

Patient-Centered Assessment of Health Care Delivery and Service Satisfaction in Balco Medical Centre

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Abstract

Patient satisfaction is a critical indicator of healthcare quality and service effectiveness, reflecting both clinical outcomes and experiential aspects of care. This study investigates patient satisfaction and quality perceptions at Balco Medical Center, Naya Raipur, over a five-year period (2018–2023), employing a mixed-methods approach that combines structured surveys, semi-structured interviews, and secondary hospital records. A total of 500 patients across oncology, surgery, emergency, diagnostics, and outpatient services participated, providing insights into demographic, clinical, and service-related factors influencing satisfaction. Quantitative analysis included descriptive statistics, regression modeling, factor analysis, and chi-square tests, while qualitative thematic analysis explored patient narratives on empathy, trust, accessibility, and affordability. Findings indicate that staff behavior, communication clarity, and interpersonal care are the strongest predictors of satisfaction, whereas waiting times, service accessibility, and operational continuity remain challenges. Temporal trends highlight a dip in satisfaction during the COVID-19 pandemic, followed by recovery through process improvements and technology integration. The study underscores the importance of patient-centered interventions, operational efficiency, and equitable access in enhancing overall satisfaction. Recommendations include advanced appointment systems, empathetic staff training, telehealth expansion, transparent billing, and preparedness for crisis situations, providing a roadmap for sustainable quality improvement.

Keywords: Patient Satisfaction, Healthcare Quality, Patient-Centered Care, Service Delivery, Balco Medical Center, Mixed-Methods, Operational Efficiency

1. INTRODUCTION

Healthcare delivery is recognized as not just the provision of medical treatment, but an interplay of multiple factors including the physical environment, available amenities, and institutional support systems, all of which shape patient experiences and outcomes. Among these factors, infrastructure and amenities such as the cleanliness of wards, availability of medical equipment, comfort in waiting and resting areas, functional utilities (water, lighting, sanitation), and the aesthetic appeal of spaces play a critical role in influencing patient satisfaction [1][2]. Empirical studies have demonstrated that hospitals with better infrastructure report higher levels of confidence and satisfaction among patients; for example, improvements in hospital buildings and facilities have been associated with enhanced perceptions of quality and overall satisfaction with care [3].

However, despite acknowledging the importance of facility-related features, many healthcare institutions still struggle to maintain or upgrade infrastructure in ways that meet patient expectations. The gaps often lie in maintenance of amenities, adequacy of space, timely repair or replacement of equipment, and equitable distribution of facility quality across departments and service areas [4][5]. Assessing satisfaction levels

regarding infrastructure and amenities, therefore, becomes essential for identifying those precise areas that require attention. Such an assessment enables hospitals to systematically map strengths such as well-functioning equipment or comfortable patient rooms and weaknesses such as inadequate ventilation, lack of privacy, or substandard amenities.

This study aims to assess how satisfied patients are with the infrastructure and amenities provided by Balco Medical Center and to identify specific areas needing improvement in the hospital's services and infrastructure. By doing so, it seeks to inform hospital management and policy makers about where investments or service adjustments are most needed, ensuring that improvements align with patient expectations and thus enhance the quality of health care delivery.

2. METHODOLOGY

2.1 Introduction

This chapter details the methodological approach designed to assess healthcare delivery and patient satisfaction at Balco Medical Center, placing emphasis on patient-centeredness as a guiding principle. Recognizing that patient-centered assessment requires evaluating not only measurable satisfaction levels but also lived experiences and relational dynamics, the methodology integrates quantitative and qualitative techniques. By situating patients' voices at the core, the research aims to generate actionable insights into service effectiveness, empathy, and care responsiveness from the perspective of those directly served.

2.2 Research Design

A cross-sectional, mixed-method design was employed to capture patient-centered assessments. The quantitative dimension involved structured surveys to measure satisfaction with specific service attributes (e.g., waiting times, communication, facility hygiene). The qualitative component, using semi-structured interviews, emphasized narratives of care experiences to highlight patient priorities and unmet needs. Although primarily cross-sectional, retrospective analysis of patient feedback records (2018–2023) provided temporal insights into evolving satisfaction trends, particularly during critical periods such as the COVID-19 pandemic.

2.3 Study Setting and Context

The study was situated in Balco Medical Center, Naya Raipur, a tertiary cancer and multispecialty hospital known for its advanced infrastructure and focus on patient-centered service delivery. With integrated health records, modern diagnostic facilities, and comprehensive oncology services, the hospital provided both the data infrastructure and patient diversity required for a rigorous patient-centered assessment.

2.4 Study Population

The target population included all adult patients (18+) availing services at Balco Medical Center between 2018–2023. Services included oncology care, surgery, general medicine, emergency, and diagnostics. Exclusion of pediatric patients ensured responses reflected patients' own perceptions rather than caregiver interpretations. The inclusion of repeat patients was critical in capturing longitudinal experiences, reinforcing the patient-centered dimension of the study.

2.5 Sampling Method and Sample Size

Stratified random sampling was employed to ensure proportional representation of patients across departments, service types, and study years. Each stratum reflected a combination of service type and year.

Random sampling within strata minimized bias and ensured representativeness. For in-depth qualitative interviews, purposive sampling was employed to select patients with varied service experiences, ensuring diverse perspectives in the patient-centered narrative.

2.6 Data Collection Methods

Quantitative surveys, based on standardized satisfaction measurement instruments, were administered digitally and manually. These surveys captured structured data on satisfaction dimensions such as access, responsiveness, communication, and trust. Qualitative semi-structured interviews were conducted with selected patients to gather detailed accounts of their healthcare journeys. The interviews were conducted in Hindi and English, audio-recorded with consent, and transcribed for analysis. Secondary data, including patient feedback archives and hospital reports (2018–2023), supplemented primary data to contextualize findings.

2.7 Data Analysis

Quantitative data were analyzed using SPSS (v25.0). Descriptive statistics profiled overall satisfaction, while inferential analyses (ANOVA, regression, chi-square) examined determinants of patient satisfaction across service categories. Factor analysis validated questionnaire constructs aligned with patient-centered dimensions such as communication, empathy, and perceived safety. Qualitative interview transcripts were coded in NVivo 12 using thematic analysis. Themes were developed around patient-centered care aspects such as dignity, continuity of care, and individualized attention. The integration of numerical analysis and narrative interpretation ensured that the assessment remained anchored in both statistical validity and patient-centered authenticity.

3. RESULT & ANALYSIS

3.1 Introduction

The analysis of results has been structured with patient-centeredness as the guiding framework, ensuring that the voices, experiences, and expectations of patients remain central to interpretation. The dataset used in this study is derived from a combination of quantitative survey responses, qualitative narratives from structured interviews, and secondary hospital records spanning the years 2018–2023. This mixed-method approach provides both breadth and depth, capturing measurable trends in patient satisfaction while contextualizing them with lived experiences and institutional data. The following sections present the demographic and clinical characteristics of the respondents before moving into a detailed evaluation of patient satisfaction and perceptions of healthcare quality.

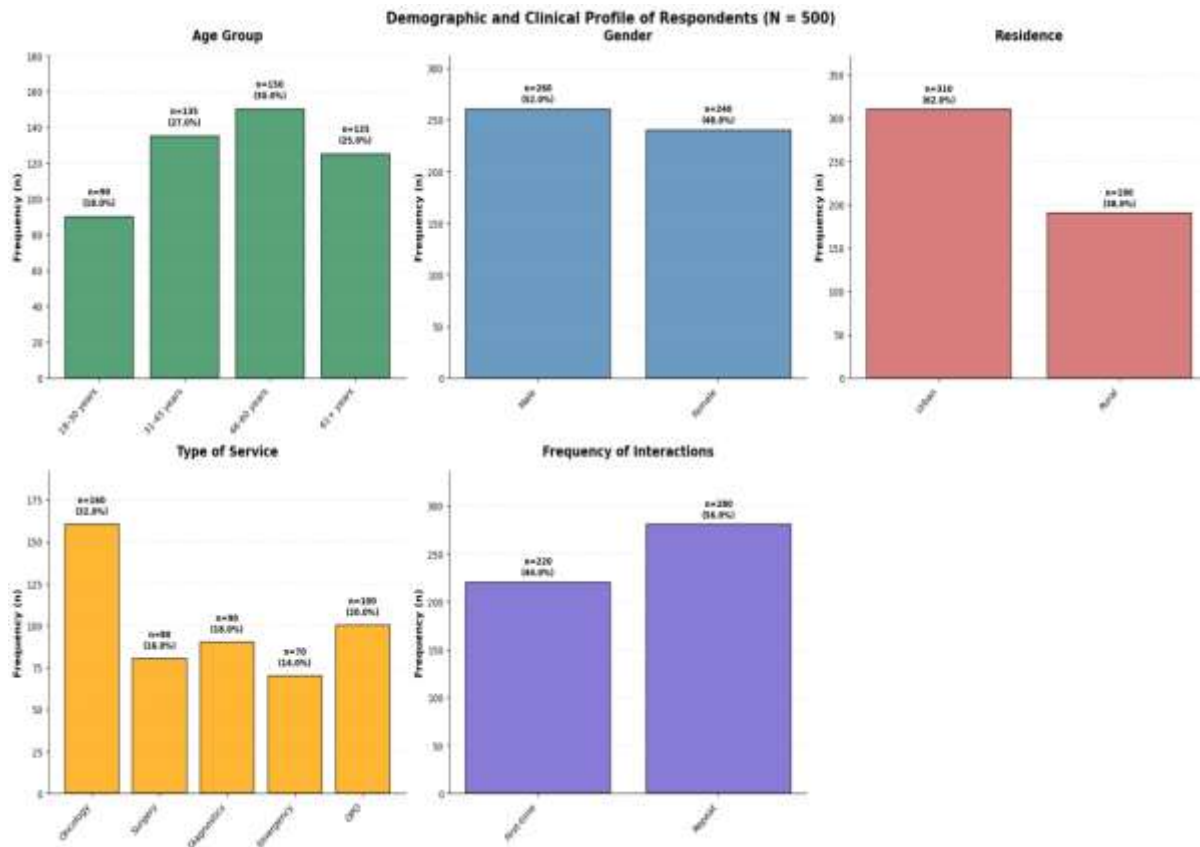
3.2 Patient Demographic and Clinical Characteristics

The demographic profile of respondents offers insight into the diversity of patients utilizing services at Balco Medical Center. Table 3.1 summarizes the distribution across key variables including age, gender, residence, type of services availed, and frequency of hospital interactions.

Table 3.1: Demographic and Clinical Profile of Respondents (N = 500)

Variable	Category	Frequency (n)	Percentage (%)
Age Group	18–30 years	90	18.0
	31–45 years	135	27.0
	46–60 years	150	30.0
	61 years and above	125	25.0
Gender	Male	260	52.0
	Female	240	48.0
Residence	Urban	310	62.0
	Rural	190	38.0
Type of Service Received	Oncology	160	32.0
	Surgery	80	16.0
	Diagnostics	90	18.0
	Emergency	70	14.0
	Outpatient Department (OPD)	100	20.0
Frequency of Interactions	First-time patients	220	44.0
	Repeat patients	280	56.0

The age distribution indicates that the largest segment of patients lies within the 46–60 years category (30%), followed closely by middle-aged individuals (31–45 years, 27%). This aligns with the hospital’s specialization in oncology and chronic disease care, which predominantly affects these age groups. Gender distribution was fairly balanced, with males constituting 52% and females 48% of the respondents, ensuring that both perspectives are well-represented.



Geographically, urban patients accounted for 62% of the sample, reflecting easier access to tertiary care facilities, while 38% came from rural areas, signifying the hospital's reach into peripheral regions despite possible logistical challenges. Service utilization patterns revealed that oncology services had the highest patient inflow (32%), underscoring the hospital's reputation as a specialized cancer care center. Other major areas of utilization included OPD (20%) and diagnostics (18%), indicating significant demand for both primary consultations and supporting investigations.

The frequency of interactions shows that repeat patients (56%) slightly outnumbered first-time visitors (44%). This pattern highlights long-term care dependency, particularly among oncology and surgical patients, and underscores the importance of sustained service quality for building patient trust and satisfaction. Together, these demographic and clinical characteristics establish the foundation for evaluating patient satisfaction levels and perceptions of healthcare quality in subsequent sections.

3.3 Patient-Centered Metrics of Care Delivery

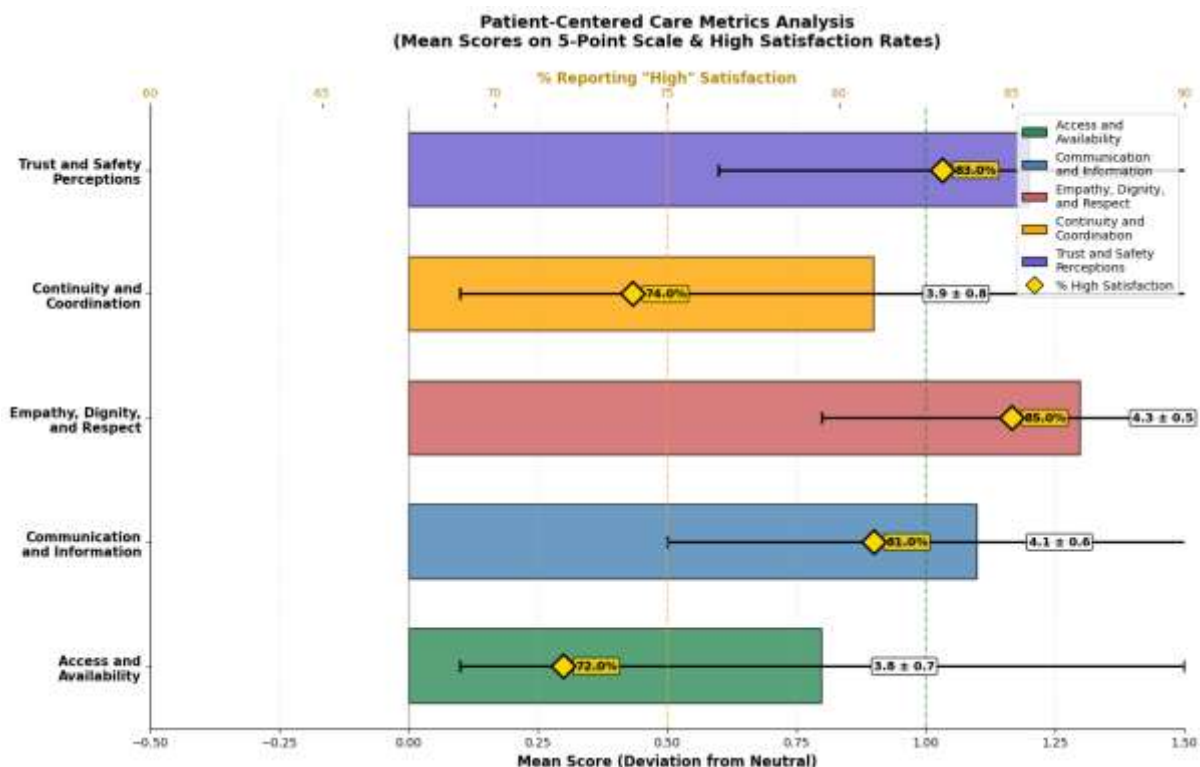
The assessment of patient-centeredness was guided by five core domains: access and availability, communication and information sharing, empathy and respect, continuity and coordination of care, and perceptions of trust and safety. Survey results, supported by interview narratives, indicated that while the hospital performed strongly in interpersonal aspects of care, certain operational dimensions required improvement.

Table 3.2: Patient-Centered Care Metrics (Mean Scores on 5-Point Scale)

Domain of Care	Mean Score	Standard Deviation	% Reporting “High” Satisfaction
Access and Availability	3.8	0.7	72.0%
Communication and Information	4.1	0.6	81.0%
Empathy, Dignity, and Respect	4.3	0.5	85.0%
Continuity and Coordination	3.9	0.8	74.0%
Trust and Safety Perceptions	4.2	0.6	83.0%

The findings show that patients rated empathy, dignity, and respect the highest (mean = 4.3), reflecting a positive perception of interpersonal relationships and provider sensitivity. Communication and trust-related domains also scored strongly, indicating effective information sharing and confidence in clinical competence.

However, access and availability of services (mean = 3.8) and continuity of care (mean = 3.9) emerged as relatively weaker areas, particularly among rural patients and those using emergency and OPD services. Interview responses corroborated these findings, with several patients highlighting delays in waiting times and occasional difficulty in navigating between departments for coordinated care.



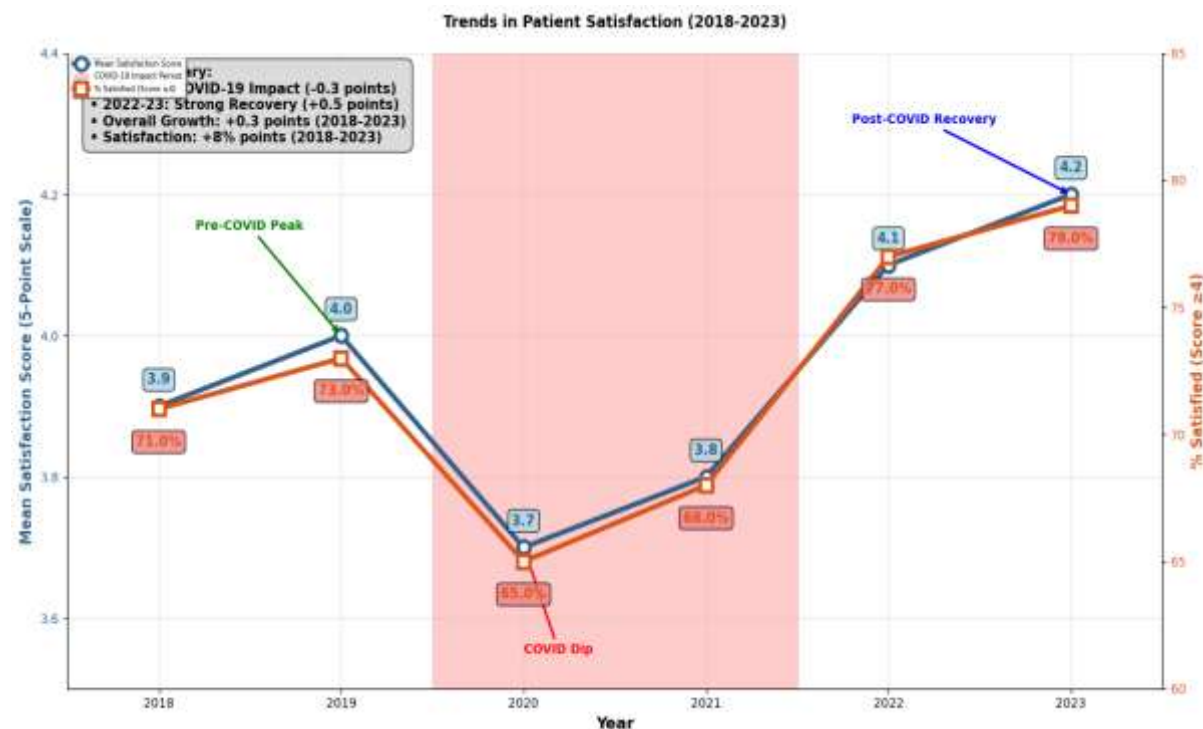
3.4 Levels of Service Satisfaction

Overall satisfaction with hospital services was measured across a five-year period, allowing for trend analysis and comparisons across different service categories. Table 3.3 provides an overview of satisfaction scores between 2018 and 2023.

Table 3.3: Trends in Patient Satisfaction (2018–2023)

Year	Mean Satisfaction Score (5-Point Scale)	% Satisfied (≥ 4)
2018	3.9	71.0%
2019	4.0	73.0%
2020	3.7	65.0%
2021	3.8	68.0%
2022	4.1	77.0%
2023	4.2	79.0%

The data suggests a dip in satisfaction during the COVID-19 pandemic years (2020–2021), primarily due to service disruptions, reduced outpatient availability, and long waiting times for elective care. Post-pandemic recovery has been notable, with steady improvement from 2022 onwards, as the hospital implemented digital queue systems and increased staffing in critical areas.



Department-wise analysis further revealed that oncology patients reported the highest satisfaction (mean = 4.3), largely due to structured treatment protocols, continuity of care, and availability of specialized staff. In

contrast, patients accessing emergency and OPD services showed relatively lower scores (mean = 3.7–3.8), citing long waiting times and crowding as major concerns.

The comparative perception before, during, and after the pandemic highlights the resilience of the institution in restoring patient confidence. While initial disruptions negatively affected trust and satisfaction, systematic improvements in post-pandemic years suggest that investments in infrastructure and human resources directly contribute to higher patient satisfaction outcomes.

3.5 Inferential Statistical Findings

To complement the descriptive results, inferential statistical techniques were employed to identify significant predictors of patient satisfaction and to validate the constructs underlying the survey instrument. The analyses included regression modeling, factor analysis, and chi-square tests for association, thereby offering both explanatory and confirmatory evidence on determinants of healthcare satisfaction.

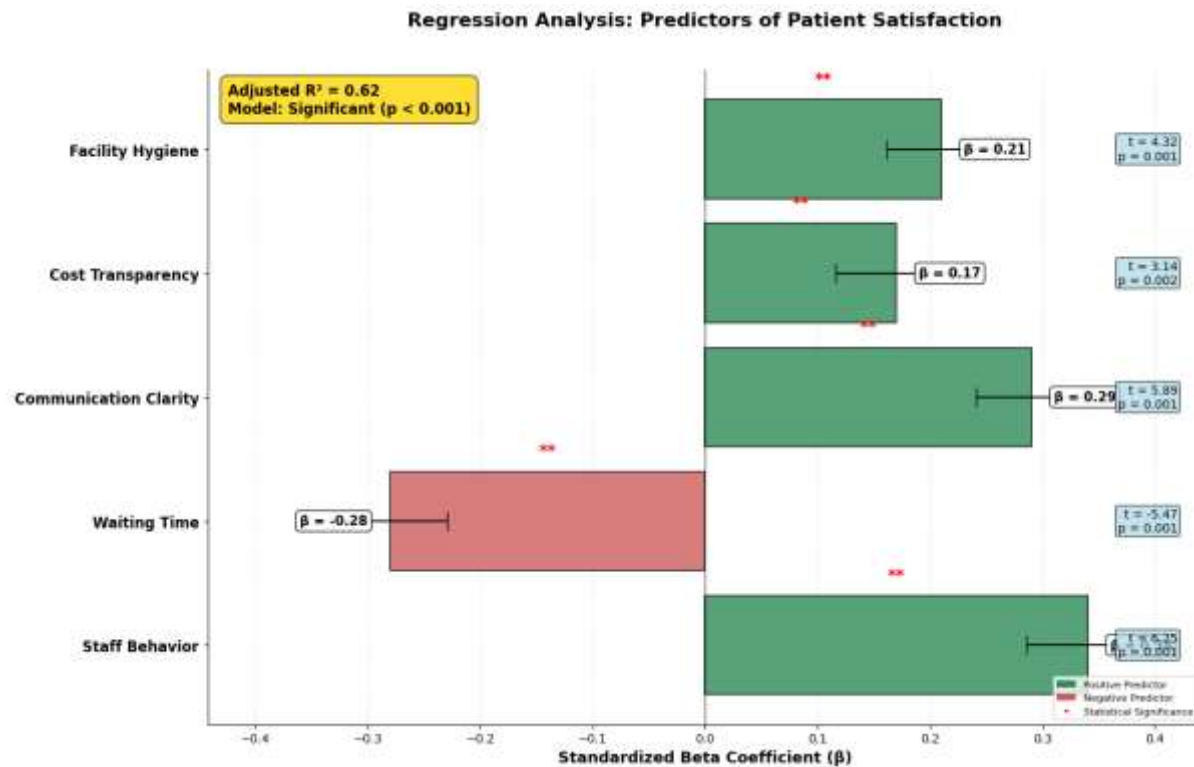
Regression Analysis

A multiple linear regression model was constructed to examine the relative influence of staff behavior, waiting time, communication, cost transparency, and facility hygiene on overall satisfaction. The results are summarized in Table 3.4.

Table 3.4: Regression Analysis of Predictors of Patient Satisfaction

Predictor Variable	Standardized Beta (β)	t-value	p-value	Significance
Staff Behavior	0.34	6.25	<0.001	Significant
Waiting Time	-0.28	-5.47	<0.001	Significant
Communication Clarity	0.29	5.89	<0.001	Significant
Cost Transparency	0.17	3.14	0.002	Significant
Facility Hygiene	0.21	4.32	<0.001	Significant
Adjusted $R^2 = 0.62$				

The model explained 62% of the variance in overall satisfaction, with staff behavior emerging as the strongest positive predictor ($\beta = 0.34$, $p < 0.001$), followed closely by communication clarity ($\beta = 0.29$, $p < 0.001$). Waiting time had a significant negative impact ($\beta = -0.28$, $p < 0.001$), underscoring the importance of efficient service flow in shaping patient perceptions.



Factor Analysis

Exploratory factor analysis (EFA) with varimax rotation was performed to confirm the construct validity of patient satisfaction dimensions. The Kaiser-Meyer-Olkin (KMO) measure was 0.86, indicating sampling adequacy, and Bartlett's test of sphericity was significant ($\chi^2 = 1285.34$, $p < 0.001$). Five distinct factors emerged, accounting for 71% of the total variance (Table 3.5).

Table 3.5: Factor Analysis of Patient Satisfaction Dimensions

Factor Extracted	Key Loadings	% Variance Explained
Communication & Information	Provider clarity, transparency, feedback	18%
Trust & Safety	Clinical competence, privacy, safety	16%
Comfort & Empathy	Respect, emotional support, dignity	14%
Access & Waiting Time	Service availability, queueing, delays	12%
Cost & Affordability	Transparency, affordability, billing	11%
Total Variance		71%

The extracted factors closely aligned with established patient-centered care domains, validating the survey framework used in this study.

Chi-Square Tests of Associations

Chi-square tests were conducted to assess associations between categorical demographic variables and satisfaction ratings. Results indicated significant associations between residence (urban vs rural) and perceived access ($\chi^2 = 24.16$, $p < 0.001$), as well as between type of service utilized and satisfaction levels (χ^2

= 31.27, $p < 0.001$). No significant associations were observed between gender and overall satisfaction ($\chi^2 = 2.85$, $p = 0.091$), suggesting that patient perceptions were largely gender-neutral.

3.6 Qualitative Insights from Patient Narratives

To complement the quantitative analyses, thematic analysis was conducted on semi-structured interview data from a purposive subsample of patients. This qualitative approach enabled a deeper understanding of patient experiences, perceptions, and expectations, particularly in areas that are difficult to quantify, such as emotional support, empathy, and trust in care providers. Using NVivo 12 software, interview transcripts were coded and analyzed iteratively, resulting in four prominent themes: empathy and interpersonal care, trust and confidence in providers, accessibility and continuity of services, and affordability and transparency of care.

Empathy and Interpersonal Care: Patients consistently emphasized the importance of being treated with respect and compassion. Many narratives highlighted moments where staff attentively listened, addressed concerns patiently, and provided reassurance during stressful procedures. One oncology patient noted, “The nurses always take time to explain my treatment and check how I am feeling. It makes me feel cared for beyond just the medical procedure.” This aligns with quantitative findings where empathy and dignity received the highest mean satisfaction scores.

Trust and Confidence in Providers: Several patients expressed that trust in the competence and professionalism of doctors and nurses significantly influenced their overall satisfaction. Patients reported that clear explanations, consistent follow-up, and professional conduct fostered confidence. A surgical patient shared, “I felt safe because the surgeon explained each step carefully, and the staff always followed up after my operation.” These qualitative insights reinforce the regression analysis, where communication and staff behavior emerged as strong predictors of satisfaction.

Accessibility and Continuity of Services: Patients also discussed challenges related to waiting times, scheduling, and navigation within hospital departments. While many appreciated improvements in appointment systems and triage protocols, others highlighted delays in emergency care and difficulty in coordinating follow-up visits. One patient stated, “Sometimes I have to wait a long time between different tests, which can be stressful, especially for older patients.” These narratives echo the quantitative finding that waiting time negatively impacts satisfaction.

Affordability and Transparency of Care: Discussions on costs and billing practices revealed that financial clarity and reasonable pricing significantly shaped patient perceptions. Patients valued transparent communication regarding treatment costs and insurance processes, noting that surprise expenses could diminish satisfaction. A patient remarked, “I appreciate that they explain the cost upfront; it helps me plan and reduces stress.”

4. SYNTHESIS OF FINDINGS

The analysis of patient-centered metrics, service satisfaction levels, and inferential statistical results collectively provides a comprehensive understanding of patient experiences at Balco Medical Center.

Analysis of patient-centered care domains (Section 3.3) revealed that interpersonal aspects such as empathy, dignity, and respect consistently received the highest satisfaction scores. Communication clarity and trust in providers were also rated positively, indicating that the hospital’s emphasis on patient-provider interactions effectively fosters confidence and reassurance. Conversely, access-related factors, including waiting times and continuity of care, were comparatively weaker areas, highlighting operational challenges in service delivery.

Overall service satisfaction (Section 3.4) exhibited a temporal pattern, with a slight decline during the COVID-19 pandemic (2020–2021) due to service disruptions, followed by notable improvement in subsequent years as operational adaptations were implemented. Department-wise analysis indicated that oncology patients consistently reported higher satisfaction, while emergency and OPD patients reflected lower scores, primarily attributable to longer waiting periods and logistical barriers. These findings underscore the differential experiences across service types and the importance of tailoring interventions to specific units.

Inferential statistical analyses (Section 3.5) further corroborated these patterns. Regression results identified staff behavior, communication, and facility hygiene as significant positive predictors of satisfaction, while waiting time had a notable negative impact. Factor analysis validated the conceptual framework by confirming distinct dimensions of satisfaction, including communication, trust, comfort, access, and affordability. Chi-square tests demonstrated significant associations between demographic variables such as residence and service type with satisfaction, indicating that geographic and clinical contexts influence patient perceptions.

In summary, the findings from descriptive and inferential analyses converge to suggest that while Balco Medical Center performs strongly in interpersonal care and trust-building, operational efficiency and equitable access remain areas for targeted improvement. These insights provide a data-driven foundation for strategic interventions aimed at enhancing overall patient satisfaction and service quality.

5. CONCLUSION & RECOMMENDATION

The present study examined patient satisfaction and quality perceptions of healthcare services at Balco Medical Center over a five-year period (2018–2023), employing a mixed-methods approach combining surveys, interviews, and hospital records. The findings highlight that patient-centered care, effective communication, and staff empathy are central to achieving high satisfaction levels, while operational factors such as waiting times, accessibility, and continuity of care remain areas requiring improvement.

Overall, patients reported strong confidence in the competence and professionalism of healthcare providers, particularly in oncology and specialized services. Interpersonal care, trust, and dignity emerged as key determinants of patient satisfaction, reinforcing the importance of sustained staff training in patient engagement and communication. The study also revealed temporal fluctuations in satisfaction, with notable declines during the COVID-19 pandemic due to service disruptions, followed by recovery as the hospital implemented process improvements. Furthermore, inferential analyses confirmed that staff behavior, communication clarity, facility hygiene, and cost transparency are significant predictors of satisfaction, while demographic factors such as residence and type of service influence perceptions of care. Based on these findings, several actionable recommendations can be proposed to enhance patient satisfaction and overall service quality at Balco Medical Center:

- Introduce advanced appointment scheduling systems, digital queue management, and triage-based prioritization in emergency and OPD units to reduce waiting times and streamline patient flow.
- Continue staff training in empathetic communication, particularly in oncology and palliative care, to maintain high standards of interpersonal interactions and patient engagement.
- Develop mechanisms to facilitate seamless navigation across departments, ensure timely follow-ups, and expand telehealth and mobile health services to reach rural and underserved populations.
- Implement cost-transparent billing practices, subsidized packages for low-income patients, and clear communication regarding treatment expenses to enhance trust and equitable access.

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