

MANAGEMENT PRACTICES IN DENTAL CLINICS: A DESCRIPTIVE CROSS- SECTIONAL STUDY OF CRYSTAL DENTAL CLINIC, BAREILLY, UTTAR PRADESH, INDIA

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Introduction & Background

Modern dental clinics face complex challenges such as administrative burdens, rising patient expectations, and technological demands, requiring strong management practices across operations, finance and patient care.

Tier-2 city clinics in India, like Bareilly, deal with specific issues including economic diversity, limited tech infrastructure, and shifting regulations, making efficient management critical for quality care and sustainability.

There is a research gap in Indian dental clinic management studies, and this study aims to fill it by analyzing the operational practices of Crystal Dental Clinic in Bareilly.

Review of Literature

Author(s)/Source	Origin	Year	Title	Purpose
1. Michael West et al.	PMC (PubMed Central)	2020	<i>Leadership in Dental Practice: A Three Stage Systematic Review</i>	To review leadership theories in patient-facing dental practice and their policy implications.
2. Dental ClaimSupport	Dental ClaimSupport Blog	2022	<i>5 Tips for Increasing Dental Practice Efficiency</i>	To provide actionable strategies for optimizing operational workflows in dental clinics.
3. Tanza Dental Clinic Study	IJREHC Journal	2024	<i>Service Quality Towards Patient Satisfaction of a Dental Clinic</i>	To evaluate patient satisfaction with service quality in a dental clinic setting.

Author(s)/Source	Origin	Year	Title	Purpose
4. Curve Dental	Curve Dental Blog	2024	<i>The Importance of Technology Integration in Dentistry</i>	To emphasize the role of technology in enhancing dental workflows and patient care.
5. PMC Study on PM Curriculum	PMC (PubMed Central)	2022	<i>Practice Management in Undergraduate Dental Program: The Need</i>	To assess dental students' demand for practice management (PM) courses in curricula.
6. PMC Public Health Editorial	PMC (PubMed Central)	2023	<i>Influence of New Technology in Dental Care: A Public Health Perspective</i>	To analyse how technology improves accessibility, affordability & outcomes.

Problem Statement & Research Questions

Problem Statement

Many dental clinics struggle with operational inefficiencies, including inadequate appointment systems, poor admin coordination, and a lack of standardized quality metrics, resulting in prolonged waiting times and reduced patient satisfaction.

Research Questions

This study addresses several critical research questions:

1. What are the current management practices at Crystal Dental Clinic, and how do they impact operational efficiency?
2. What is the level of patient satisfaction with current service delivery mechanisms?
3. Which operational processes demonstrate the highest and lowest efficiency levels?
4. What are the correlations between management practices and patient satisfaction scores?
5. What evidence-based improvements can be implemented to enhance overall operational efficiency?

Research Objectives

The primary objective of this study is to evaluate the management practices and operational efficiency at Crystal Dental Clinic through systematic data collection and analysis. Specific objectives include:

1. **Assessment of Current Management Practices:** Comprehensive evaluation of existing administrative processes, patient management systems, staff coordination mechanisms, and resource utilization patterns.
2. **Measurement of Operational Efficiency:** Quantitative analysis of key performance indicators, including patient waiting times, appointment scheduling accuracy, treatment completion rates, and resource utilization metrics.
3. **Patient Satisfaction Analysis:** Systematic evaluation of patient experiences, satisfaction levels, and perceived quality of care across different service categories.

Significance of Study & its Scope & Limitations

Significance of the Study

- This research fills a gap in Indian dental practice management literature by offering practical insights to enhance operational efficiency and patient care.
- It provides actionable strategies for balancing quality service delivery with financial sustainability.
- The study introduces replicable metrics and frameworks, promoting evidence-based, data-driven management in Indian dental clinics.

Scope & Limitations

- The study provides an in-depth evaluation of management practices at Crystal Dental Clinic over three months, offering detailed but clinic-specific insights.
- Limitations include limited generalizability, absence of long-term or seasonal data, and a primary focus on operational rather than clinical management.
- Data confidentiality measures may have restricted the depth of some analyses.

Methodology

Research Design

- Type: Descriptive cross-sectional study.
- Purpose: To evaluate management practices and operational efficiency at Crystal Dental Clinic.
- Approach: Mixed-methods – combining quantitative (surveys, assessments) and qualitative (observations, interviews) techniques.
- Strength: Offers a comprehensive, real-time snapshot of clinic operations.
- Limitation: Captures data from a specific period; may not show long-term trends.

Study Setting

- Location: Crystal Dental Clinic, Bareilly, Uttar Pradesh.
- Services Offered: General dentistry, oral surgery, orthodontics, cosmetic dentistry.

Study Population

- Inclusion Criteria: Patients ≥ 18 years, received dental care during the study (Mar 10 – May 31, 2025), gave informed consent.
- Exclusion Criteria: Patients < 18 , emergency cases, those unable to consent.
- Sample Size: 125 patients (convenience sampling)

Data Collection Instruments

- Validated patient satisfaction questionnaires
- Operational efficiency assessment tools
- Time-motion studies
- Administrative process evaluation forms.

Data Collection Procedures

- Surveys: Administered post-treatment with informed consent.
- Operational Observations: Conducted during clinic hours using defined protocols.
- Administrative Evaluations: Based on document review, staff interviews, and live demonstrations.
- Time-Motion Studies: Conducted by using standardized timing tools.

Limitations

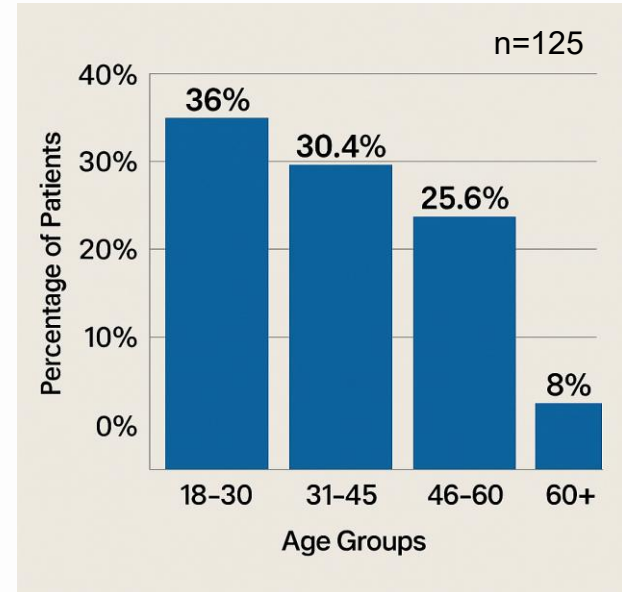
- Single-site study: The study cant be generalized.
- Short duration: Does not reflect seasonal or long-term trends.
- Hawthorne Effect: Staff behavior may be influenced by being observed.
- Limited Clinical & Financial Analysis: Focus on admin/operational aspects; financial/proprietary data access restricted.

Results

In accordance with the three previously stated study objectives, the findings of this study are compiled into three headings.

1. Assessment of Current Management Practices

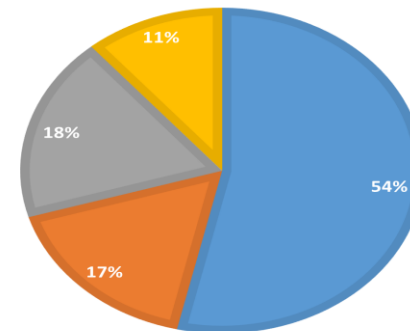
- The age distribution shows a predominance of younger and middle-aged patients, with 66.4% of participants falling between 18-45 years.



- Treatment type distribution indicates that general dentistry services constitute the majority of cases (53.6%), followed by orthodontics (18.4%) and oral surgery (16.8%). This distribution reflects typical dental practice patterns in urban Indian settings and provides a comprehensive basis for evaluating management practices across different service categories.

Percentage Share of Different Dental Treatments

■ General Dentistry ■ Oral Surgery ■ Orthodontics ■ Cosmetic



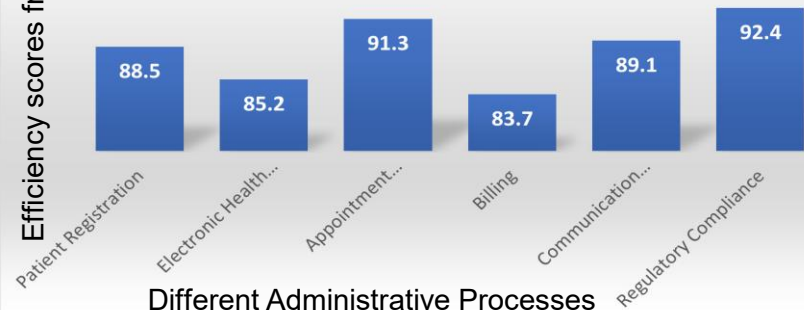
n=125

- Administrative process evaluation reveals strong performance across all categories, with efficiency scores ranging from 83.7 to 92.4. Regulatory compliance achieved the highest efficiency score & billing processes demonstrated the lowest efficiency scores.

Efficiency scores from 0-100

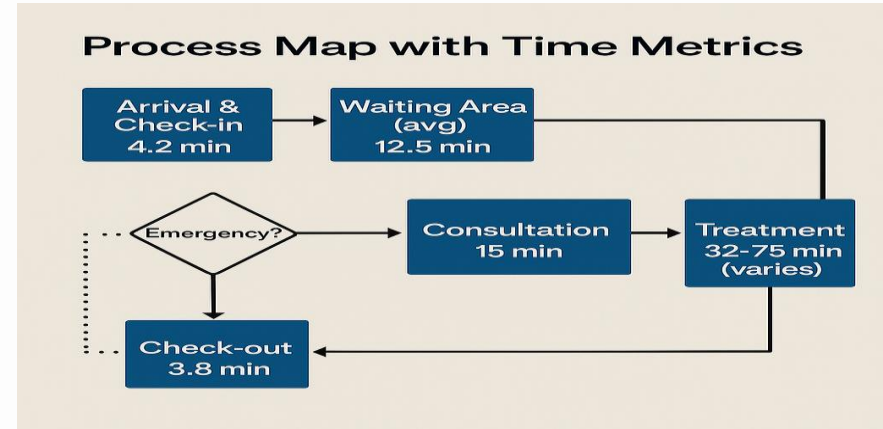
Efficiency Scores for different Administrative Processes

n=125



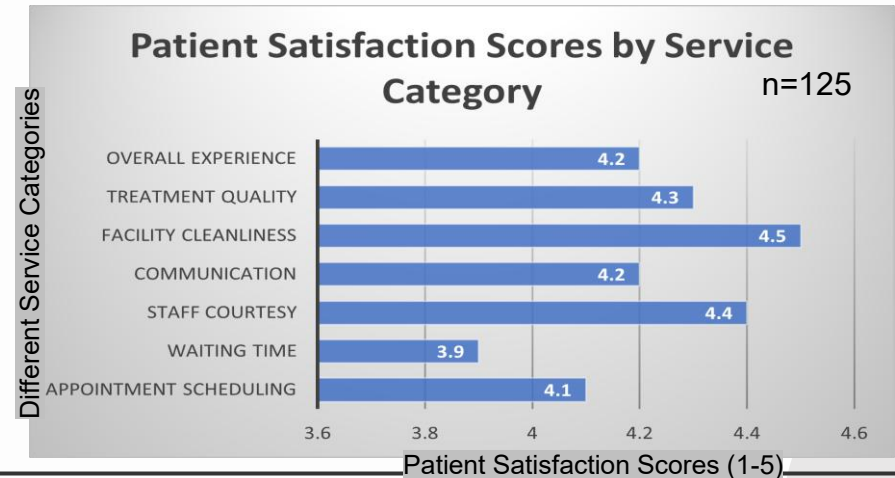
Different Administrative Processes

- Patient check-in procedures averaged 4.2 minutes, and new patient registration required additional time, averaging 8.7 minutes.
- Waiting time analysis revealed variations by appointment type and time of day, averaging 12.5 minutes.
- Check-out procedures averaged 3.8 minutes, including payment processing, appointment scheduling, and post-treatment instructions.



2. Patient Satisfaction Analysis

- The results show high patient satisfaction across all domains, with the highest scores in facility cleanliness and waiting time scored lowest, highlighting a key area for improvement.



3. Measurement of Operational Efficiency

- The operational efficiency analysis shows strong performance, with an average waiting time of 12.5 minutes and 94.2% appointment scheduling accuracy, both exceeding benchmarks.
- Treatment room utilization stands at 78.3%, and patient throughput is 6.8 patients/hour—both within optimal ranges.
- The staff productivity index is 82.4, indicating effective use of human resources.
- Administrative processes, such as check-in and check-out, average 8.3 minutes, meeting efficiency targets and supporting positive patient experiences.

Metric	Mean Value	Target Range	Performance Status
Average Waiting Time (minutes)	12.5	<15 minutes	Meets Target
Appointment Accuracy (%)	94.2	>90%	Exceeds Target
Treatment Room Utilization (%)	78.3	70-80%	Optimal
Patient Throughput (patients/hour)	6.8	6-8	Optimal
Staff Productivity Index	82.4	>75	Good
Administrative Processing Time (minutes)	8.3	<10 minutes	Meets Target

Comparative Analysis

➤ **Time Period Analysis:**

Morning operations (10:00 AM – 12:00 PM) showed higher efficiency and satisfaction (avg. rating: 4.3) than evening operations (5:00 PM – 8:00 PM, avg. rating: 4.0), due to shorter waiting times and more energetic staff.

➤ **Treatment Type Comparison:**

General dentistry achieved the highest efficiency and satisfaction scores. Oral surgery scored lower, primarily due to patient anxiety and longer procedures. Orthodontic consultations had high satisfaction but affected throughput due to extended consultation times.

➤ **Staff Performance Variation:**

Senior staff delivered more consistent performance and higher patient satisfaction. Newer staff showed more variability, indicating a need for additional training and supervision.

Discussion

Interpretation of Key Findings

- Overall patient satisfaction score: 4.2/5, indicating strong patient-centred care.
- Average waiting time: 12.5 minutes, better than typical industry benchmarks.
- Administrative efficiency: Scores between 83.7–92.4.
- Significant correlation between admin efficiency and patient satisfaction, highlighting the value of efficient operations.

Comparison with Existing Literature

- **Appointment scheduling accuracy (94.2%)** and satisfaction scores align with established benchmarks.
- Highest satisfaction in **facility cleanliness (4.5)** and **staff courtesy (4.4)**; lowest in **waiting time**, though still acceptable.
- **Resource utilization (78.3%)** falls within optimal operational efficiency ranges.

Suggestions

Implications for Practice Management

- A structured management system combining admin efficiency and patient-centred care can achieve strong outcomes.
- Need to further improve **waiting time perception** through communication and expectation setting.
- **Staff training** is critical for consistent performance and high-quality service delivery.
- Standardised **communication protocols** enhance overall patient satisfaction.

Opportunities for Operational Efficiency Enhancement

- **Billing processes** had the lowest efficiency (83.7%); require improvement.
- **Evening operations** are less efficient than mornings—calls for better workload and staff allocation.
- Further **technology integration** (e.g., EHR, patient communication systems) could boost overall efficiency.

Quality Improvement Recommendations

- Enhance communication about waiting times (real-time updates, delay explanations).
- Introduce **standardized staff training programs** with ongoing evaluation and development.
- Optimize **billing systems** via process redesign, tech upgrades, and staff upskilling.
- Establish **continuous quality monitoring systems** (patient feedback, performance tracking, KPIs).

Limitations and Considerations

- **Single-site study** limits generalizability.
- **Cross-sectional design** doesn't capture long-term or seasonal variations.
- Focused more on **operational/admin aspects**, less on clinical integration.
- Urban setting may not translate to **rural or low-resource environments**.

Future Research Directions

- Conduct **longitudinal studies** to assess sustainability and long-term impact of improvements.
- **Comparative studies** across various clinic types, regions, and systems for broader applicability.
- Explore **clinical-operational integration** to develop holistic management frameworks.
- Investigate **emerging technologies** and their strategic role in dental practice management.

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THANK YOU!