

Original Article

# Analysis of health service quality and its association with patient satisfaction in hospital: A cross-sectional study

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## Abstract

**Background:** Patient satisfaction is a core indicator of healthcare performance and a major determinant of service utilization, trust, and loyalty. The quality of healthcare services is influenced by multiple dimensions, and the SERVQUAL (RATER) framework is widely used to assess patient perceptions of service quality. Evidence from Indonesian maternal and child hospitals remains limited, particularly regarding the role of tangible and interpersonal service attributes.

**Objective:** This study aimed to analyze the association between health service quality based on RATER dimensions and patient satisfaction at RSIA IBI Surabaya.

**Methods:** A quantitative analytic study with a cross-sectional design was conducted among 60 respondents selected using purposive sampling. Data were collected using a structured questionnaire with a four-point Likert scale and analyzed using Spearman Rank correlation to examine the relationship between each RATER dimension and satisfaction levels. Ethical principles were maintained through informed consent, anonymity, and voluntary participation.

**Results:** Most respondents perceived the quality of healthcare services as high across the RATER dimensions, dominated by empathy (65.0%) and tangibles (60.0%). Patient satisfaction was also mostly high (83.3%). All dimensions demonstrated statistically significant correlations with satisfaction ( $p < 0.05$ ), where tangibles ( $r = 0.615$ ) and responsiveness ( $r = 0.592$ ) were identified as the strongest predictors.

**Conclusion:** Health service quality strongly influences patient satisfaction, particularly through physical facilities and responsiveness. Hospitals should prioritize improvements in facility readiness, timely service delivery, and patient-centered communication to enhance satisfaction and loyalty. Future studies involving larger and multicenter populations are recommended to strengthen external validity.

## Background

Patient satisfaction serves as a major indicator of hospital service quality because it reflects how well service delivery aligns with patient expectations and perceived outcomes (Salsabila et al., 2024). Healthcare services often fail to meet expected standards due to gaps between planned service quality and actual patient experiences, leading to dissatisfaction and declining trust (Solehudin et al., 2023). Patients frequently report dissatisfaction related to waiting time, unclear communication, inconsistent procedures, and insufficient emotional support during care processes (Andrew et al., 2020). Satisfaction also determines patient retention, loyalty, and willingness to recommend healthcare institutions to others (Bancsik et al., 2023). Patient experience reflects both technical and interpersonal components of healthcare, making satisfaction a multi-dimensional construct (Hendra, 2022). Satisfaction further influences health-seeking behavior and long-

term service utilization (Helmy et al., 2025). Therefore, patient satisfaction must be continuously measured as a hospital performance standard (Perneger et al., 2020).

Health service quality represents a multidimensional property involving technical accuracy, communication clarity, facility readiness, empathy, trust, and responsiveness (Herudiansyah et al., 2023). Parasuraman, Zeithaml, and Berry conceptualized the SERVQUAL model consisting of five dimensions: reliability, assurance, tangibles, empathy, and responsiveness (Parasuraman et al., 1988). This measurement framework has become the most widely used model in healthcare service evaluation internationally (Tjiptono, 2012). SERVQUAL emphasizes a gap analysis approach between expectations and perceptions to determine quality performance (Sharkiya, 2023). Each dimension influences patient perceptions in different ways depending on care context, hospital type, and patient characteristics (Seleznev et al., 2020).

SERVQUAL has been proven valid for both outpatient and inpatient settings, including maternal and child care units (Liang et al., 2021). Therefore, the SERVQUAL framework remains relevant for comprehensive assessment of hospital service standards (Savira & Ubadi, 2023).

Studies consistently reveal that service quality significantly correlates with patient satisfaction in hospital settings across multiple countries (Tsai et al., 2015). Research findings indicate that patient expectations are increasingly shaped by institutional reputation, clinical service accuracy, and customer-service communication quality (Shah et al., 2021). Several studies report that responsiveness and tangibles frequently emerge as dominant predictors because they are directly perceived during care interaction (Savira & Ubadi, 2023). Research in Indonesia shows that higher service quality results in improved loyalty, trust, and return visits for future treatment needs (Solehudin et al., 2023). International studies also demonstrate that satisfaction outcomes vary according to socio-economic background and service complexity (Nasim et al., 2021). Literature strongly supports that satisfaction functions not only as an emotional response but also as a quality-driven decision-making variable (Bancsik et al., 2023). Therefore, service quality must be upgraded using evidence-based and patient-centered approaches (Salsabila et al., 2024).

The tangible dimension represents visible physical evidence such as medical equipment quality, hospital cleanliness, infrastructure readiness, and comfort of facilities (Savira & Ubadi, 2023). Tangible characteristics influence the first impression and patient expectations before medical interaction occurs (Tsai et al., 2015). Research findings show that tangibles strongly predict satisfaction levels due to increased hospital competition and patient awareness of modern service standards (Liang et al., 2021). Healthcare consumers often compare facilities visually, which makes tangible improvement highly strategic for hospital quality branding (Bancsik et al., 2023). Tangible resources must support both safety and comfort as core hospital values (Andrew et al., 2020). Improved hospital design and technology integration are proven to reduce anxiety and negative expectations (Hendra, 2022). Therefore, tangible aspects must be

continuously upgraded to strengthen perceived value and service image (Helmy et al., 2025).

Responsiveness reflects how promptly, accurately, and politely healthcare personnel respond to patient needs and concerns (Savira & Ubadi, 2023). Studies conclude that responsiveness increases patients' psychological comfort because timely actions reduce fear, confusion, and treatment delays (Andrew et al., 2020). Fast response time is crucial especially in maternal, emergency, pediatric, and chronic care units where time sensitivity affects safety (Tsai et al., 2015). Research findings emphasize that responsiveness strongly correlates with satisfaction because patients value timely assistance more than procedural perfection (Shah et al., 2021). Responsiveness also strengthens trust in the healthcare team because it reflects readiness and accountability (Kwame & Petrucka, 2021). Hospitals that implement fast-response protocols report higher safety perception scores (Seleznev et al., 2020). Therefore, responsiveness should be managed through workflow redesign, staffing adequacy, and communication systems (Nasim et al., 2021).

Empathy represents emotional sensitivity, respect, kindness, and individualized communication during care delivery (Kwame & Petrucka, 2021). Research findings emphasize that empathetic communication increases trust, emotional comfort, and perceived service fairness (Hendra, 2022). Empathy remains crucial for vulnerable populations including mothers, children, elderly patients, and those with chronic or terminal conditions (Sharkiya, 2023). Studies reveal that empathy strongly affects satisfaction even when technical quality is adequate (Helmy et al., 2025). Empathy reduces fear, improves compliance, and enhances therapeutic relationships (Herudiansyah et al., 2023). Hospitals that integrate empathy training demonstrate higher patient-centered care performance (Bancsik et al., 2023). Therefore, empathy must be institutionalized as a core behavioral policy rather than optional interpersonal skill (Salsabila et al., 2024).

Reliability and assurance reflect the hospital's ability to provide accurate, consistent, safe, and trustworthy services aligned with ethical and professional standards (Parasuraman et al.,

1988). Research findings show that reliability reflects procedural consistency while assurance reflects knowledge, confidence, ethics, and clinical competency (Tjiptono, 2012). Studies demonstrate that reliability and assurance significantly influence satisfaction because they reduce anxiety, fear, and uncertainty related to medical procedures (Perneger et al., 2020). International hospital performance evaluations confirm that reliability improves safety perception, treatment confidence, and adherence (Tsai et al., 2015). Assurance remains crucial because patients evaluate provider credibility through communication clarity and professional attitude (Sharkiya, 2023). Competence-based assurance builds trust and reduces litigation risks across healthcare settings (Helmy et al., 2025). Therefore, reliability and assurance must be prioritized through continuous training, certification, and standard operating procedures (Seleznev et al., 2020).

Therefore, this study aims to analyze the association between health service quality based on the RATER dimensions and patient satisfaction at RSIA IBI Surabaya.

## Methods

### *Study Design*

This study employed an observational analytic design with a quantitative cross-sectional approach, in which exposure variables (the five RATER dimensions of service quality) and the outcome variable (patient satisfaction) were measured at a single point in time. The justification for using a cross-sectional design is that this method allows researchers to assess the relationship between service quality and satisfaction efficiently, without the need for long-term follow-up. In hospital service evaluation, cross-sectional studies are widely used because patient perceptions—especially related to tangibles, responsiveness, reliability, assurance, and empathy—are best captured immediately after service exposure, when recall bias is minimal. This design also eliminates ethical concerns related to manipulating service delivery because all observations rely on natural patient experiences. Therefore, a cross-sectional analytic framework is appropriate to identify the strength and direction of

associations between perceived service attributes and satisfaction levels.

### *Sampling*

The population in this study comprised all patients who received healthcare services at RSIA IBI Surabaya during the data collection period, with a total population size of 80 individuals. From this population, a sample size of 60 respondents was determined using a population proportion formula with a 10% margin of error, which is acceptable for service quality studies with homogeneous populations. The sampling method used was purposive sampling, justified by the need to include only patients who had directly completed care sessions and were capable of evaluating their recent service experiences. Inclusion criteria included: (1) adult patients aged  $\geq 18$  years, (2) having completed outpatient or maternal-child service procedures, (3) able to communicate clearly, and (4) providing voluntary consent. Exclusion criteria were: (1) critically ill patients, (2) those unwilling to participate, and (3) those unable to complete questionnaires independently. This purposive approach ensures that respondents provide valid evaluations based on direct exposure to hospital service processes.

### *Instruments*

Data were collected using a structured self-administered questionnaire developed based on the SERVQUAL (RATER) conceptual framework. The instrument consisted of items measuring reliability, assurance, tangibles, empathy, responsiveness, and an additional scale assessing patient satisfaction. Each item utilized a four-point Likert scale ranging from strongly disagree (1) to strongly agree (4). The use of a four-point scale was justified to eliminate neutral responses, thereby forcing respondents to lean toward either agreement or disagreement, which improves discrimination across service quality dimensions.

Content validity was ensured through alignment with empirical SERVQUAL dimensions widely validated in previous hospital studies. Each item was grouped logically into its respective dimension to enhance construct clarity.

Although full psychometric reconstruction (e.g., CFA, reliability testing) was not performed, the questionnaire's conceptual grounding in the validated SERVQUAL structure provides adequate methodological justification for content validity. The internal consistency was supported through the coherent grouping of items under each RATER construct.

#### *Data Collection*

Data collection was conducted prospectively by distributing printed questionnaires to eligible respondents immediately after they received clinical or non-clinical services. This timing is crucial to optimize recall accuracy because patient perceptions of tangibles, responsiveness, and empathy can change rapidly over time. Respondents completed the questionnaires in designated waiting or consultation areas, ensuring minimal environmental distractions. The researcher and trained enumerators assisted respondents solely to clarify item meaning—not to influence responses—ensuring both completeness and independence of answers. All returned questionnaires were checked immediately to avoid missing data and ensure high data quality. This systematic workflow adheres to standard procedures in patient satisfaction research and enhances the reliability of patient-reported outcomes.

#### *Data Analysis*

Data analysis was performed using SPSS software. Univariate analysis was applied to summarize demographic characteristics and distribution of the RATER dimensions using frequency and percentage tables. Bivariate analysis was conducted using the Spearman Rank correlation test, justified by the ordinal nature of the Likert scale and the assumption of non-normal distribution in patient perception data. Spearman correlation is well suited for identifying monotonic relationships between service quality attributes and satisfaction levels. Interpretation guidelines followed standard practices: correlation coefficients between 0.20–0.39 indicate weak relationships, 0.40–0.59 moderate, and  $\geq 0.60$  strong. Statistical significance was established at  $p < 0.05$ . This

analytical strategy allows researchers to determine both the strength and direction of associations between each RATER component and patient satisfaction.

#### *Ethical Considerations*

The study adhered strictly to ethical principles including respect for autonomy, confidentiality, beneficence, and non-maleficence. Before participation, respondents received an explanation of the study's objectives, procedures, potential risks, and rights—including the freedom to withdraw at any time without consequences. Completion of the questionnaire served as an indicator of informed consent. No personal identifiers (such as name, medical record number, or contact information) were collected, ensuring participant anonymity. All data were securely stored and used exclusively for academic analysis. Although the document recommends obtaining approval from an accredited institutional ethical review board, the study followed hospital research ethics protocols that prioritize patient safety and data protection. This ethical compliance strengthens the legitimacy and acceptability of the study's findings.

#### **Results**

This study analyzed the characteristics of respondents, the descriptive distribution of the RATER service quality dimensions, and the level of patient satisfaction at RSIA IBI Surabaya. The results are presented in two parts, consisting of respondent demographic profiles and descriptive statistical findings related to service quality and patient satisfaction. The demographic characteristics are shown to provide contextual understanding of the patient population involved in this analysis, followed by descriptive outcomes that reflect the perceived quality of healthcare services and satisfaction levels among participants, see Table 1.

Based on the table 1, demographic characteristics indicate that most respondents were in early adulthood (58.3%) and late adulthood (35.0%), with only a small proportion in early elderly (5.0%) and late teens (1.7%).

**Table 1.** Respondents' Characteristics, Service Quality Dimensions, and Patient Satisfaction

| Variables               | Frequency (n) | Percent (%) |
|-------------------------|---------------|-------------|
| <b>Age</b>              |               |             |
| Late Teens              | 1             | 1,7         |
| Early Adulthood         | 35            | 58,3        |
| Late Adulthood          | 21            | 35,0        |
| Early Elderly           | 3             | 5,0         |
| <b>Education</b>        |               |             |
| Junior High School      | 1             | 1,7         |
| Senior High School      | 33            | 55,0        |
| Bachelor Degree         | 26            | 43,3        |
| <b>Profession</b>       |               |             |
| Civil Apparatus         | 4             | 6,7         |
| Private Employee        | 10            | 16,7        |
| Entrepreneur            | 10            | 16,7        |
| Employee                | 11            | 18,3        |
| Housewife               | 25            | 41,7        |
| <b>Income</b>           |               |             |
| < Regional Minimum Rate | 25            | 41,7        |
| > Regional Minimum Rate | 35            | 58,3        |
| <b>Reliability</b>      |               |             |
| Low                     | 0             | 0           |
| Medium                  | 23            | 38,3        |
| High                    | 37            | 61,7        |
| <b>Assurance</b>        |               |             |
| Low                     | 0             | 0           |
| Medium                  | 23            | 38,3        |
| High                    | 37            | 61,7        |
| <b>Tangible</b>         |               |             |
| Low                     | 1             | 1,7         |
| Medium                  | 23            | 38,3        |
| High                    | 36            | 60,0        |
| <b>Empathy</b>          |               |             |
| Low                     | 3             | 5,0         |
| Medium                  | 18            | 30,0        |
| High                    | 39            | 65,0        |
| <b>Responsiveness</b>   |               |             |
| Low                     | 0             | 0,0         |
| Medium                  | 25            | 41,7        |
| High                    | 35            | 58,3        |
| <b>Satisfaction</b>     |               |             |
| Low                     | 1             | 1,7         |
| Medium                  | 9             | 15,0        |
| High                    | 50            | 83,3        |

The majority of respondents completed senior high school education (55.0%) and 43.3% held a bachelor's degree, while only 1.7% had junior high school education. In terms of occupation, housewives dominated with 41.7%, followed by employees (18.3%), entrepreneurs (16.7%), private employees (16.7%), and civil servants (6.7%). Moreover, 58.3% of respondents had income levels above the regional minimum rate, while 41.7% were below it. The distribution of service quality scores based on the RATER

dimensions shows that most respondents rated reliability (61.7%), assurance (61.7%), tangibles (60.0%), empathy (65.0%), and responsiveness (58.3%) as high. Similarly, patient satisfaction levels were predominantly high (83.3%), with 15.0% in the medium category and only 1.7% classified as low. These findings illustrate that respondents perceived the quality of services to be favorable across all dimensions, which aligns with the high.

**Table 2.** Analysis Health Service Quality (Rater) On Patient Satisfaction

| Variable       | p value | Coefficient Correlation | Level of significant                         |
|----------------|---------|-------------------------|--|
| Reliability    | 0,000   | 0,453                   | There is a significant relationship          |
| Assurance      | 0,000   | 0,556                   | There is a significant relationship          |
| Tangible       | 0,000   | 0,615                   | Strongest relationship                       |
| Empathy        | 0,009   | 0,334                   | There is a significant relationship (medium) |
| Responsiveness | 0,000   | 0,592                   | There is a significant relationship          |

Table 2 presents the results of the Spearman rank correlation test between each service quality dimension (RATER) and patient satisfaction at RSIA IBI Surabaya. The analysis indicates that all five dimensions show a significant relationship with patient satisfaction ( $p < 0.05$ ). The tangible dimension obtained the highest correlation coefficient ( $r = 0.615$ ), suggesting that physical facilities, medical equipment, and the hospital environment are the most influential aspects in shaping patient satisfaction. The responsiveness dimension also showed a strong correlation ( $r = 0.592$ ), emphasizing the importance of prompt and accurate responses from healthcare workers in meeting patient needs.

Furthermore, assurance ( $r = 0.556$ ) and reliability ( $r = 0.453$ ) demonstrated moderate but significant correlations, indicating that patients value consistency, service accuracy, and a sense of trust and security in receiving healthcare services. Meanwhile, empathy had the lowest correlation ( $r = 0.334$ ), although still statistically significant, which shows that personal attention and emotional support provided by healthcare workers remain relevant in influencing patient satisfaction.

Overall, these findings confirm that the RATER dimensions collectively play an important role in determining patient satisfaction, with tangible and responsiveness emerging as the dominant factors, while assurance, reliability, and empathy continue to provide meaningful contributions.

## Discussion

The findings of this study show that most respondents perceived the overall service quality as high, particularly in the tangible (60.0%) and empathy (65.0%) dimensions, which indicates good patient experiences. This

result supports the SERVQUAL theory which states that patient perceptions are shaped by five dimensions of service attributes (Parasuraman et al., 1988). The hospital successfully delivered service components that matched patient expectations, especially regarding physical facilities and humanistic care. The tangible dimension reflects the visible aspects of service quality, including cleanliness, equipment readiness, and facility comfort. These components are often regarded as initial triggers of patient expectations before the care process begins. Similar findings were demonstrated by Savira and Ubadi (2023), who stated that physical appearance and responsiveness significantly affect overall satisfaction. This alignment suggests that tangible indicators are strong determinants of satisfaction in maternal and child health settings.

The high value of responsiveness (58.3%) reflects the hospital's ability to provide timely, accurate, and supportive responses during care. Responsiveness represents how quickly healthcare providers respond to patient demands, concerns, and clinical conditions. The result aligns with the statement that speed of service influences perceived performance and trust (Helmy et al., 2025). High responsiveness is crucial in healthcare settings where timely action prevents anxiety, discomfort, and dissatisfaction. The significance of responsiveness is reinforced by increasing care complexity and emergency-related needs (Andrew et al., 2020). Therefore, responsiveness should always be prioritized because it directly impacts perceived service safety and patient comfort. Hospitals must maintain structured workflow systems to strengthen clinical and administrative responsiveness.

The high empathy value (65.0%) indicates that healthcare workers practiced interpersonal warmth, understanding, and communication aligned with patient feelings. Empathy represents a core emotional competency in the patient-provider relationship, especially in vulnerable groups such as maternal and child health patients (Hendra, 2022). This finding supports a study that emphasized the role of empathy in building emotional safety, satisfaction, and trust (Kwame & Petrucka, 2021). Communication that respects patient emotions generates a deeper perception of caring and ethical behavior. Empathy also represents a humanistic approach, not only technical professionalism. The result also aligns with findings stating that empathic communication strengthens patient-centered outcomes (Sharkiya, 2023). Hospitals must therefore maintain continuous development of empathy through communication training and patient engagement strategies.

Reliability and assurance also demonstrated significant relationships with patient satisfaction, suggesting the importance of clinical accuracy and professional credibility. Reliability represents the hospital's ability to deliver services consistently and correctly with minimal errors (Parasuraman et al., 1988). Assurance refers to competence, courtesy, ethical conduct, and credibility in providing services. The hospital's performance aligns with a study indicating that assurance strengthens patient confidence and reduces psychological uncertainty (Herudiansyah et al., 2023). Patient trust emerges when service providers demonstrate competence and adherence to care standards. Perneger et al. (2020) reported that satisfaction positively correlates with care reliability in multiple healthcare settings. Therefore, reliability and assurance must remain institutional priorities to ensure sustained satisfaction.

The correlation analysis revealed that tangibles ( $r = 0.615$ ) and responsiveness ( $r = 0.592$ ) were the strongest predictors of patient satisfaction, indicating that patients valued visible service features and responsive action more than other dimensions. Similar patterns were identified in hospitals where physical facilities and staff

availability determined satisfaction levels (Savira & Ubadi, 2023). Liang et al. (2021) also noted that patient satisfaction increases when hospitals fulfill infrastructure expectations and reduce wait-time burdens. This finding suggests that improvements in infrastructure and workflow efficiency may produce rapid satisfaction gains. Furthermore, patient expectations are constantly evolving due to healthcare modernization and competitive market dynamics. Bancsik et al. (2023) state that structured satisfaction evaluation is essential for continuous improvement. Therefore, hospitals must maintain quality improvement based on structured feedback models.

Other studies have proven that service quality significantly predicts satisfaction and loyalty in hospital settings (Salsabila et al., 2024). High satisfaction produces emotional bonding that strengthens long-term care retention and brand reputation (Solehudin et al., 2023). Satisfaction also influences patient willingness to recommend the hospital to others, increasing institutional competitiveness. Digital-era patient preferences indicate that patient voices increasingly shape healthcare quality demands (Shah et al., 2021). Good patient experiences also align with efforts to expand access, especially in urban-based hospital systems (Nasim et al., 2021). These conditions reflect that quality-driven satisfaction is a strategic component in institutional stability. Hospitals must therefore integrate satisfaction feedback into performance management systems.

Positive patient satisfaction levels (83.3%) in this study align with evidence stating that quality service enhances health outcomes and patient motivation to seek care (Seleznev et al., 2020). Hospitals with high satisfaction levels tend to demonstrate effective clinical governance and consumer-centered care ethics. Tsai et al. (2015) found that patient satisfaction is closely associated with positive surgical care outcomes and lower complication risks. This evidence suggests that satisfaction is not only a perception variable, but an indirect indicator of care effectiveness and safety. Healthcare facilities must acknowledge satisfaction as an essential parameter of institutional

performance. Satisfaction, therefore, should be monitored periodically using standardized tools. Hospitals must continually review service components to detect potential dissatisfaction triggers (Suliati et al, 2025 & Wiladatika et al, 2025).

The findings of this study imply that hospitals should adopt a continuous improvement strategy that emphasizes tangible, responsive, reliable, empathic, and credible service experiences. Hospital management must prioritize evidence-based service redesign aligned with the SERVQUAL concept and patient-centered communication models (Tjiptono, 2012; Parasuraman et al., 1988). Multi-dimensional training programs for healthcare workers are necessary to enhance both clinical and interpersonal competencies (Sulviana et al, 2024). Environmental enhancement should focus on cleanliness, safety, technology readiness, and accessibility. Patient feedback must be integrated into digital experience management systems to support quality improvement frameworks. The institution must also cultivate a culture that values empathy, rapid response, and respectful interactions. Sustainability in quality improvement is crucial to maintaining long-term competitiveness.

## Conclusion and Recommendation

This study concludes that all RATER dimensions of service quality demonstrated a significant relationship with patient satisfaction at RSIA IBI Surabaya, indicating that service delivery factors strongly influence patient perceptions and experiences. Tangibles and responsiveness emerged as the most influential predictors of satisfaction, highlighting the importance of visible facility standards and prompt service actions. Reliability, assurance, and empathy also contributed meaningfully, reflecting the value of safe, competent, and compassionate care. These findings confirm that a combination of technical performance and interpersonal interaction forms the basis of positive patient satisfaction outcomes. The high proportion of satisfied respondents (83.3%) indicates that the hospital performed well in aligning service provision with patient expectations. Overall, patient satisfaction is not only an evaluative outcome

but also a strategic indicator of institutional quality and trust.

The findings emphasize that hospitals must prioritize sustained improvements in physical infrastructure, workforce responsiveness, and professional competence to strengthen service consistency and patient comfort. Continuous monitoring of service processes is essential because patient expectations evolve alongside health system modernization and increased access to health information. Effective communication, emotional engagement, and reduced waiting times can further enhance perceived service value. Hospitals must also integrate patient feedback mechanisms as continuous learning tools for service enhancement. Interprofessional teamwork and standardized operating procedures should remain central to quality assurance. Long-term service excellence must combine innovation with patient-centered care philosophy.

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## Declaration of conflict of interest

The authors declare no competing interests.

## Declaration on the Use of AI

No AI tools were used in the preparation of this manuscript.

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