



Research article

Service demand analysis and optimization strategy construction of emergency observation patients based on the Kano model

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ABSTRACT

Background: Emergency observation unit in China are characterized by a high number of patients, complexity of diseases, and instability of patient conditions, leading to low patient satisfaction. The Kano model is an effective method widely used to identify customer demands and improve service quality to enhance customer satisfaction. However, its application in emergency observation unit has been studied less. This study aims to design a questionnaire based on the Kano model and identify the demands of emergency observation patients to determine priorities for improvements in the emergency observation unit and improve patient satisfaction.

Methods: A cross-sectional study was conducted in Guizhou Provincial People's Hospital from March 21st, 2023, to May 20th, 2023. A convenient sampling method was used to recruit 100 patients from the emergency observation unit, who completed a questionnaire designed based on the Kano model to assess their demands for care service. Data were analyzed using IBM SPSS Statistics 28.0 software. The element selection line and sensitivity analysis were used to determine factors for patient service demand improvement.

Results: A total of 13 patient service demands for improvement were screened out from 19 service demands, including 1 item of must-be quality (M), 11 item of one-dimensional quality (O), and 1 item of attractive quality (A). These attributes showed significant differences in patients' socio-demographic characteristics.

Conclusion: The Kano model is a valuable tool for identifying the characteristics of patients' service demands, and the element screening method can be employed to establish the hierarchy of these demands. These results offer crucial direction for creating forthcoming nursing management initiatives in emergency observation unit.

1. Introduction

The emergency department is usually the first stop of hospital treatment for acute and critical patients [1]. It is estimated that half of hospital inpatient admissions occur in the emergency unit [2]. Short-stay inpatient stays are becoming increasingly common, and hospitals manage these patients as outpatients in the emergency observation unit. The emergency observation unit is a specialized area within the emergency department for initial treatment, assessment, and reassessment of patients to decide whether a patient should be

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admitted to the hospital or discharged [3]. The emergency observation unit can help avoid unnecessary hospital admissions, optimize bed capacity, improve emergency department throughput, and enhance the overall efficiency of patient care [4]. However, there is a high risk of medical and nursing disputes in the emergency observation unit due to the high number of patients, the complexity of diseases, and the instability of patient conditions [5,6]. Moreover, uncertainty about the patients' waiting time for hospital admission can contribute to significant emotional distress of patients and families, further leading to medical and nursing disputes [7]. These disputes may negatively affect the treatment outcomes and patient satisfaction, the key indicators of the quality of care provided in the emergency department [8,9]. The patient satisfaction rate in the emergency observation unit was reported to be below 80 % [10], indicating an urgent need to take measures to improve patient satisfaction.

A large body of studies has endeavored to explore practical strategies to improve patient satisfaction in emergency unit observation unit, focusing on areas like reducing wait times, enhancing communication between medical staff and patients, streamlining the admission and discharge processes, and improving the comfort and privacy of the observation environment [11,12]. However, the effectiveness of these measures in improving patient satisfaction is inconsistent and limited. It appears these strategies may not fully address the actual demands of the patients themselves, leading to limited impact. Identifying the specific demands of patients is the first step towards designing targeted interventions to address these demands, thus enhancing patient satisfaction. However, studies focusing on the patient demands of emergency observation unit using an objective and effective method are currently lacking.

The Kano model is a simple and effective way of determining service attributes, and it has also been used to identify demands [13]. The Kano model classifies service attributes into five categories: must-be qualities (M), one-dimensional qualities (O), attractive qualities (A), indifferent qualities (I), and reversal qualities (R) [14,15]. As shown in Fig. 1, A must-be quality is essential; its absence can cause customer dissatisfaction, but its presence doesn't necessarily boost customer satisfaction. A one-dimensional quality satisfies users when present and dissatisfies them when absent. The concept of attractive qualities can be defined as characteristics that, if not provided, user satisfaction will not be reduced, and if provided, user satisfaction can be greatly improved. Qualities that do not affect users' satisfaction are called indifferent qualities. A reverse quality indicates a decrease in user satisfaction with these features, and users' satisfaction decreases with the extent of their provision [16].

Over the last few decades, the Kano model has been widely applied to various fields, mainly the market, all over the world to improve customer satisfaction, and has achieved great success [17–19]. In 2003, the Kano model was first introduced into the healthcare service [20] and has been widely used in healthcare settings to identify patient demands and improve the quality of care since then [21–24]. A recent review of the application of the Kano model in healthcare has demonstrated consistent and robust evidence of the model's effectiveness in decreasing adverse events, improving patient prognosis, and enhancing patient satisfaction [25]. However, previous studies were predominantly conducted in inpatient and outpatient departments, and there is a noticeable dearth of research focusing on patients from the emergency observation unit. Significant variances may exist in the scope, type, and quality of medical services provided by different medical unit, which may lead to various patient demands to be addressed by various departments [25]. It is, therefore, essential to explore such demands in the emergency observation unit using the Kano model.

To address the research gaps, we conducted the current study to design a questionnaire based on the Kano model and conduct a survey to identify patient demands and determine the priorities for improvements in the emergency observation unit. Our findings will offer fresh insight into the specific and unique demands of patients in the emergency observation unit and provide a reference for designing targeted and effective intervention programs to optimize the quality of emergency care services, which will ultimately help enhance patient satisfaction.

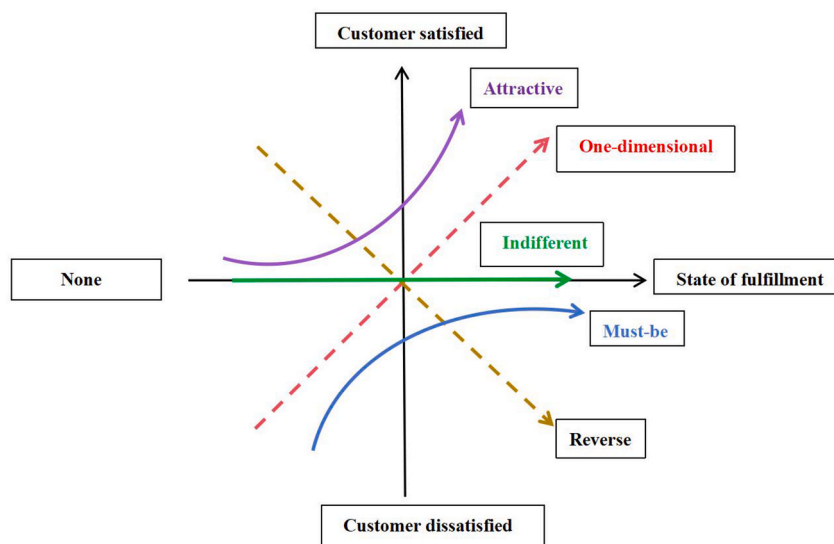


Fig. 1. The Kano model.

2. Material and methods

2.1. Study design and participants

A cross-sectional study was conducted in Guizhou Provincial People's Hospital in Guizhou, China, from March 21st, 2023, to May 20th, 2023. STROBE Guideline [26] was used to guide study design and report results. Our study subjects were patients admitted to the hospital's emergency observation unit. Inclusion criteria included: (1) age ≥ 18 years; (2) clear consciousness; (3) normal communication and comprehension abilities; (4) voluntary informed consent to participate in the study. Exclusion criteria: (1) length of stay in the emergency department < 6 h (previous studies showed that the 25th percentile (P25) of retention time for emergency department patients was 6.5 h, and a shorter stay may indicate insufficient patient engagement in healthcare to obtain comprehensive and reliable data [27]); (2) participants with severe psychiatric symptoms and psychosocial impairments, defined as significant abnormalities in perception, emotion, cognition, and behavior with a medical diagnosis or reported by family members; (3) severe respiratory, circulatory, digestive diseases, or acute injuries. The 'rule of thumb' sample size for Kano studies is 50–300 [28]. In addition, the suggested sample size for questionnaire psychometric testing is 5–10 times the number of items in the questionnaire [29]. Our study had a sample size of 100, which satisfies the sample size requirements for both the Kano model and psychometric testing of scales.

2.2. Procedure

A convenient sampling method was used to recruit participants from the hospital's emergency observation unit. Eligible patients were approached by the unit nurse and referred to our research team for study participation. Patients should be in a stable condition before participating in the study to ensure that the questionnaire does not disrupt their treatment or recovery. Data collection was carried out by five trained nurses, well-versed in both the protocols of the emergency ward and the ethical considerations of patient interaction. These nurses, acting as data collectors, were specifically chosen for their clinical expertise and ability to handle sensitive health and privacy issues competently. Before the survey, all participants were briefed on the study's objectives and how their responses would be used. Following this, informed consent was obtained both orally and through signed written consent forms. This approach safeguarded patient welfare while ensuring the integrity and reliability of the collected data. The nurses then conducted face-to-face interviews with the participants to complete the questionnaire. Among 115 participants approached, 15 refused due to privacy concerns ($n = 4$), lack of time ($n = 3$), no interest ($n = 6$), or concern about their conditions ($n = 2$).

We set general knowledge questions in the questionnaire (such as 'What is the capital of China?') to filter out questionnaires with low authenticity. After unified and standardized training and a clear survey purpose, the questionnaire issuer could correctly understand the items and contents of the assessment tool scale and adopt unified survey instructions. During the survey, the researchers avoided using inductive language and filled in the questionnaire according to the participants' answers. At the end of the questionnaire, the investigators checked the questionnaire on the spot for missing items. After all the questionnaires were completed, a two-person input audit was conducted.

2.3. Measures

2.3.1. General information questionnaire

The general information questionnaire comprises ten items, including age, gender, place of residence, education level, occupation, marital status, annual income, type of medical insurance, stay time in the emergency observation unit, and whether the first time stays in the emergency observation unit.

2.3.2. A Kano-based demand questionnaire for nursing services

The Kano-based demand questionnaire includes 19 items under five dimensions: tangibility (5 items), reliability (3 items), responsiveness (5 items), assurance (4 items), and empathy (2 items). Each item has two questions comprising a positive question and a reverse question. Each question eventually corresponded to a Kano attribute (Table 1). "M" indicates must-be attributes, "O" indicates one-dimensional attributes, "A" indicates attractive attributes, "I" indicates indifferent attributes, "R" indicates reverse attributes, and "Q" indicates questionable answers. An expert panel reviewed the questionnaire and ensured that each item accurately reflected the intended constructs and comprehensively covered the research domain, indicating good face validity. The content validity of the questionnaire was evaluated based on its relevance to the research topic on a 4-point Likert score, ranging from 1 (irrelevant) to 4

Table 1
Kano model attribute classification method.

| Positive questions | Reverse questions | | | | |
|-----------------------|--------------------|---------------------|--------------|--------------------|-----------------------|
| | I like it that way | It must be that way | I am neutral | I can live with it | I dislike it that way |
| I like it that way | Q | A | A | A | O |
| It must be that way | R | I | I | I | M |
| I am neutral | R | I | I | I | M |
| I can live with it | R | I | I | I | M |
| I dislike it that way | R | R | R | R | Q |

(highly relevant). The item-level content validity index (I-CVI) was calculated by the proportion of experts giving a score of 3 and above [30]. The scale-level content validity index (S-CVI) was obtained by averaging the I-CVI of all items. The S-CVI of the questionnaire was 0.905, and the I-CVI was 0.800–1.000, indicating good content validity. In addition, the questionnaire showed good reliability with a Cronbach's alpha of 0.957. All these results suggest that the questionnaire is reliable and valid in measuring patients' demands for nursing services.

2.3.3. Evaluation of the attributes of nursing service demands

The Kano model was used to categorize the item attributes. The satisfaction coefficient is expressed by the Better/SI value, and the importance coefficient is defined by the Worse/DSI value. $\text{Better/SI} = (A + O)/(A + O + M + I)$, $\text{Worse/DSI} = -1 \times (M + O)/(A + O + M + I)$. The Better/SI value is generally positive; the larger the value is, the greater the impact of the item on patient satisfaction; the Worse/DSI value is generally negative. The closer the value is to -1 , the more important patients consider the item.

2.3.4. Nursing service demand sequencing

The patients' demands were sorted using the element screening approach to establish the priority of improvement of the demands of patients remaining in the emergency observation and allocate resources appropriately. In the element selection method, the value of Better (SI) is taken as the horizontal axis and the absolute value of Worse (DSI) as the vertical axis. Element selection lines and key element selection lines are added. Both are based on point "0" of the scatter plot. The sensitivity on the arc of the element selection line is 0, taking 0.707 (the distance from the origin to the center point of the scatter plot) and 1.061 (3/4 of the distance from the origin to the upper right vertex of the matrix) as the 1/4 arc of the radius, Sensitivity represents the distance from the discrete point to the element selection line ($R = \sqrt{SI^2 + DSI^2} - 0.707$) [31]. The element selection line divides patient demands, with points on the left side representing demands that can be deferred according to the actual situation of the department and points on the right-side representing demands that require immediate improvement [32]. The key element selection line further distinguishes between improvement elements. Key elements are represented by discrete points to the right of the key element selection line, indicating higher priority and immediate attention. Improvement elements are represented by discrete points to the left, indicating lower priority. The focus on key elements and their order of improvement takes precedence over that of improvement elements. Patient demands with higher sensitivity demand greater attention and timely improvement.

2.4. Statistical analysis

Data were analyzed using IBM SPSS Statistics 28.0 software. Participants' characteristics were described by frequencies and

Table 2
Basic characteristics of patients in the emergency observation unit.

| Category | Item | N (%) |
|---|---|-----------|
| Age (years) | 18–44 | 34 (34 %) |
| | 45–59 | 37 (37 %) |
| | ≥60 | 29 (29 %) |
| Gender | Male | 56 (56 %) |
| | Female | 44 (44 %) |
| Place of residence | City/Town | 62 (62 %) |
| | Rural area | 38 (38 %) |
| Education level | Below junior high school | 21 (21 %) |
| | Senior high school/technical secondary school | 22 (22 %) |
| | College | 27 (27 %) |
| Occupation | Bachelor's degree and above | 30 (30 %) |
| | Farmers | 33 (33 %) |
| | Civil servants | 17 (17 %) |
| | Individual merchants | 14 (14 %) |
| | Enterprises/public institutions employees | 19 (19 %) |
| | Students | 9 (9 %) |
| Marital status | Others | 8 (8 %) |
| | Unmarried | 31 (31 %) |
| | Married | 45 (45 %) |
| | Divorced or Widowed | 24 (24 %) |
| Annual income | <36000 RMB | 31 (31 %) |
| | 36000-60000 RMB | 34 (34 %) |
| | >60000 RMB | 35 (35 %) |
| Type of medical insurance | No | 61 (61 %) |
| | Medical insurance | 27 (27 %) |
| | Others | 12 (12 %) |
| Emergency observation stay time (hours) | <24 h | 26 (26 %) |
| | 24–72 h | 60 (60 %) |
| | >72 h | 14 (14 %) |
| First time in the emergency observation unit? | Yes | 46 (46 %) |
| | No | 54 (54 %) |

percentages. The differences in demands between the basic characteristics of the patient and Kano attributes were statistically analyzed using the chi-square test. Pearson's chi-square test was used when the assumptions for the chi-square test were met. If the assumptions were not satisfied, Fisher's exact test was employed to determine the exact two-tailed probability.

3. Results

3.1. General information

Table 2 displays the characteristics of the patients. The participants had an average age of 49.96 ± 16.48 , and there were more males than females (56 % vs 44 %). Most were city/town residents (62 %), had an education level of senior high school and above (79 %), had an annual income of above 36000 RMB (69 %), and had no insurance (61 %). 46 % of participants visited the emergency observation unit for the first time, and 60 % stayed for 24–72 h.

3.2. Kano attributes and calculation of the Better-Worse coefficient

Frequency statistics were performed on each demand item to determine Kano attributes using the Kano model attribute categorization approach [15], and the Better-Worse coefficient was calculated. Among them, 13 and 17 were must-be qualities, 2, 4, 7, 9, 10, 11, 12, 14, 15, 16, and 19 were one-dimensional qualities, 1, 6, and 18 were attractive qualities, and 3, 5, and 8 were indifferent qualities. See Table 3 and Fig. 2 for details.

3.3. Screening of improvement elements and key elements in the demands

Based on the Better-Worse coefficient, we added sensitivity R and screened out the improvement and vital elements of service demands for emergency observation patients. Then, according to the R-value, the results were sorted in descending order. The greater the sensitivity value, the more attention the patient demands. The sorting results are detailed in Table 4. As shown in Fig. 3 and Table 4, the first four improvement elements were that the nurses are warm and friendly; when operating, the nurse can protect your privacy; the patient calls and the nurse responds in time; take effective measures to relieve the pain. The results suggest that managers need to focus on these four demands of emergency patients and prioritize improvement according to the actual situation of the department.

3.4. Association between patient demographics and service demand attributes

We further compared each item's Kano attributes by patients' demographic characteristics, and the results showed significant differences. For instance, patients aged ≥ 60 years were more likely to consider nurses taking the initiative to care and provide help

Table 3

Kano attributes and better-worse coefficients of demands for emergency observation patients.

| Dimension | No. | Items | A | O | M | I | Kano attributes | Better/SI | Worse/DSI |
|----------------|-----|--|----|----|----|----|-----------------|-----------|-----------|
| Tangibility | 1 | Nurses dress properly and behave appropriately | 49 | 8 | 14 | 29 | A | 0.57 | -0.22 |
| | 2 | The nurses are warm and friendly | 9 | 73 | 17 | 1 | O | 0.82 | -0.90 |
| | 3 | The identification of the emergency observation unit is clear, eye-catching and standard | 14 | 3 | 20 | 63 | I | 0.17 | -0.23 |
| | 4 | The emergency observation unit is in good health condition and comfortable environment | 16 | 42 | 31 | 11 | O | 0.58 | -0.73 |
| | 5 | The emergency observation unit has complete convenience service facilities | 18 | 5 | 6 | 71 | I | 0.23 | -0.11 |
| Reliability | 6 | The nurse is skilled in the treatment and nursing | 43 | 23 | 12 | 22 | A | 0.66 | -0.35 |
| | 7 | Nurses can take effective measures to relieve the pain | 4 | 57 | 35 | 4 | O | 0.61 | -0.92 |
| | 8 | Nurses can provide examination and laboratory results accurately and timely | 8 | 6 | 33 | 53 | I | 0.14 | -0.39 |
| Responsiveness | 9 | When encountering difficulties, nurses take the initiative to care and provide help | 23 | 53 | 12 | 12 | O | 0.76 | -0.65 |
| | 10 | Nurses take the initiative to communicate with patients to understand their needs | 30 | 43 | 13 | 14 | O | 0.73 | -0.56 |
| | 11 | The nurse changed the infusion in time | 23 | 37 | 16 | 24 | O | 0.60 | -0.53 |
| | 12 | When the patient calls, the nurse responds in time | 12 | 63 | 20 | 5 | O | 0.75 | -0.83 |
| | 13 | The medical treatment process is convenient and fast (such as charging, taking medicine, etc.) | 14 | 14 | 41 | 31 | M | 0.28 | -0.55 |
| Assurance | 14 | The nurse is patient and meticulous | 15 | 53 | 23 | 9 | O | 0.68 | -0.76 |
| | 15 | Waiting time for inpatient beds is reasonable | 14 | 54 | 26 | 6 | O | 0.68 | -0.80 |
| | 16 | Waiting time for infusion is reasonable | 14 | 45 | 31 | 10 | O | 0.59 | -0.76 |
| | 17 | Charge standard and transparent | 3 | 13 | 66 | 18 | M | 0.16 | -0.79 |
| Empathy | 18 | Nurses provide personalized services to their patients | 44 | 15 | 12 | 29 | A | 0.59 | -0.27 |
| | 19 | When operating, the nurse can protect your privacy | 10 | 69 | 13 | 8 | O | 0.79 | -0.82 |

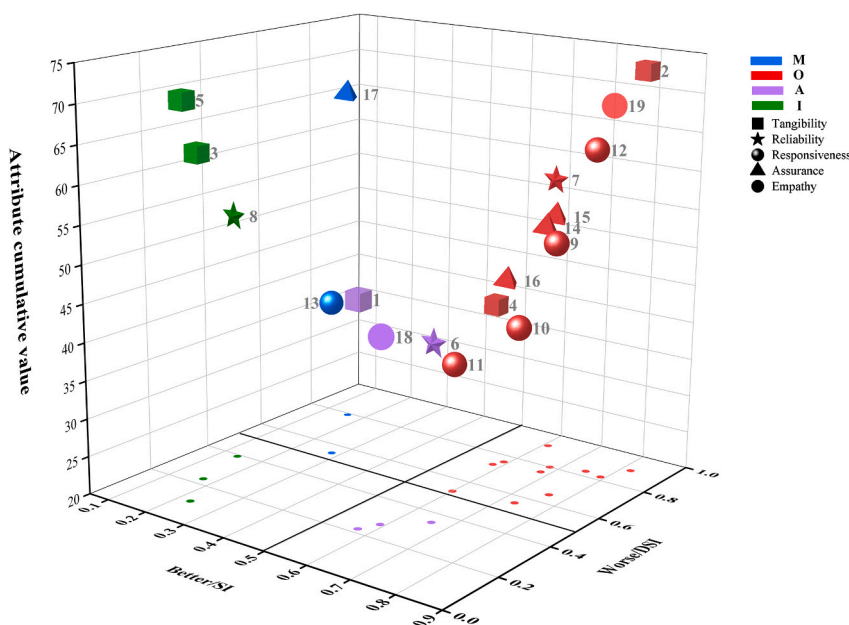


Fig. 2. Better worse scatter chart of demands of emergency observation patients must-be qualities (M), one-dimensional qualities (O), attractive qualities (A), indifferent qualities (I).

Table 4

Sensitivity ranking of improvement elements and key elements of emergency observation patients' demands.

| No. | Kano attributes | Items | Sensitivity(R) | Order |
|-----|-----------------|--|----------------|-------|
| 2 | O | The nurses are warm and friendly | 0.511 | 1 |
| 19 | O | When operating, the nurse can protect your privacy | 0.432 | 2 |
| 12 | O | The patient calls, and the nurse responds in time | 0.412 | 3 |
| 7 | O | Take effective measures to relieve the pain | 0.397 | 4 |
| 15 | O | Waiting time for inpatient beds is reasonable | 0.343 | 5 |
| 14 | O | The nurse is patient and meticulous | 0.313 | 6 |
| 9 | O | When encountering difficulties, nurses take the initiative to care and provide help | 0.293 | 7 |
| 16 | O | Waiting time for infusion is reasonable | 0.255 | 8 |
| 4 | O | The emergency observation unit is in good health condition and comfortable environment | 0.225 | 9 |
| 10 | O | Nurses take the initiative to communicate with patients to understand their needs | 0.213 | 10 |
| 17 | M | Charge standard and transparent | 0.099 | 11 |
| 11 | O | The nurse changed the infusion in time | 0.094 | 12 |
| 6 | A | The nurse is skilled in the treatment and nursing | 0.040 | 13 |

when encountering difficulties as must-be quality compared to those <60 years ($P < 0.05$). Patients living in cities or towns were more likely to consider charge standards and transparency as indifferent qualities than rural residents ($P < 0.05$). Patients with bachelor's degrees or higher were more likely to consider personalized nursing services a must-be quality ($P < 0.05$). Farmers were more likely than enterprises/public institution employees to consider charge standards and transparency as must-be qualities ($P < 0.05$). Divorced or widowed patients were more likely to consider nurses taking the initiative to care and provide help when encountering difficulties as must-be qualities ($P < 0.05$). Patients with middle to lower income levels were more likely to consider charge standards and transparency as must-be qualities ($P < 0.05$). Patients with an emergency observation stay time of 24–72 h were more likely to consider waiting time for inpatient beds to be reasonable as must-be quality compared to those with a stay time of over 72 h ($P < 0.05$). Patients with first treatment in the emergency observation unit were more likely to consider the following items as must-be qualities compared to patients who had previous treatments: the identification of the emergency observation unit is clear, eye-catching, and standard; the emergency observation unit has complete convenience service facilities; nurses can provide examination and laboratory results accurately and timely; nurses take the initiative to communicate with patients to understand their demands; the medical treatment process is convenient and fast (all $P < 0.05$). Conversely, patients with previous treatments in the emergency observation unit were more likely to consider waiting time for infusion to be reasonable as a must-be quality compared to first-time patients ($P < 0.05$) (Supplementary Tables).

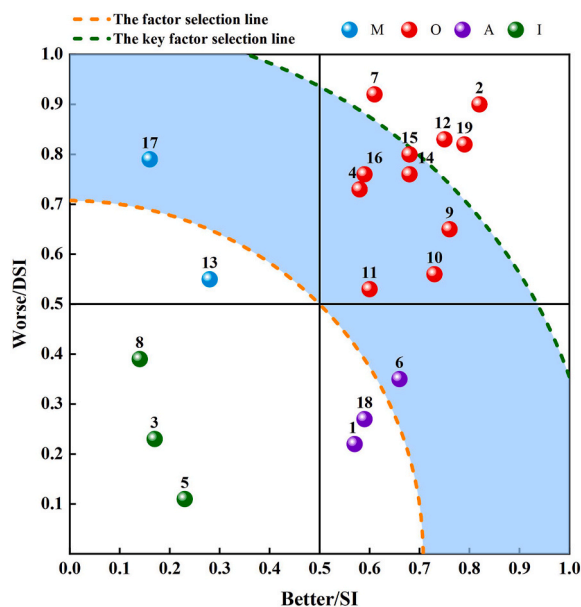


Fig. 3. Sensitivity comparison matrix of improved elements and key elements must-be qualities (M), one-dimensional qualities (O), attractive qualities (A), indifferent qualities (I).

4. Discussion

This study used the Kano model to comprehensively analyze the service demands of emergency observation patients and how they affect satisfaction with nursing services. Our investigation identified two must-be demands, eleven one-dimensional demands, three attractive demands, and three indifferent demands. We identified four elements that urgently require improvement while investigating the relationship between patients' demographics and service demands. These findings illuminate potential pathways for personalizing and enhancing emergency service satisfaction, providing critical insights for developing future emergency management strategies.

Our study identified a convenient and fast medical treatment process and a transparent charge standard as two must-be qualities for emergency observation patients, consistent with previous studies. Previous research [33,34] has found that medical charges moderate the relationship between service quality and patient satisfaction, implying that emergency care professionals should keep patients informed about treatment costs to avoid potential disagreements. Failure to meet these demands results in a significant drop in satisfaction, emphasizing the critical need for an efficient emergency care process and transparency in medical charges. Furthermore, one-dimensional demands were based on nurses' attitudes, response speed, professional skill set, work ethics, and appropriate wait times for bed allocation. The more effectively these demands are addressed, the higher the patient satisfaction, and vice versa. To successfully address these areas, we recommend nurses receive concentrated training to improve their sympathetic communication and responsiveness abilities. Also, improving rapid response methods and supporting continued professional growth in existing medical practices are critical for improving patient care. Additionally, simplifying bed allocation processes is critical to meeting patient expectations for wait times [35,36]. Implementing these strategies will improve emergency care quality and operational efficiency, thus enhancing patient satisfaction. This method proposes a practical approach for healthcare facilities to improve emergency services and patient experiences.

Our study findings also underscored the importance of attractive demands such as nurses' ability to provide personalized services, clinical proficiency, and professional appearance and conduct. These factors considerably increase patient satisfaction without decreasing it, providing emergency departments a unique opportunity to exceed fundamental service quality demands. Previous studies have also indicated that delivering personalized care can strengthen patients' trust in nurses, which is the foundation for creating a therapeutic relationship and can improve patient satisfaction [37–39]. As a result, we advocate for training programs that emphasize customized care, clinical expertise, and professional attitude. This group of ideas can chart a new course for patient-centered care. Our study also identified several conventional practices in the emergency care context as indifferent demands that neither significantly improve nor detract from patient satisfaction. These items included complete convenience facilities in the emergency observation unit, nurses' ability to provide accurate and timely examination and laboratory results, and the emergency observation unit's clear, eye-catching, and standard identification. This finding has not been reported in earlier studies and provides a novel perspective on emergency care planning. Essentially, patients regard these characteristics as necessary components of care—expected but not determining elements in their overall satisfaction. These findings suggest that emergency departments should efficiently sustain these core services while directing focus into areas with a greater potential to impact patient satisfaction significantly.

Our study has identified several urgent priority improvement elements, such as fostering warmer nurse-patient interactions,

protecting patient privacy, responding quickly to calls, and effectively managing pain. These findings highlight the urgent demands of emergency observation patients and identify deficiencies in these areas. Previous research has shown that patients' perceived privacy significantly impacts nursing service satisfaction. Efforts to improve emergency departments should focus on enhancing the environmental design of emergency departments and providing ongoing education to healthcare workers to protect patients' privacy during their stay [40–42]. These critical categories represent patients' fundamental expectations of compassionate and efficient care. Our findings propose a strategic approach to emergency management, emphasizing the importance of addressing these weaknesses promptly. Prioritizing these changes provides a framework for the efficient allocation of emergency department resources, ensuring immediate enhancements in patient care.

Our study delineates how demographic characteristics and prior experiences shape patient expectations in the emergency department. Key findings reveal that elderly patients and those divorced or widowed particularly value situations where nurses proactively offer care and assistance when difficulties arise, highlighting the importance of supportive interactions in enhancing patient satisfaction [43,44]. In contrast, expectations around the transparency of charges and the efficiency of medical treatment vary across demographic lines, with a notable emphasis on clear communication about costs among rural residents and lower-income patients [45]. Distinctly, first-time and repetitive patients present differing priorities, with the former group emphasizing the need for a clear, efficient introductory experience to emergency care and the latter focusing more on operational efficiency, particularly in response time and waiting time for care [46]. These insights advocate for a tailored approach to emergency care that combines clinical proficiency with a deep understanding of patient demands for empathy, clear communication, and operational efficiency. Implementing targeted nurse training and optimizing care delivery processes can significantly elevate patient satisfaction, underlining the critical role of personalized care in emergency departments. This strategy aims to meet diverse patient expectations and enhance the overall quality of emergency healthcare services.

This research stands out by applying the Kano model to develop a questionnaire and identify the service demands of patients in the emergency observation unit, which is understudied in the literature. The study's strength is evident in its methodical categorization of patient demands into must-be, one-dimensional, attractive, and indifferent qualities, pinpointing precise improvement opportunities. The analysis of 19 distinct service demands, supported by statistical validation, provides actionable insights for healthcare practitioners to prioritize improvements that significantly impact patient satisfaction. Moreover, by considering patient demographics and their previous healthcare experiences, the study underscores the necessity of personalized care approaches. These insights offer a valuable blueprint for refining nursing practices and enhancing the effectiveness of emergency observation services, thus making a practical contribution to the field.

This study has several limitations that should be considered when interpreting the findings. First, the use of convenience sampling and the limited sample size may affect the generalizability of the results to other populations and settings. Second, the cross-sectional design of the study limits our ability to infer causality between patient characteristics and their service demands. Third, the reliance on self-reported data may introduce response bias, as patients might have provided socially desirable answers or not have accurately recalled their experiences. Finally, the study was conducted in a single hospital in China, which may limit the applicability of the findings to different cultural and healthcare contexts.

5. Conclusion

Using the Kano model, we have identified attributes of patient service demands. By addressing diverse patient demands, healthcare providers can break away from traditional methods, enhancing trust and the quality of care. Our findings underscore the vital significance of aligning with patient expectations, thereby providing guidance for the development of emergency nursing policies aimed at delivering more patient-centered services.

Disclosure of interests

We declare no competing interest.

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Ethics statement

This study was approved by the ethical committee of the Guizhou Provincial People's Hospital (No: 2023-020). Before access to the survey questionnaire was allowed, informed consent was acquired orally and written signatures of consent were obtained from the participants. Additionally, all participants have provided written consent for the publication of the study results. The poll was completely anonymous, and no personally identifiable information was acquired.

Data availability statement

All data generated or analyzed during this study are included in this article. The raw data supporting the conclusions of this article

will be made availability by the authors, without undue reservation. Please contact Dr Huan Yao (yaohuan541@126.com) if you want to get the data from this study.

CRediT authorship contribution statement

Huan Yao: Writing – original draft, Investigation, Data curation, Conceptualization. **Peipei Guo:** Writing – review & editing, Writing – original draft, Methodology, Investigation. **Wei Du:** Methodology, Investigation. **Yingyue Zhang:** Investigation. **Tao Li:** Investigation. **Gui Xiao:** Writing – review & editing, Writing – original draft, Funding acquisition, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.heliyon.2024.e36323>.

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