



A Systematic Review of the Kano Model's Utility in Classifying Healthcare Service Attributes and Driving Patient Satisfaction

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<p>Track Record Article</p> <p>Revised: 29 December 2025 Accepted: 27 February 2026 Published: 31 March 2026</p> <p>How to cite : Irianti, G. F., Jati, S. P., & Purnami, C. T. (2026). A Systematic Review of the Kano Model's Utility in Classifying Healthcare Service Attributes and Driving Patient Satisfaction. <i>Contagion : Scientific Periodical of Public Health and Coastal Health</i>, 8(1), 238–245.</p>	<p style="text-align: center;">Abstract</p> <p><i>Patient satisfaction is a key indicator of hospital service quality, closely linked to patient loyalty, clinical outcomes, and the reputation of health institutions. However, identifying specific attributes that determine patient satisfaction and dissatisfaction remains a challenge amid the ever-evolving dynamics of healthcare services. The Kano Model offers a useful framework by categorizing service attributes according to their impact on patient satisfaction. This study presents a systematic literature review of the model's application in hospitals, conducted using the PRISMA protocol. Searches across PubMed, Scopus, and ProQuest for publications from 2019 to 2024 yielded 17 eligible international journal articles, which were analyzed narratively to identify patterns, methods, and findings. Results consistently revealed a hierarchy of patient needs: clinical competence, safety, and accurate information emerged as Must-be attributes, whose absence leads to strong dissatisfaction. Communication quality, responsiveness, and service efficiency were typically One-dimensional attributes, with satisfaction rising proportionally to performance. Digital innovations such as telehealth and personalized services often appeared as Attractive attributes, delighting patients when present but not causing dissatisfaction when absent. Attribute classification proved dynamic, shaped by clinical context and patient demographics. Furthermore, integrating the Kano Model with frameworks such as SERVQUAL and the Balanced Scorecard enhances strategic prioritization. Several studies also demonstrated that Kano-based interventions can improve both clinical and psychological patient outcomes.</i></p> <p>Keywords: <i>Patient Satisfaction, Hospital, Kano Model, Service Quality.</i></p>
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INTRODUCTION

In today's global era, patient satisfaction has become a vital measure of healthcare services (Ferreira et al., 2023). It influences not only hospital loyalty and reputation but also clinical outcomes, operational efficiency, and service sustainability. For example, a study in Malaysia found that patient perceptions of service quality, assessed through SERVQUAL dimensions, significantly shaped satisfaction and hospital evaluation (Rahim et al., 2021). Despite this importance, many hospitals continue to struggle with identifying the specific factors that drive satisfaction or dissatisfaction, particularly in the rapidly evolving context of technological innovation, digitalization, and shifting patient expectations.

In this context, the Kano Model has gained increasing use. Originally developed for product evaluation, it has since been applied to healthcare services because of its ability to classify service attributes into five categories: Must-be, One-dimensional, Attractive, Indifferent, and Reverse (Barrios-Ipenza et al., 2021). This framework enables organizations

to prioritize service improvements based on their impact on patient satisfaction and dissatisfaction. For example, a study in Peru assessed two hospitals using the Kano model and found that most service attributes fell into the one-dimensional category, indicating that enhancing these attributes proportionally increased patient satisfaction (Barrios-Ipenza et al., 2021).

Recent empirical studies have applied the Kano Model across diverse healthcare contexts, including pediatric care (H. Tang et al., 2025) chronic disease management, and specialist outpatient services (X. Wang et al., 2025). Findings consistently highlight that fundamental attributes such as safety and clinical competence (Must-Be) form the essential foundation of patient satisfaction. Meanwhile, factors like communication and service performance (One-Dimensional) and digital service innovation (Attractive) contribute in varying ways to shaping overall experiences. Furthermore, integrating the Kano Model with quality management frameworks such as SERVQUAL and the Balanced Scorecard has demonstrated synergistic benefits, enabling more precise prioritization of improvement strategies (Cao et al., 2025; de Vasconcelos et al., 2023).

The application of the Kano Model in healthcare offers a conceptual framework for hospital management in setting investment priorities and improving service processes. However, several research gaps remain. Building on this, the present study seeks to identify and map the service attributes that influence patient satisfaction in hospitals using the Kano model. Specifically, this scoping review aims to synthesize the latest empirical evidence on the model's implementation in the context of patient satisfaction. The ultimate goal is to provide evidence-based guidance for planning and enhancing healthcare service quality.

METHODS

Research Design

This study aims to identify, evaluate, and synthesize scientific evidence related to the implementation of the Kano Model in the context of patient satisfaction. To ensure transparent, complete, and high-quality reporting of systematic reviews, PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) was used in this study. The main goals of PRISMA are transparency, completeness, and comparability, allowing researchers to select, analyze, and interpret the literature reviews.

Literature Findings Strategy

The literature findings in this study were carried out through three indexed electronic databases: PubMed, Scopus, and Proquest. Publications were included if published between 2019 and 2025. Keywords were grouped into three main categories using Boolean operators (AND, OR), namely "Satisfaction, Patient" OR "Consumer Satisfaction" OR "Kano Model" AND "hospital".

Inclusion and Exclusion Criteria

The inclusion criteria were literature that was published between 2019 and 2025 as original research, available in full text, Open access, and the language used was English. The exclusion criteria mentioned in this paper are studies related to patient satisfaction and loyalty in non-hospital settings.

Analysis of Results

The extracted data were analyzed narratively and presented in a synthesis table. Barriers were grouped into main themes based on conceptual similarities to facilitate interpretation and discussion. Figure 1 shows the PRISMA flow diagram summarizing the eligibility and selection process.

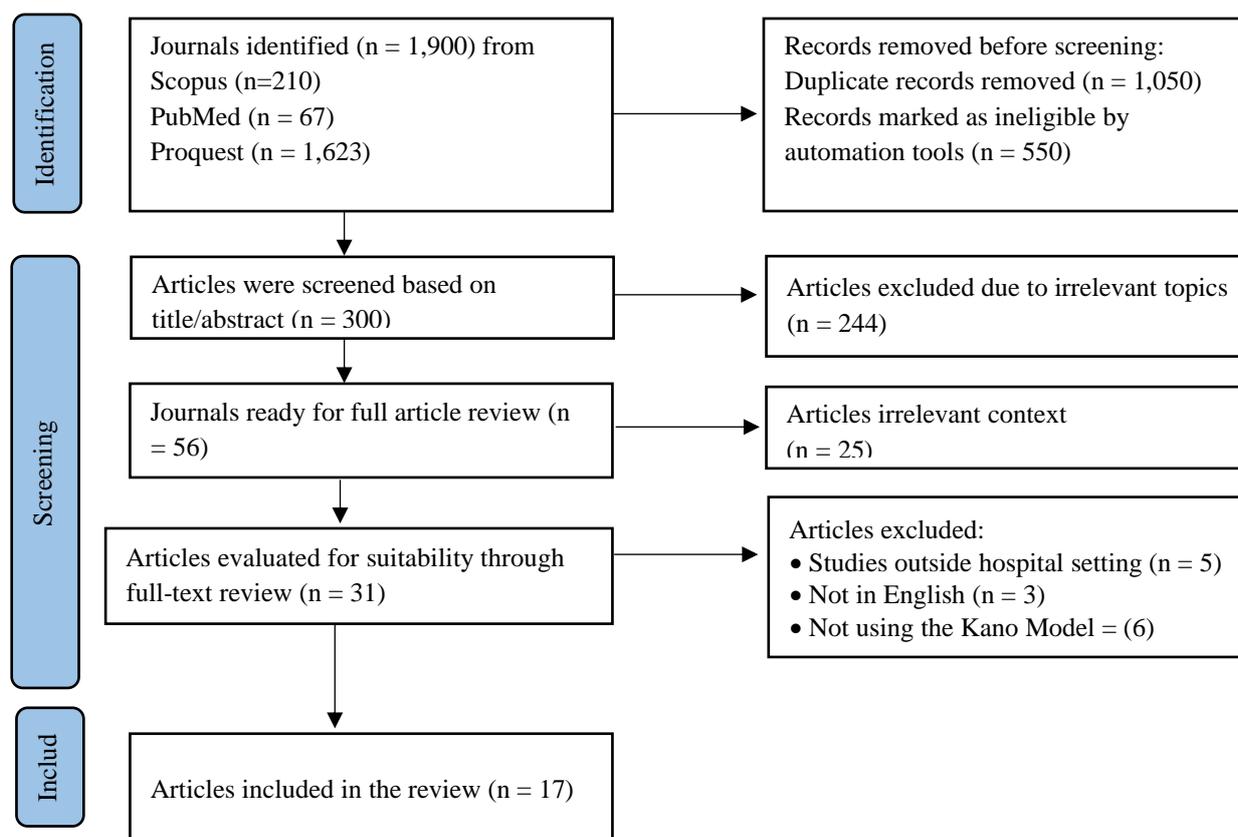


Figure 1 . PRISMA Diagram Flow

RESULTS

Based on the systematic literature review mapping presented in Table 1, several key findings emerge regarding the use of the Kano Model in assessing patient satisfaction. The model effectively categorizes patient needs and expectations into four main categories: *Must-be* (M), *One-dimensional* (O), *Attractive* (A), and *Indifferent* (I). *Must-be* attributes represent essential requirements that must be fulfilled to prevent dissatisfaction. *One-dimensional* attributes reflect factors directly proportional to satisfaction; the better the performance, the greater the satisfaction. *Attractive* attributes, when present, can substantially enhance satisfaction but do not cause dissatisfaction if absent. Finally, *Indifferent* attributes have little to no impact on patient satisfaction levels.

Most studies identify attributes in the *Must-be* category as those related to clinical safety, medical staff competence, and the reliability of information and communication. For example, Tang et al. (2025) in their study of families of pediatric patients following congenital heart interventions, classified doctor reliability, drug safety, and clear explanations of side effects as *Must-be* attributes, noting that their absence led to significant dissatisfaction. Similarly, Wang et al. (2025), in research on thyroid biopsy outpatients highlighted physician technical expertise, procedure safety, and information accuracy as essential requirements. In line with these findings, Cao et al. (2025) reported that patient safety and comfort are critical dimensions influencing perceptions of hospital service quality among orthopedic trauma patients.

The most frequently identified *One-dimensional* attributes include service speed and efficiency, staff responsiveness, and clarity of information. Ding et al. (2025), using a combined SERVQUAL and Kano models in Internet+ Nursing services, classified *tangibility* and *reliability* as both *One-dimensional* and *Must-be* attributes, while *empathy* and *economy* are categorized as *Attractive*. In community nursing services, Zhang et al. (2024) found that interactive communication and *telehealth* function as *Attractive* attributes that enhance patient experience, whereas body image management was considered *a must-have* for breast cancer survivors. Similarly, Wang et al. (2024) reported that emotional support and a positive care environment were *Attractive* attributes with a strong impact on the psychological well-being of advanced-stage cancer patients.

Several studies reveal variations in findings based on patients' clinical and demographic characteristics. Y. Tang et al. (2025) reported that for elderly patients with chronic diseases, cost information and treatment planning were prioritized as *Must-be* attributes, while social support and ease of digital services were classified as *Attractive*. In contrast, Ding et al. (2025

found that postpartum mothers, digital-based services were predominantly viewed as *Attractive* attributes, as these innovations enhanced comfort and the perceptions of service quality. Meanwhile, Barrios-Ipenza et al. (2021), in a study of two public hospitals in Peru, observed that most service quality attributes fell into the *One-dimensional* category, indicating that patient satisfaction increased proportionally with improvements in service performance.

A small number of studies have gone beyond mapping satisfaction attributes to applying outcome-based interventions using the Kano Model. For instance, Zhu et al. (2023) developed nursing interventions for children with febrile seizures based on *Must-be* and *Attractive attributes*. Their results demonstrated significant improvements in the children's clinical condition and a reduction in parental psychological stress. These findings underscore the value of the Kano Model not only as a framework for analyzing patients' needs but also as a foundation for designing effective service interventions.

DISCUSSION

Systematic literature review findings consistently identify the clinical and professional reliability of healthcare personnel as a *Must-Be* attribute. Elements such as the technical expertise (X. Wang et al., 2025), diagnostic and medical record accuracy (Priya, 2025), procedural safety, and clear explanations of treatment side effects (Tang et al., 2025) are considered non-negotiable components of patient satisfaction. Their absence leads to significant dissatisfaction, while their presence is regarded as the minimum expected standard. These findings support the research of Ali et al. (2024), which emphasizes that the quality of patient-provider interactions strongly influences satisfaction and trust in healthcare institutions. Similarly, research by Park et al. (2022) found that professionalism, including clinical knowledge and treatment efficiency, is a key determinant of inpatient satisfaction. Thus, attributes in the *Must-be* category should be prioritized in hospital quality improvement policies, as they form the foundation of patient-centered care.

Findings from this systematic literature review consistently highlight that communication, clarity of treatment information, and cost transparency are the most prominent *One-dimensional* attributes. Enhancements in these areas are directly proportional to increases in patient satisfaction. Friedel et al. (2023) demonstrated that patients' perceptions of clear clinical communication strongly correlate with satisfaction, while Furtado et al. (2025) confirmed that communication gaps are among the most frequent causes of preventable dissatisfaction. Similarly, Çakmak & Uğurluoğlu (2024) emphasized that patient-centered communication significantly shapes perceptions of service quality and overall satisfaction.

These results suggest that practical communication training for healthcare professionals should be prioritized as a strategy to strengthen One-dimensional attributes and improve service quality.

Several studies, particularly those examining digital service contexts such as the Internet Nursing Service (Ding et al., 2025), have found that technological innovations are often classified as *Attractive* attributes. Patients perceive added value when hospitals provide online services, automated notifications, or remote consultations. Kintzle et al., (2022) reported that patients receiving care through telehealth services expressed high levels of satisfaction. However, recent literature suggests that the impact of digital innovation on satisfaction is highly contextual. For instance, by Nuryuliana (2025) demonstrated that digital services effectively improve patient satisfaction in Indonesian healthcare settings, with telemedicine users predominantly being of productive age and possessing higher levels of education. These findings indicate that digital features function as digital features function as *Attractive* attributes only when supported by technological readiness and aligned with patient preferences.

CONCLUSIONS

Patient experience is a critical dimension that healthcare systems must prioritize to strengthen patient-centeredness, satisfaction, and willingness to recommend hospital services. From the overall research findings, the key factors influencing patient satisfaction in hospitals include: (1) the professional competence of medical personnel, (2) the safety and reliability of services, (3) transparent communication and information, (4) the comfort of physical facilities, and (5) emotional support alongside digital innovation. In practice, hospitals should first ensure that all basic service elements within the *Must-be* category are consistently met to prevent dissatisfaction. Next, they should focus on improving process efficiency (*One-dimensional* category) and finally invest in innovations related to comfort and technology-based services (*Attractive* attributes) to maximize patient satisfaction.

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