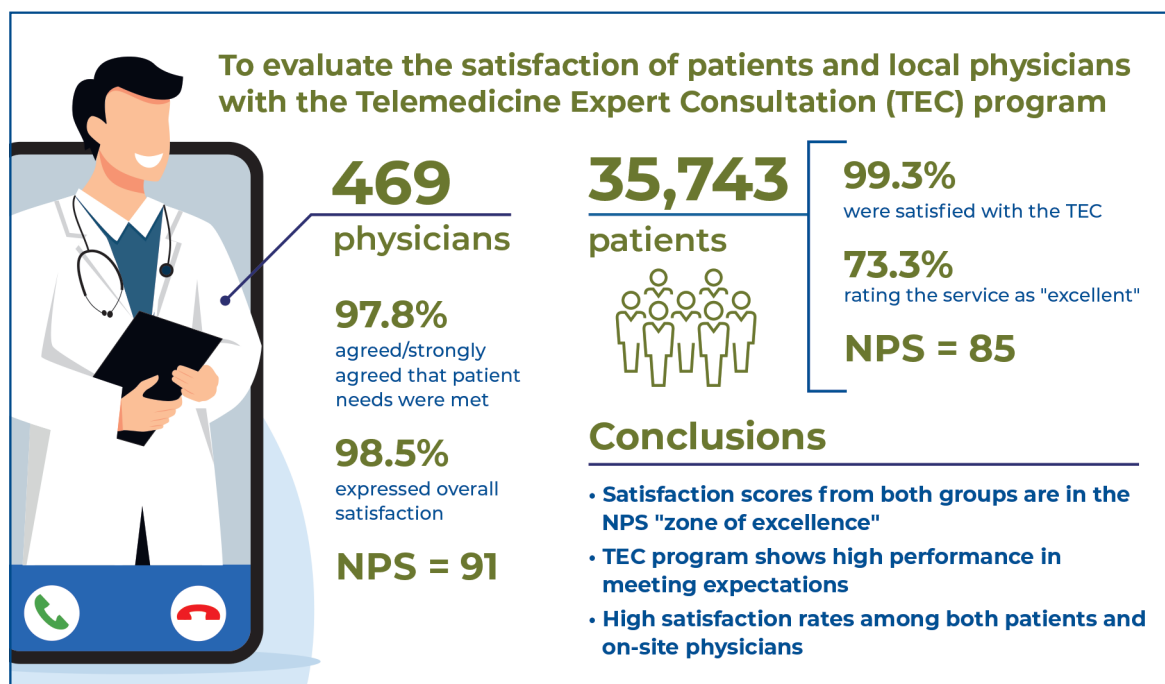


Patient and on-site physician satisfaction with a comprehensive specialist teleconsultation program



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In Brief

Telemedicine Expert Consultations significantly improved access to specialized care in underserved regions of Brazil, achieving high satisfaction levels among patients and physicians, with Net Promoter Scores of 85 and 91, respectively, indicating excellence in service delivery.

Highlights

- Net Promoter Scores of 85 and 91 among patients and physicians, respectively, over three years.
- A total of 99.3% of patients were satisfied with the teleconsultation.
- A total of 98.5% of physicians reported overall satisfaction with the program.
- Surveys reflect excellence in telemedicine expert consultation.

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ORIGINAL ARTICLE

Patient and on-site physician satisfaction with a comprehensive specialist teleconsultation program

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ABSTRACT

Objective: Telemedicine via teleconsultations enhances access to specialized care. However, the degree of satisfaction among patients and providers with this method remains unclear. This study assessed patient and on-site physician satisfaction with the Comprehensive Specialist Teleconsultation Program (Telemedicine Expert Consultation) developed by *Hospital Israelita Albert Einstein* to reduce healthcare disparities in Brazil's Northern and Central-Western regions. **Methods:** A retrospective, single-center analysis employed the Net Promoter Score as the primary metric for evaluating satisfaction. Data were collected from patients and on-site physicians over three years through voluntary surveys with three focused questions. These assessed telemedicine effectiveness, fulfillment of patient needs, and satisfaction with project support. Additional analyses included response rates, demographics, and Net Promoter Score distribution across predefined performance zones. **Results:** Of the 1,144 surveys distributed to physicians, 469 (41%) were received. Among the respondents, 459 (97.8%) either agreed or strongly agreed that patient needs were adequately met, and 462 (98.6%) expressed overall satisfaction, resulting in a three-year average Net Promoter Score of 91. For patients, 35,743 (32%) responses were obtained from 111,730 distributed surveys. Among patient respondents, 35,493 (99.3%) indicated that their needs were met, with 26,200 (73.3%) rating the service as "excellent," with an average Net Promoter Score of 85 over the three years. Satisfaction scores from both groups fell within the Net Promoter Score "zone of excellence," underscoring the program's high performance in meeting expectations. **Conclusion:** The Telemedicine Expert Consultation program successfully achieved high satisfaction rates among patients and on-site physicians.

Keywords: Telemedicine; Patient satisfaction; Remote consultation; Surveys and questionnaires

INTRODUCTION

Brazil is a vast and diverse nation divided into five distinct regions. According to recent data from the Brazilian Institute of Geography and Statistics (IBGE - *Instituto Brasileiro de Geografia e Estatística*), 45% of Brazilian municipalities are characterized by low urbanization levels, emphasizing the importance of rural areas within the country's territorial structure. This uneven urbanization pattern indicates significant disparities in access to healthcare services, particularly in underserved and remote regions.⁽¹⁾

Figure 1 shows the physician and specialist distribution in Brazil.

The Northern region, while covering the largest geographical area in Brazil, has the lowest population density and faces substantial accessibility challenges. Many municipalities are accessible only by boats or aircraft,

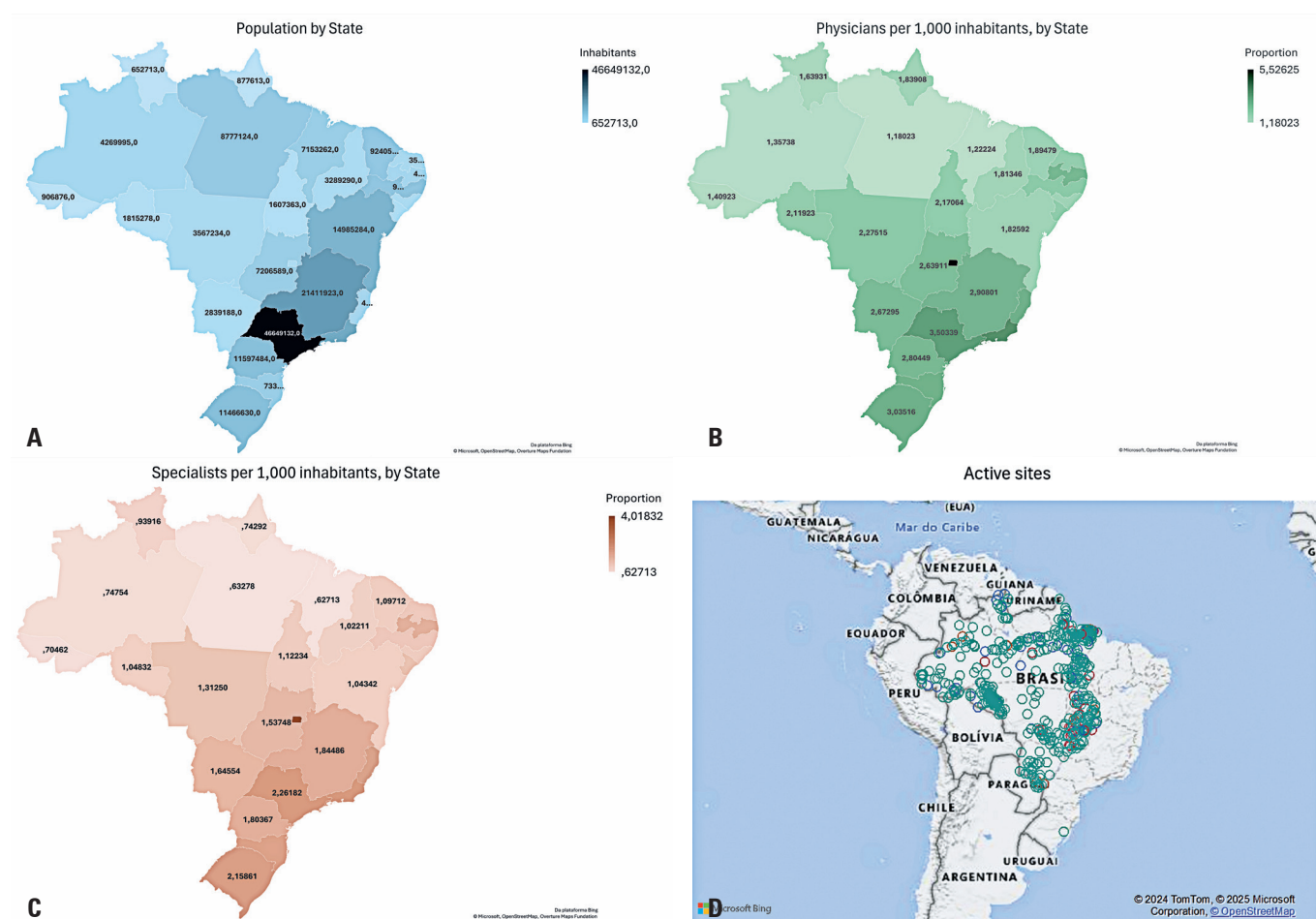


Figure 1. Distribution of centers, physicians, and specialists in Brazil. (A) Population distribution by state; (B) Physician-to-population ratio (per 1,000 inhabitants) by state; (C) Specialist-to-population ratio (per 1,000 inhabitants) by state; (D) Active sites (in green) across Brazil

complicating the delivery of healthcare services. A shortage of physicians, particularly specialists, within the Brazilian Public Health System (SUS - *Sistema Único de Saúde*) exacerbates these issues, significantly restricting access to specialized care. Consequently, numerous patients are deprived of essential consultations for managing complex health conditions.^(2,3)

The integration of the Comprehensive Specialist Teleconsultation Program (TEC - Telemedicine Expert Consultation), provided by *Hospital Israelita Albert Einstein* (HIAE), into the SUS in Brazil's Northern and Central-West regions represents an innovative approach to overcoming geographic and specialist access barriers. This program effectively mitigates the regional shortage of specialists by offering expert consultations to underserved areas while supporting local healthcare teams in adhering to current clinical

guidelines. By aligning patient management with evidence-based practices, TEC significantly enhances the quality of care delivered within the SUS network.⁽⁴⁾

The Support Program for the Institutional Development of the Unified Health System (PROADI-SUS - *Programa de Apoio ao Desenvolvimento Institucional do Sistema Único de Saúde*), in collaboration with the Telemedicine (TM) Center at *Hospital Israelita Albert Einstein*, has been delivering specialist teleconsultations to Brazil's Northern and Central-West regions since February 2020. Since its inception, the program has recorded continuous growth in the number of medical specialties, consultations, and active sites (Figure 2). As of January 2025, the TEC program includes 12 medical specialties, operates at 390 sites, and completed 9,075 appointments in the month of January, achieving an occupancy rate of 99.67%.

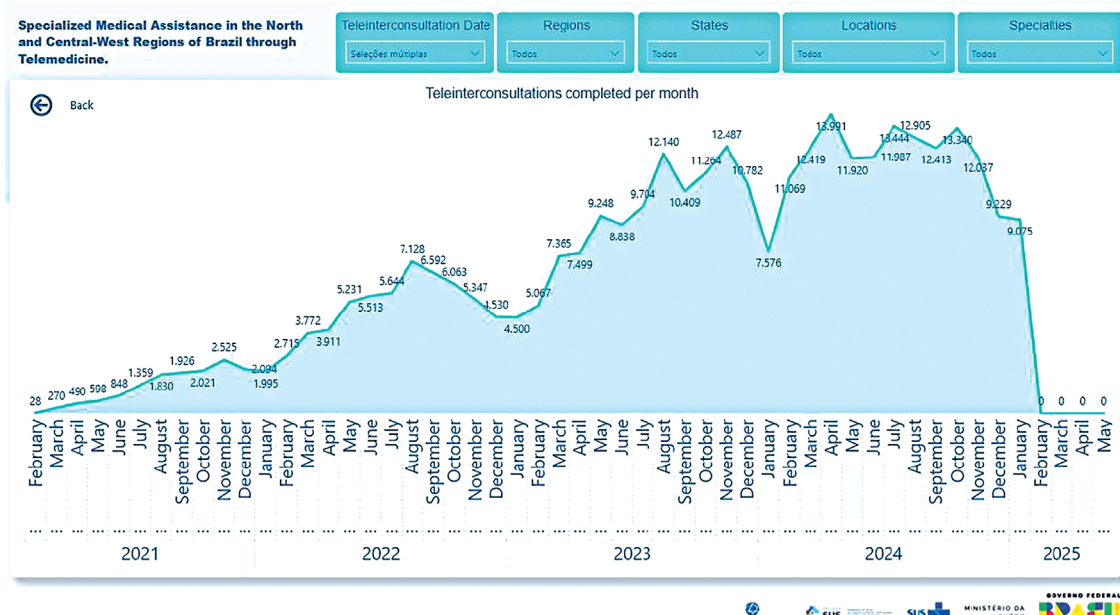


Figure 2. Telemedicine expert consultations completed per month

This study examined the Net Promoter Score (NPS) as a measure of satisfaction among patients and on-site physicians utilizing this comprehensive specialist teleconsultation service. While the expansion of TM presents significant opportunities, it also raises the possibility that increasing demand could negatively affect NPS scores due to potential strains on service quality or response times. Currently, no data exist on the impact of TM growth on NPS within this specific context, highlighting the need for further research to identify and address potential challenges. Evaluating these perspectives should provide critical insights into the program's impact, effectiveness, and areas for enhancement, offering a foundation for strengthening public-private TM partnerships.⁽⁵⁾

Telemedicine, specifically the TEC program, represents a strategic pathway to achieving the Quintuple Aim: enhancing patient experience, improving population health, reducing costs, supporting care team well-being, and promoting health equity. Preliminary data suggest that the program provides substantial clinical benefits, such as optimized treatment plans and more efficient allocation of healthcare resources. However, the satisfaction levels of patients and on-site physicians participating in the program remain underexplored, leaving a critical gap in understanding their perspectives on this TM initiative.^(6,7)

METHODS

This retrospective single-center study evaluated the TEC program implemented by the TM Center at *Hospital Israelita Albert Einstein*, targeting Brazil's Northern and Central-West regions. These areas cover 10 states and the Federal District, encompassing 390 active medical sites participating in the program. The analysis period extended from February 2021 to January 2025, during which satisfaction data were collected. Over this timeframe, the program conducted 198,690 consultations. Initially offering seven medical specialties, the program was expanded in January 2024 to include five additional specialties, increasing the total to 12. In 2024, the program averaged 12,106 consultations per month, demonstrating its growing scale and impact on healthcare accessibility in underserved regions.

Evaluating user satisfaction with TM poses distinct challenges owing to the multifaceted nature of the service and the absence of universally standardized assessment tools. To address these complexities, the program adopted NPS as the primary satisfaction metric, complemented by two additional parameters. These metrics were systematically collected from both patients and on-site physicians over the past three years. Survey participation was voluntary, with all individuals involved in the program invited to provide informed consent before completing the questionnaire.^(4,5)

The survey included three targeted questions for each group. For patients, the questions were: (1) "What

is your opinion of the Telemedicine care model?” (2) “Did you find the Telemedicine Expert Consultation satisfactory?” and (3) the NPS. For on-site physicians, the questions were: (1) “Do you believe the patient’s needs were met?” (2) “How satisfied are you with the support provided by Einstein’s project team?” and (3) the NPS. The NPS was asked as follows: “On a scale from 0 to 10, how likely are you to recommend the Telemedicine Specialist Consultation Program to a friend or family member? Where 10 means extremely likely and 0 means not at all likely, referring to the consultation provided via the Einstein Telemedicine system as part of the PROADI-SUS initiative by the Brazilian Ministry of Health.” Additionally, the study analyzed response rates, the total number of responses, and their distribution across states. This streamlined methodology aimed to ensure the collection of robust and actionable data while maintaining simplicity in evaluating satisfaction levels within the diverse TM ecosystem.

The response options to three questions were based on a five-point Likert Scale, and for the other one, it was binary as follows:

- “What is your opinion of the Telemedicine care model?”
Excellent, Good, Neutral, Poor, or Very poor.
- “Did you find the Telemedicine Expert Consultation satisfactory?”
Yes or No.
- “Do you believe the patient’s needs were met?”
Strongly agree, Agree, Neither agree nor disagree,

Disagree, or Strongly disagree.

- “How satisfied are you with the support provided by Einstein’s project team?”
Completely satisfied, Satisfied, Neither satisfied nor dissatisfied, Dissatisfied, or Completely dissatisfied.

The NPS was collected as usual and is presented as a score number stratified by zones (Excellence Zone, Quality Zone, Improvement Zone, and Critical Zone). The responses to the complementary research questions are presented as percentages, and the demographic data are presented as absolute numbers.

The study was approved by the research ethics committee of *Hospital Israelita Albert Einstein* (CAAE: 81436624.3.0000.0071; #7.469.723).

RESULTS

Physician feedback data were distributed across states, with the number of responses proportional to the volume of consultations conducted. Of the 1,144 surveys distributed to physicians, 469 (41%) were received. Among the respondents, 217 (46.2%) strongly agreed that the program met their needs, 242 (51.6%) agreed, eight (1.7%) remained neutral, one (0.2%) disagreed, and one (0.2%) strongly disagreed. Regarding satisfaction levels, 317 (67.5%) reported being strongly satisfied, 145 (31.0%) were satisfied, four (0.9%) were neutral, two (0.4%) were dissatisfied, and 1 (0.2%) was strongly dissatisfied. The program achieved an impressive overall average NPS of 91 during the three-year assessment period (Figure 3).

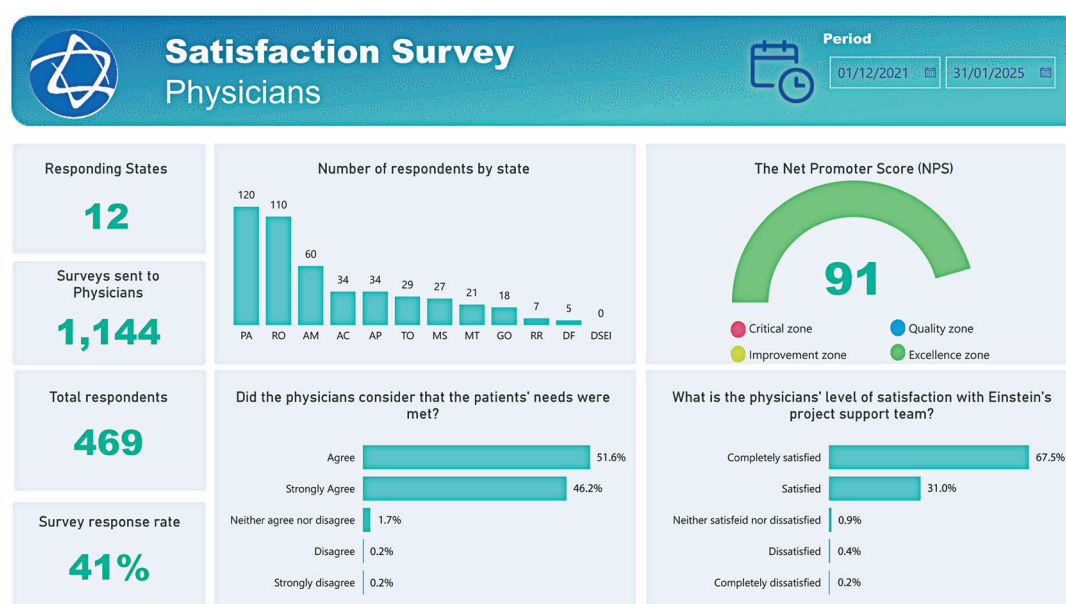


Figure 3. Physician survey

Patients similarly expressed highly positive feedback about the program. Across 11 states and the Federal District, 111,730 surveys were distributed, resulting in 35,743 (32%) responses. Notably, 35,493 (99.3%) respondents indicated that their needs had been met, with 26,200 (73.3%) rating the service as excellent, 8,793 (24.6%) as good, 643 (1.8%) as neutral, and only 71 (0.2%) as poor or 36 (0.1%) as very poor. The three-year average NPS for patients was 85, reflecting consistent satisfaction with the program (Figure 4).

DISCUSSION

Over the past three years, the TEC project has expanded to include additional states and medical sites, leading to a significant increase in consultations. This expansion has enhanced access to specialized care, promoted adherence to evidence-based treatment protocols, and improved population health while maintaining consistently high satisfaction levels among patients and on-site physicians. These outcomes align with the goals of the Quintuple Aim.^(6,7)

The survey response rate exceeded the average of 30% typically observed in healthcare NPS studies, with 32% of patients and 41% of on-site physicians participating. Both groups reported NPS scores within the “zone of excellence,” defined as scores above 76. For comparison, the average NPS in the healthcare sector is 58, with scores above 80 considered world-class. In 2023, top-ranking hospitals in the United States

achieved NPS values of 90 and 92. The NPS of the TEC program aligns with these benchmarks, underscoring its success in delivering satisfaction levels comparable to those of leading healthcare institutions worldwide.⁽⁸⁾

Although specialized questionnaires are available to evaluate various mHealth outcomes, general questionnaires with fewer items and greater reliability are more commonly used. Despite its simplicity and ease of interpretation, the NPS is utilized in only about 2% of virtual service satisfaction assessments.⁽⁵⁾ Most evaluations in virtual healthcare settings focus on usability rather than professional quality, emphasizing the need for more comprehensive tools to assess service quality, including clinical effectiveness and professional standards.⁽⁹⁾

Using the NPS as a standalone metric for assessing patient experience is particularly advantageous when patients have a choice of service, offering high survey completion rates, and ease of interpretation. However, limitations include factors such as age (*e.g.*, older patients are less likely to recommend services) and cultural differences, which influence the results. Evidence suggests that combining NPS with additional measures provides a more holistic evaluation of patient experience. Although NPS supports consistent intra-center comparisons, it presents challenges for cross-provider benchmarking.^(10,11)

A study on the adaptability of NPS in low-resource health clinics found that numerical scales were effective for clients with low literacy levels. Incorporating

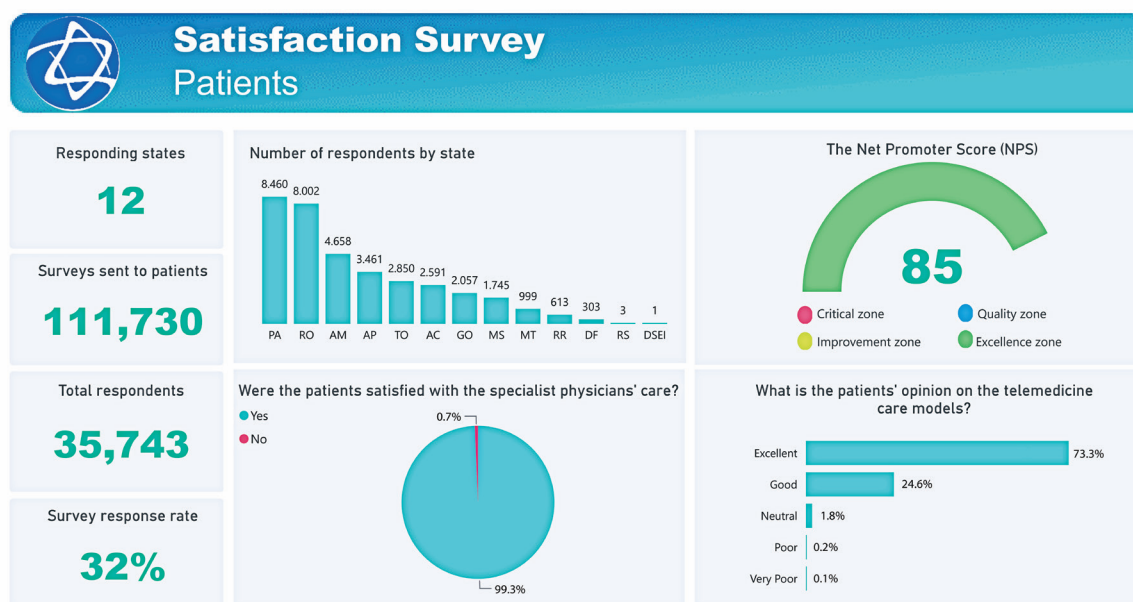


Figure 4. Patient survey

demographic data enriched the analysis of client satisfaction, and qualitative feedback was recommended for groups with low NPS scores to identify areas that require improvement. These findings highlight NPS as a promising tool for understanding client experiences in nonprofit healthcare settings.⁽¹²⁾ Additionally, our study evaluated satisfaction among more than patients with 30,000 chronic conditions, contrasting with prior studies of similar populations that typically included fewer than 100 patients. More than 400 physicians responded, a sample size exceeding that of most survey-based studies conducted in this profession. This highlights the scale and robustness of our analysis.⁽¹³⁾

A previous review of the subject revealed the use of various tools to assess quality, although no standardized scientific method was consistently applied. Most studies have focused on patient and provider experiences, with limited attention to health equity, costs, and sustainability. The TEC program achieved high satisfaction scores while improving equity by expanding access to services. It also significantly reduced costs by eliminating the need for patients to travel an average distance of over 1,000 km for specialist consultations. This reduction alleviated financial burdens and lowered carbon emissions, contributing to environmental sustainability.^(3,14)

A study examining tools for measuring process quality of care (QoC) in low- and middle-income countries highlighted the critical need for standardized methodologies. Client exit interviews, which are commonly used in these settings, often fail as reliable proxies for actual care quality. The study emphasized the importance of developing standardized tools and adopting a multimethod approach for more accurate and comprehensive QoC assessments.⁽¹⁵⁾

Over the past three years, the TEC program has undergone substantial growth, now encompassing 12 medical specialties, serving 390 active sites, and completing over 198,690 consultations. Throughout this expansion, patient and physician satisfaction levels have remained consistently high, with average NPS scores of 92 for physicians and 85 for patients—comparable to world-class benchmarks.⁽¹⁶⁾

By aligning with the Quintuple Aim—enhancing patient experience, improving population health, reducing costs, supporting care team well-being, and promoting health equity—the program has effectively addressed critical healthcare disparities in Brazil's Northern and Central-West regions. The TEC initiative has ensured adherence to evidence-based treatment protocols, optimized healthcare resource allocation,

and delivered clinical benefits that improve patient outcomes. Furthermore, its innovative TM approach has significantly reduced the need for long-distance travel, lowering emissions and contributing to environmental sustainability.^(7,17)

Although NPS is a valuable and user-friendly tool for assessing satisfaction, its limitations, including the influence of demographic and cultural differences on response patterns, highlight the need for complementary metrics to achieve a more comprehensive evaluation of QoC and patient outcomes. Integrating NPS with additional measures provides a more nuanced understanding of healthcare delivery performance and user experiences.

A key aspect of the program's success is its development and scaling by a hospital team with a culture of excellence accredited by the Joint Commission International. This accreditation ensures that professional quality standards and evidence-based care protocols are seamlessly integrated into the virtual care model, maintaining the highest levels of clinical excellence.⁽¹⁸⁾

CONCLUSION

The Comprehensive Specialist Teleconsultation program, implemented by *Hospital Israelita Albert Einstein*, has delivered healthcare services to underserved and predominantly remote communities, achieving high satisfaction scores (NPS: 91 for physicians and 85 for patients). The program aligns with the Quintuple Aim framework, which extends beyond healthcare optimization to encompass an exceptional user experience. Grounded in operational excellence and innovative service delivery, the Comprehensive Specialist Teleconsultation program represents a scalable model that integrates high user satisfaction, offering a strategic approach to addressing global healthcare challenges.

AUTHORS' CONTRIBUTION

Francisco Jose Nigro Mazon: article writing. Ana Eliza Acerbi Sarti: data collection. Bruna Dayanne Reges Amaral and Marianne Pojoli de Arruda: data collection and image editing. Tarso Augusto Duenhas Accorsi: article design, data analysis, and article writing. Renata Albaladejo Morbeck, Flavio Tocci Moreira and Carlos Henrique Sartorato Pedrotti: article design and article writing.

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