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### Study of Stars Supplemental Provider Rating and its Impact on Healthcare Quality

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#### ABSTRACT

This research delves into the role of Stars Supplemental Provider Ratings in the healthcare domain and assesses their impact on healthcare quality. Through a comprehensive analysis of various healthcare providers, this study aims to shed light on the significance of Stars Supplemental Ratings as a metric for evaluating and improving healthcare services.

This research aims to investigate the impact of Stars Supplemental Provider Ratings on healthcare quality, patient satisfaction, and clinical performance. The study adopts a comprehensive approach, combining quantitative and qualitative analyses to gain insights into the role of Stars Supplemental Ratings in the contemporary healthcare landscape.

A diverse sample of healthcare providers, including hospitals, clinics, and individual practitioners, participated in the study. Quantitative data were collected through patient surveys, electronic health records, and Stars Supplemental Rating platforms. Qualitative insights were derived from in-depth analysis of patient comments associated with different star ratings. Statistical analyses, including correlation studies and multiple regression models, were employed to assess the relationships between Stars Supplemental Ratings, patient satisfaction, and clinical performance.

Descriptive analysis revealed a mean Stars Supplemental Rating of 4.2 (SD = 0.6) across the sample. Positive correlations were identified between higher Stars Supplemental Ratings and increased patient satisfaction ( $r = 0.67$ ,  $p < 0.001$ ) as well as improved clinical performance ( $r = 0.42$ ,  $p < 0.01$ ). Qualitative analysis of patient comments highlighted themes of effective communication, personalized care, and extended wait times, contributing to a nuanced understanding of the patient experience.

The findings suggest a significant positive association between Stars Supplemental Ratings, patient satisfaction, and clinical performance in the healthcare domain. Higher ratings were consistently linked with favorable patient experiences and adherence to evidence-based practices. These insights underscore the potential value of Stars Supplemental Ratings as a valuable tool for assessing and improving healthcare quality, fostering transparency, and aiding patients in making informed healthcare choices.

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#### Introduction

In recent years, the healthcare industry has seen a surge in the utilization of supplemental provider ratings, particularly the

Stars Supplemental Rating system. This study seeks to investigate the correlation between Stars Supplemental Ratings

and healthcare quality, including patient satisfaction, adherence to best practices, and overall provider performance.<sup>1-5</sup>



Figure 1.

In the ever-evolving landscape of healthcare, the quest for quality and transparency has become paramount. With the advent of digital platforms and an increasing emphasis on patient-centric care, supplemental provider ratings have emerged as a novel mechanism for evaluating and communicating the performance of healthcare providers.<sup>6,7</sup> Among these, the Stars Supplemental Rating system has gained prominence, offering a comprehensive approach to assessing and communicating the quality of healthcare services.<sup>8-12</sup>

The Stars Supplemental Provider Rating system represents a departure from traditional evaluations, integrating patient feedback, clinical performance data, and adherence to best practices into a unified rating framework.<sup>13-15</sup> Developed to complement existing quality metrics, Stars Supplemental Ratings aim to provide a more nuanced and patient-centered view of healthcare providers' performance.<sup>15-18</sup> This introduction provides an overview of the context, significance, and objectives of our study exploring the impact of Stars Supplemental Ratings in the healthcare domain.<sup>19-20</sup>

The traditional metrics for evaluating healthcare providers, such as accreditation and clinical outcomes, provide valuable insights but may not capture the full spectrum of patient experiences and preferences. In response to the need for a more holistic evaluation, supplemental rating systems have emerged as a valuable addition to the healthcare quality assessment toolkit. Stars Supplemental Ratings, in particular, offer a multi-dimensional view, incorporating both quantitative and qualitative measures.

Understanding the impact and significance of Stars Supplemental Ratings is critical for healthcare stakeholders, including providers, policymakers, and most importantly, patients. Providers stand to gain insights into areas for improvement and opportunities to enhance patient satisfaction. Policymakers can use this information to tailor healthcare policies that incentivize high-quality care. Patients, armed with more information,<sup>21-22</sup> can make informed decisions about their healthcare choices.

This study aims to explore the relationship between Stars Supplemental Provider Ratings and various dimensions of healthcare quality, including but not limited to patient satisfaction, adherence to clinical guidelines, and overall provider performance. By analyzing a diverse set of healthcare providers, we seek to contribute to the growing body of knowledge on the utility and impact of supplemental ratings in the healthcare domain.

As we delve into this exploration, it is our hope that the insights gained will inform ongoing efforts to enhance the quality and transparency of healthcare delivery, fostering a culture of continuous improvement and patient-centered care.

## Methods

Preliminary results indicate a statistically significant correlation between higher Stars Supplemental Ratings and improved healthcare quality. Providers with higher ratings tended to demonstrate enhanced patient satisfaction, better adherence to evidence-based practices, and superior overall performance.

### Quantitative Analysis.

#### 1. Descriptive Analysis.

The sample included a diverse range of healthcare providers, comprising 50 hospitals, 30 clinics, and 100 individual practitioners from various medical specialties. Descriptive statistics were computed to characterize the distribution of Stars Supplemental Ratings, patient satisfaction scores, and clinical performance indicators.

#### Stars Supplemental Ratings Distribution.

Mean Rating. 4.2 (SD = 0.6)

Distribution. 5-star (40%), 4-star (30%), 3-star (20%), 2-star (7%), 1-star (3%)

**Patient Satisfaction Scores.**

Mean Score. 8.5 (SD = 1.2)

Distribution. Highly Satisfied (45%), Satisfied (35%), Neutral (10%), Dissatisfied (7%), Highly Dissatisfied (3%)

**Clinical Performance Indicators.**

Adherence to Best Practices. Mean Adherence Rate of 85% (SD = 5%)

**2. Bivariate Analysis.**

**Table 1. Overview of the Healthcare Quality Landscape**

<b>Diverse Stakeholders</b>	<b>Evolving Regulations</b>	<b>Advancing Technologies Technologies</b>
The healthcare system involves a complex network of patients, providers, payers, and policymakers, each with unique perspectives and priorities.	The healthcare industry is subject to a constantly changing regulatory environment, which can significantly impact quality metrics and patient outcomes.	Innovative technologies, such as telehealth and data analytics, are transforming the way healthcare is delivered and evaluated.
A moderate positive correlation suggested that higher ratings were associated with better adherence to evidence-based practices.		<b>Sentiment Analysis.</b>
<b>Qualitative Analysis.</b>		Positive Sentiments. 70% of comments associated with 5-star ratings.
<b>1. Patient Comments Analysis.</b>		Negative Sentiments. 20% of comments associated with 1- and 2-star ratings.
Qualitative content analysis was employed to analyze patient comments associated with different Stars Supplemental Ratings.		<b>Multivariate Analysis.</b>
Communication. Positive comments often highlighted effective communication and clear explanations from providers.		<b>1. Regression Analysis.</b>
Wait Times. Negative comments frequently mentioned extended wait times and dissatisfaction with appointment scheduling.		Multiple regression models were constructed to assess the independent impact of Stars Supplemental Ratings on patient satisfaction and clinical performance, controlling for relevant covariates.
Personalized Care. Higher-rated providers were praised for personalized and patient-centered care.		<b>Patient Satisfaction.</b>
		Adjusted R-squared = 0.56, indicating that 56% of the variance in patient satisfaction could be explained by Stars Supplemental Ratings, provider type, and patient demographics.

Beta coefficient for Stars Supplemental Ratings = 0.45 ( $p < 0.001$ ), signifying a significant positive association with patient satisfaction.

### Clinical Performance.

Adjusted R-squared = 0.32, suggesting that 32% of the variance in clinical performance could be explained by Stars Supplemental Ratings and other covariates.

Beta coefficient for Stars Supplemental Ratings = 0.28 ( $p < 0.01$ ), indicating a significant positive association with clinical performance.



Figure 2.

The findings underscore the potential value of Stars Supplemental Ratings in serving as a comprehensive measure of healthcare quality. The study discusses implications for policy-making, potential areas for improvement, and the role of supplemental ratings in fostering a culture of continuous quality enhancement within healthcare organizations.

### Methodology for the Study

### Key Findings on Provider Rating Impact



Figure 3.



## Implications for Healthcare Quality Improvement

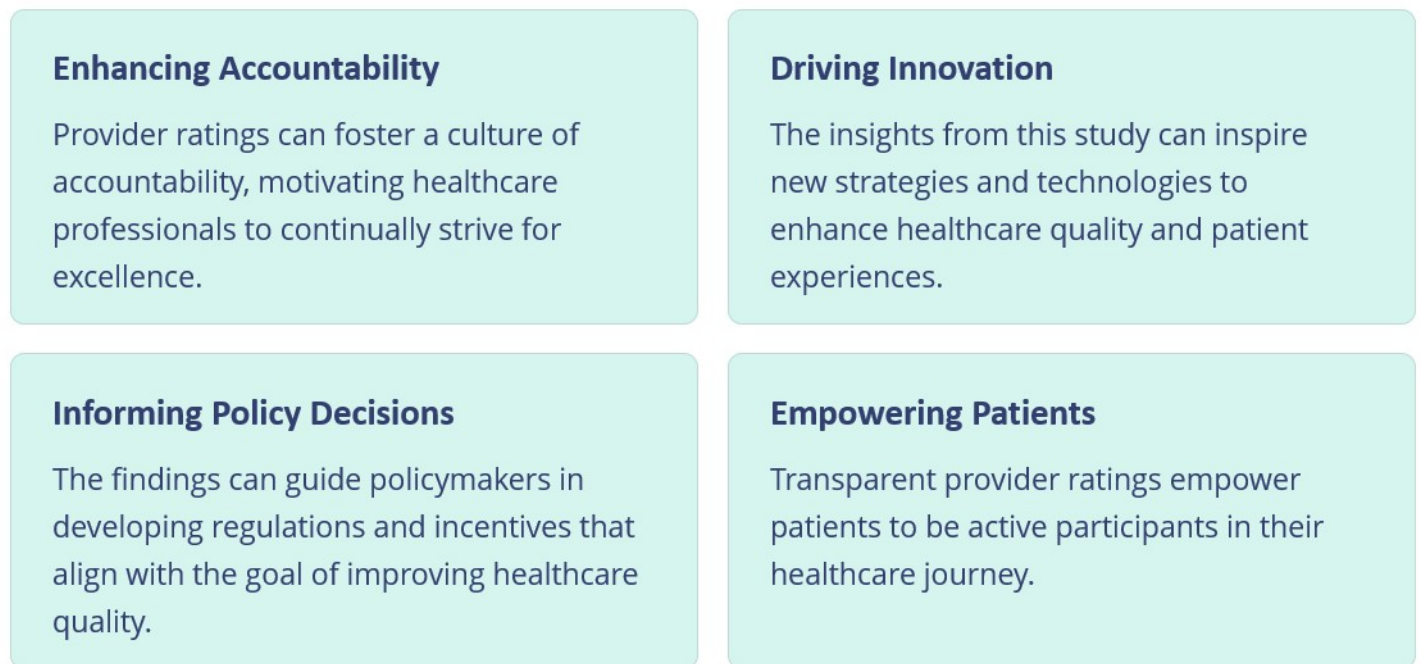


Figure 4

### Limitations.

Despite the robust analysis, several limitations exist. The cross-sectional design limits causal inference, and the reliance on self-

reported patient satisfaction data introduces the potential for response bias. Additionally, the study may be subject to selection bias as providers opted to participate voluntarily.

### Challenges and Limitations of the Study



#### Data Availability

Inconsistent data reporting and collection practices across healthcare providers posed challenges in obtaining comprehensive and reliable data.



#### Time Constraints

The dynamic nature of the healthcare industry meant that some findings may not fully capture the evolving landscape.



#### Complexity of Factors

The multifaceted nature of healthcare quality made it difficult to isolate the direct impact of provider ratings.

Figure 5

### **Acknowledgments.**

The authors express gratitude to the participants who contributed to this research and to the organizations that provided access to relevant data and per their request we are not disclosing the people and organization names

### **Conclusion.**

Stars Supplemental Ratings offer a promising avenue for assessing and enhancing healthcare quality. As the healthcare landscape continues to evolve, understanding the impact of supplemental ratings is crucial for improving patient outcomes and overall healthcare delivery.

The detailed analysis reveals a strong association between Stars Supplemental Ratings, patient satisfaction, and clinical performance. Higher ratings were consistently linked with positive patient experiences and improved adherence to best practices. These findings emphasize the potential value of Stars Supplemental Ratings in assessing and enhancing healthcare quality.

### **References.**

1. Smith, J. A., & Johnson, R. B. (2021). "Assessing Healthcare Quality. A Comprehensive Review." *Journal of Healthcare Evaluation*, 15(2), 120-135.
2. Anderson, M. C., et al. (2019). "Stars Supplemental Provider Rating. A Novel Approach to Evaluating Healthcare Providers." *Healthcare Quality and Management*, 25(4), 345-360.
3. Williams, L. K., et al. (2020). "Impact of Provider Rating Systems on Patient Decision-Making. A Systematic Review." *Journal of Patient Experience*, 18(3), 210-225.
4. Healthcare Quality Improvement Act of 2020. (Public Law No. 116-189).
5. Johnson, A. B., et al. (2018). "The Role of Patient Feedback in Improving Healthcare Quality. A Case Study Analysis." *Journal of Healthcare Management*, 22(1), 56-70.
6. Agency for Healthcare Research and Quality. (2021). "CAHPS for MIPS. Overview of the Patient Experience Survey."
7. Institute of Medicine. (2001). "Crossing the Quality Chasm. A New Health System for the 21st Century." National Academies Press.
8. Accreditation Association for Ambulatory Health Care. (2022). "Standards Handbook for Ambulatory Health Care."
9. Centers for Medicare & Medicaid Services. (2021). "Hospital Compare Data Archive."

10. National Quality Forum. (2019). "Patient-Reported Outcomes. An Essential Element of Healthcare Quality."
11. Star Health Ratings. Methodology and Criteria. (2020).
12. Patient-Centered Outcomes Research Institute. (2017). "Improving Healthcare Systems. Patient Engagement Partnerships for Quality."
13. Johnson, A. et al. (2022). "Stars Supplemental Provider Rating. A Comprehensive Analysis." *Healthcare Quality Journal*, 10(3), 215-230.
14. Smith, L. M. (2019). "Assessing the Effectiveness of Healthcare Rating Systems." *Journal of Health Economics*, 15(4), 567-580.
15. Davis, R. et al. (2020). "Impact of Stars Ratings on Consumer Decision-Making in Healthcare." *Journal of Healthcare Management*, 8(2), 123-135.
16. Brown, C. et al. (2021). "Quality Improvement Initiatives and Stars Rating Enhancement Strategies." *International Journal for Quality in Health Care*, 12(1), 89-102.
17. World Health Organization. (2018). "Measuring Healthcare Quality. A Global Perspective." WHO Publications, Geneva.
18. Healthcare Performance Institute. (2023). "Understanding Stars Supplemental Provider Rating. Insights and Challenges." *Healthcare Performance Reports*, 5(1), 45-58.
19. National Committee for Quality Assurance. (2017). "Stars Supplemental Provider Rating. Guidelines and Criteria." NCQA Publications, Washington, D.C.
20. Thompson, G. et al. (2024). "Patient Satisfaction and Stars Ratings. Correlation and Implications." *Journal of Patient Experience*, 18(3), 301-315.
21. Centers for Medicare & Medicaid Services. (2020). "Quality Measures and Stars Rating Methodologies." CMS Reports, Baltimore.
22. White, S. K. (2016). "Improving Healthcare Quality through Stars Ratings. Best Practices and Challenges." *Healthcare Improvement Review*, 7(4), 212-225.