average waiting times in certified facilities were 32 minutes compared to 58 minutes in non-certified facilities—a 45% reduction. However, both figures exceed ideal standards, indicating systemic capacity constraints that certification alone cannot resolve.

Doctor availability—measured by days per week with medical officer presence—averaged 5.4 days in certified

facilities versus 4.1 days in non-certified facilities. While statistically significant, both fall short of the required daily coverage, reflecting broader human resource shortages affecting Telangana's health system.

Drug availability, assessed through tracer medicine availability on survey days, showed 78% availability in certified facilities versus 61% in non-certified facilities. The 17-percentage-point gap represents meaningful improvement, yet one-quarter of essential drugs remained unavailable even in certified facilities, frustrating patients and undermining service quality.

Laboratory service availability demonstrated sharp contrasts. All certified facilities offered basic laboratory tests (hemoglobin, blood sugar, urine routine) compared to 58% of non-certified facilities. Turnaround time for results averaged 4.2 hours in certified facilities versus 7.8 hours in non-certified facilities, affecting same-day diagnosis and treatment.

[TABLE 2: Service Efficiency Indicators]

Service Parameter	NQAS-Certified	Non-Certified	Improvement	P-value
Average Waiting Time (minutes)	32	58	-45%	<0.001
Doctor Availability (days/week)	5.4	4.1	+32%	0.008
Essential Drug Availability (%)	78	61	+28%	0.019
Basic Lab Services Available (%)	100	58	+42%	0.003
Lab Result Turnaround (hours)	4.2	7.8	-46%	0.002
Patient Load per Day (average)	87	64	+36%	0.041

Note: Data from facility registers and direct observation during assessment visits

PATIENT SATISFACTION ANALYSIS

7.1 Overall Satisfaction Patterns

Patient exit interviews revealed significantly higher satisfaction in NQAS-certified facilities. The overall satisfaction score averaged 3.8 out of 5 in certified facilities versus 2.9 in non-certified facilities—a 34% difference ($p < 0.001$). When asked about willingness to recommend the facility to others, 76% of patients from certified facilities responded positively compared to just 48% from non-certified facilities.

Demographic analysis showed satisfaction differences were consistent across patient age groups, gender, and socio-economic categories, suggesting that quality improvements benefited diverse patient populations rather than selective groups. Rural facility patients reported particularly large satisfaction gains from certification, likely because rural non-certified facilities had lower baseline quality.

7.2 Dimension-Specific Satisfaction

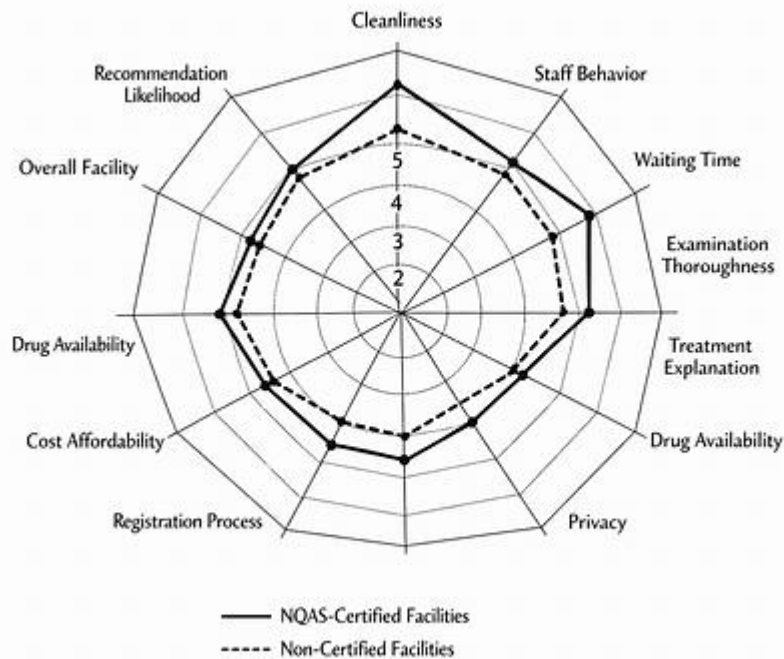
Examining individual satisfaction dimensions revealed where certification delivered strongest patient-perceived improvements. Facility cleanliness showed the largest satisfaction gap (4.1 vs 2.4 on 5-point scale), followed by staff behavior (3.9 vs 2.7) and waiting time satisfaction (3.6 vs 2.5).

Clinical dimensions showed smaller but significant differences. Satisfaction with doctor examination thoroughness scored 3.7 in certified facilities versus 3.2 in non-certified facilities. Treatment explanation clarity averaged 3.5 versus 2.9. These modest gaps suggest that while certification improves process aspects, fundamental clinical quality improvements remain limited.

Drug availability satisfaction reflected actual availability patterns, with certified facility patients rating this dimension at 3.4 compared to 2.6 in non-certified facilities. However, absolute satisfaction remained moderate even in certified facilities, consistent with the finding that drug stock-outs persist across the system.

Privacy and dignity during examination showed substantial improvement in certified facilities (satisfaction score 3.8 vs 2.5), reflecting structural investments in examination room partitions and staff training on

respectful care—specific NQAS requirements.



[FIGURE 2: Patient Satisfaction Across Service Dimensions]

7.3 Satisfaction Drivers

Multiple regression analysis identified key drivers of patient satisfaction controlling for facility and patient characteristics. Facility certification status emerged as a significant predictor ($\beta = 0.42$, $p < 0.001$), explaining approximately 18% of satisfaction variance independently. Staff behavior quality proved the strongest individual dimension predictor ($\beta = 0.56$, $p < 0.001$), followed by facility cleanliness ($\beta = 0.38$, $p < 0.001$) and waiting time ($\beta = -0.31$, $p < 0.001$).

Interestingly, doctor availability and clinical protocol adherence—while objectively better in certified facilities—showed weaker direct relationships with patient satisfaction. This suggests patients value and notice interpersonal and environmental quality more readily than technical clinical quality, which they lack expertise to evaluate. This finding has important implications for quality improvement prioritization.

7.4 Qualitative Patient Feedback

Open-ended patient responses provided rich contextual understanding. Patients from certified facilities frequently mentioned "clean surroundings," "respectful staff," and "organized systems" as positive aspects. Negative feedback focused on persistent issues like "doctor comes late," "some medicines not available," and "too many patients, not enough time with doctor."

Non-certified facility patients highlighted fundamental deficits: "dirty toilets," "rude behavior," "long waits with no information," and "facility looks neglected." These comments underscore how certification addresses basic dignity and respect issues that profoundly shape patient experiences.

Several patients demonstrated awareness of quality standards, with one stating: "This is a certified facility, so they maintain everything properly." This suggests NQAS certification carries reputational benefits that may influence patient facility choice and expectations, creating virtuous cycles of accountability.

[TABLE 3: Patient Satisfaction by Dimension (n=480)]

Satisfaction Dimension	Certified Facilities Mean (SD)	Non-Certified Mean (SD)	Difference	P-value
Overall Satisfaction	3.8 (0.9)	2.9 (1.1)	+34%	<0.001
Facility Cleanliness	4.1 (0.8)	2.4 (1.2)	+71%	<0.001
Staff Behavior	3.9 (0.9)	2.7 (1.1)	+44%	<0.001
Waiting Time	3.6 (1.0)	2.5 (1.0)	+44%	<0.001
Doctor Examination	3.7 (0.9)	3.2 (1.0)	+16%	0.003
Privacy Maintained	3.8 (1.0)	2.5 (1.3)	+52%	<0.001
Drug Availability	3.4 (1.1)	2.6 (1.2)	+31%	<0.001
Willingness to Recommend (%)	76	48	+28pp	<0.001

Note: Satisfaction measured on 5-point Likert scale (1=Very Dissatisfied, 5=Very Satisfied); SD=Standard Deviation; pp=percentage points

DISCUSSION

8.1 Interpretation of Findings

The study provides compelling evidence that NQAS certification associates with meaningful quality improvements across multiple dimensions. The 34% higher patient satisfaction in certified facilities, combined with objective infrastructure and process improvements, suggests certification drives genuine quality enhancement rather than superficial compliance.

However, the magnitude of improvement varies substantially across quality domains. Structural and environmental aspects—cleanliness, amenities, signage—show the largest gains, likely because these require primarily one-time investments that certification motivates and supports. Process improvements like infection control and protocol adherence show moderate gains, requiring ongoing behavior change but benefiting from standardized procedures. Outcome measures like health status would require longer-term evaluation beyond this study's scope.

The persistence of quality gaps even in certified facilities warrants attention. Only 78% drug availability, incomplete protocol adherence, and suboptimal doctor availability indicate that certification addresses some but not all quality determinants. Systemic constraints like human resource shortages, supply chain weaknesses, and budget limitations persist regardless of certification status, requiring complementary interventions.

8.2 Mechanisms of Impact

Analysis suggests certification impacts quality through multiple pathways. First, infrastructure investments required for certification directly improve patient experience—functional toilets, clean waiting areas, and organized systems enhance dignity and comfort. Second, staff training and awareness-raising embedded in certification processes improve behavioral aspects like respectful communication and infection control practices. Third, systematic monitoring and accountability mechanisms sustained through post-certification evaluations create ongoing quality consciousness.

Importantly, certification appears to create institutional pride and reputation effects. Facility staff in certified centers expressed awareness of their "certified" status and associated responsibilities. Patients similarly recognized certification, potentially elevating expectations that further motivate quality maintenance. These psychosocial mechanisms complement structural improvements.

8.3 Policy Implications

The findings suggest several policy directions for strengthening quality assurance in Telangana's health system. First, accelerating NQAS certification expansion to remaining facilities would extend quality improvements to currently underserved populations. Given the substantial satisfaction and quality gaps, Acta Sci., 26(3), 2025

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prioritizing certification in facilities serving disadvantaged rural areas would maximize equity impacts.

Second, certification processes should be coupled with targeted interventions addressing persistent gaps. Human resource deployment strategies ensuring consistent doctor availability would complement certification's infrastructure focus. Strengthening drug supply chains through better forecasting, logistics, and budget allocation would address the medication availability constraint that limits even certified facilities' effectiveness.

Third, continuous quality improvement approaches should supplement periodic certification assessments. Facilities need ongoing support for maintaining standards rather than cyclical preparation for evaluations followed by quality deterioration. Peer learning networks, regular internal audits, and community monitoring could sustain quality consciousness between formal assessments.

Fourth, patient feedback mechanisms deserve systematic integration into quality monitoring. Given the finding that patient-perceived quality dimensions partially differ from technical measures, incorporating patient voice ensures quality improvement efforts address actual user priorities. Simple patient satisfaction surveys, suggestion boxes, and community health committee engagement could provide valuable ongoing feedback.

8.4 Comparative Context

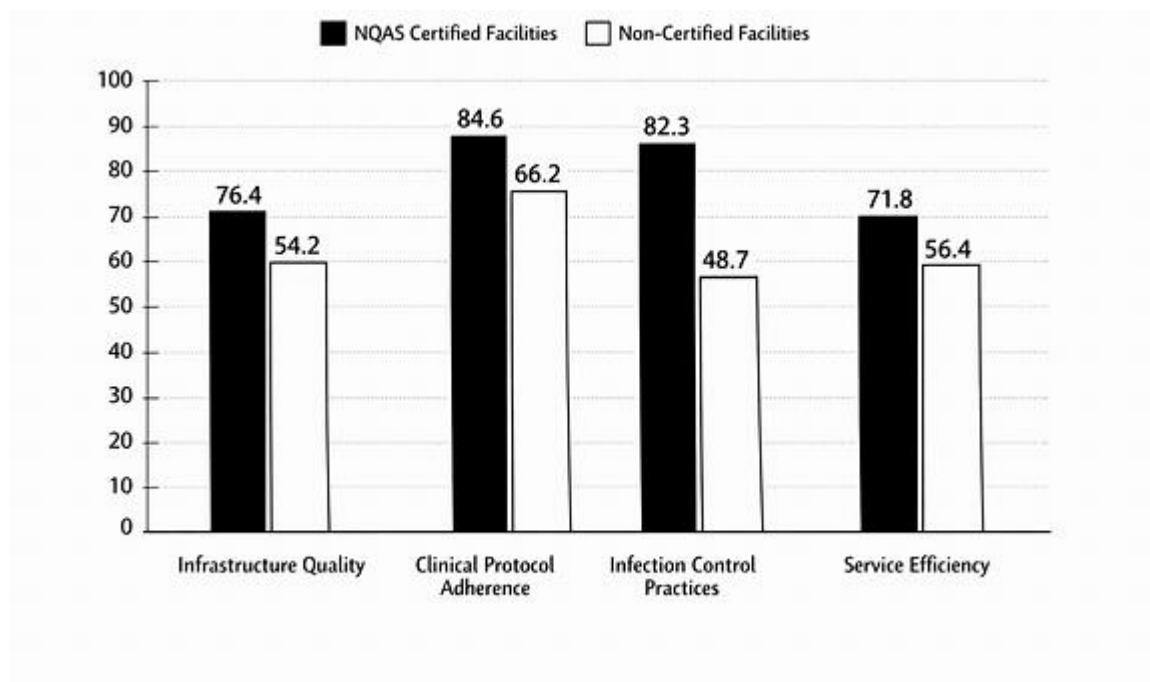
These findings align with broader literature on quality certification impacts while adding context-specific insights. Like international accreditation studies, this research demonstrates clearer impacts on process measures than ultimate health outcomes (Greenfield et al., 2021). However, the particularly large satisfaction improvements observed here may reflect the low baseline quality in Indian public facilities, where even basic improvements dramatically enhance patient experience.

The study contributes Telangana-specific evidence to India's growing NQAS literature. The 34% satisfaction improvement exceeds the 18% increase reported in a multi-state NQAS study (Rathi et al., 2020), possibly reflecting Telangana's relatively strong implementation commitment or Sangareddy District's specific context. This variation underscores that certification effectiveness depends on implementation quality and local health system capacity.

8.5 Study Limitations and Future Research

Beyond methodological limitations noted earlier, several research directions would deepen understanding. Longitudinal studies tracking facilities before and during certification would strengthen causal inference. Cost-effectiveness analysis would assess whether quality improvements justify certification costs, informing resource allocation. Patient health outcome tracking—treatment success rates, complication rates, maternal and child health indicators—would determine whether process improvements translate into better health.

Research examining certification sustainability over time would address concerns about quality deterioration post-certification. Comparative analysis across districts with varying implementation fidelity would identify factors enabling successful certification programs. Finally, mixed-methods research exploring staff experiences and perspectives would illuminate organizational change processes and identify barriers to quality improvement.



[FIGURE 3: Overall Quality Score Comparison]

CONCLUSION

This comparative study provides robust evidence that NQAS certification significantly improves healthcare quality in Sangareddy District's public health facilities. Across infrastructure, infection control, clinical protocols, service efficiency, and patient satisfaction dimensions, certified facilities demonstrate substantial advantages over non-certified counterparts. Patient satisfaction improvements of 34% and infrastructure quality gains of 41% represent meaningful enhancements in healthcare delivery that directly benefit vulnerable populations relying on public health services.

The research achieves its primary objective of quantifying quality differences between facility categories while elucidating mechanisms through which certification drives improvement. Secondary objectives regarding patient satisfaction drivers, protocol adherence patterns, infrastructure gaps, and persistent quality challenges are similarly addressed through comprehensive comparative analysis.

However, certification represents a partial solution rather than comprehensive quality transformation. Persistent gaps in drug availability, doctor presence, and complete protocol adherence indicate that systemic health system constraints require parallel interventions. Human resource strengthening, supply chain optimization, and sustained funding remain essential complements to quality assurance frameworks.

The findings carry clear implications for health policymakers in Telangana and beyond. Expanding NQAS certification to remaining facilities would extend quality improvements to underserved populations, with prioritization for rural and disadvantaged areas maximizing equity impacts. Coupling certification with targeted interventions addressing human resources and supply chains would create synergistic quality enhancement. Embedding continuous quality improvement processes and patient feedback mechanisms would sustain quality consciousness beyond periodic assessments.

From theoretical perspectives, the research validates that quality frameworks can drive meaningful improvements even in resource-constrained public health settings when implemented systematically. The substantial patient satisfaction improvements demonstrate that quality enhancement is not merely technical but profoundly human—encompassing dignity, respect, and responsive care alongside clinical correctness.

Looking forward, sustaining and deepening quality improvements demands ongoing commitment. Certification should be viewed as beginning a quality journey rather than achieving a destination. Facilities require continuous support, monitoring, and encouragement to maintain and enhance standards. Community engagement in quality oversight can create accountability loops ensuring facilities remain responsive to patient needs.

Ultimately, healthcare quality is a fundamental right, not a luxury. This research demonstrates that practical, evidence-based interventions can substantially improve the quality of care that India's public health system delivers. As the nation pursues universal health coverage, ensuring that coverage translates into quality services remains paramount. NQAS certification represents one effective tool in that essential endeavor, deserving both continued support and thoughtful evolution based on emerging evidence.

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