Social Medicine
Health For All
ISSN: 1557-7112

ORIGINAL RESEARCH

The Impact of Hospital Food Quality on Hospitalized Patient Satisfaction: The Role of Emotional Well-being and Perceived Value

El impacto de la calidad de la alimentación hospitalaria en la satisfacción del paciente hospitalizado: el papel del bienestar emocional y el valor percibido

Luxin Zhang. Graduate School of Business, Universiti Kebangsaan Malaysia, Bangi, Selangor, Malaysia.
Email: ukm.edu.academic@gmail.com, https://orcid.org/0009-0009-9932-7698

Wan Mohd Hirwani Wan Hussain. Graduate School of Business, Universiti Kebangsaan Malaysia, Bangi, Selangor, Malaysia.
Email: wmhwh@ukm.edu.my, https://orcid.org/0000-0002-5048-6251

Sawal Hamid Md Ali. Department of Electrical, Electronics and System Engineering, Universiti Kebangsaan Malaysia, Selangor, Malaysia.
Email: sawal@ukm.edu.my,, https://orcid.org/0000-0002-4819-863X

Received: April 7, 2025.
Accepted: May 9, 2025.
Conflicts of interest: None.
DOI: https://doi.org/10.71164/socialmedicine.v19i1.2026.2095

Abstract

Hospital food services are a critical yet often overlooked component of patient-centered care. This study investigates how perceived hospital food quality influences patient satisfaction, with emotional well-being as a mediator and perceived value as a moderator. Drawing on Affect-as-Information Theory and Perceived Value Theory, a survey was conducted among 209 inpatients at a tertiary hospital in Luoyang, China, and data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) in SmartPLS. The results indicate that perceived food quality significantly enhances patient satisfaction both directly and indirectly through emotional well-being, with the effect amplified when patients perceive greater value in hospital services. These findings highlight the psychological and experiential dimensions of hospital meals and suggest practical strategies for improving patient satisfaction through non-clinical services.

Keywords: hospital food quality; patient satisfaction; emotional well-being; perceived value; patient-centered care.

Resumen

Los servicios de alimentaciónhospitalaria son un componentecríticopero a menudo pasadopor alto de la atencióncentrada en el paciente. Este estudioexamina el impacto de la calidadpercibida de la alimentaciónhospitalaria en la satisfacción del pacientehospitalizado, con el bienestaremocionalcomomediador y el valor percibidocomomoderador. Basándose en la Teoría del AfectocomoInformación y la Teoría del Valor Percibido, se realizóunaencuestacuantitativa entre 209 pacienteshospitalizados en Luoyang, China. Se empleó el Modelado de EcuacionesEstructurales de MínimosCuadradosParciales (PLS-SEM) utilizandoSmartPLS para probar las relacionespropuestas. Los resultadosrevelan que la calidadpercibida de los alimentosmejorasignificativamente la satisfacción del paciente, tanto directamentecomoindirectamente a través del bienestaremocional. Además, el efecto es másfuertecuando los pacientesperciben un mayor valor en los servicioshospitalarios. Estoshallazgossubrayan las dimensionespsicológicas y experienciales de las comidashospitalarias y sugierenestrategiasprácticas para mejorar la satisfacción del paciente a través de servicios no clínicos.

Palabras clave: calidad de la alimentaciónhospitalaria; satisfacción del paciente; bienestaremocional; valor percibido; atencióncentrada en el paciente.

1. Introduction

The integration of patient-centered care into contemporary healthcare systems has underscored the need for hospitals to address not only clinical outcomes but also the full range of patients' experiences and psychosocial needs.[1] This paradigm shift reframes patients as active stakeholders in the healthcare process, thereby placing greater responsibility on institutions to manage both tangible services and subjective experiences.[2, 3]

Among non-clinical service components, hospital food provision has emerged as a critical yet underexplored determinant of hospitalized patient satisfaction.[4, 5] Although advanced medical technologies and professional expertise remain central to quality care delivery, growing empirical evidence has highlighted the meaningful role of food-related services in shaping patient evaluations of their hospital stay.[6-8] Beyond its nutritional function, hospital food influences patients' emotional states, sense of dignity, and overall perception of care quality.[9]

Despite this recognition, the pathways through which food quality affects patient satisfaction remain insufficiently understood. In particular, the potential mediating function of emotional well-being and the moderating role of perceived value have not been systematically examined. The absence of such insight constrains theoretical development and limits managerial strategies for improving patient experience through environmental and service enhancements.

To address these gaps, the present study conceptualizes a model in which perceived hospital food quality directly affects hospitalized patient satisfaction, while also exerting indirect effects via emotional well-being. Furthermore, the relationship is hypothesized to vary based on patients' perceived value of hospital services. This framework is theoretically grounded in Affect-as-Information Theory (AIT),[10] which posits that affective states serve as cognitive cues in evaluative processes. When patients encounter high-quality food, the resulting positive emotions may shape their broader judgment of hospital performance.

In addition, Perceived Value Theory [11] informs the study's moderating hypothesis by suggesting that satisfaction is not solely determined by service quality, but by an evaluative trade-off between perceived benefits and sacrifices. Accordingly, the influence of food quality on satisfaction may be accentuated in contexts where patients perceive higher value in the overall care environment.

This study proposes and empirically tests a conceptual model linking perceived hospital food quality, emotional well-being, perceived value, and hospitalized patient satisfaction. By identifying affective and cognitive mechanisms underlying food-service experiences, the research contributes to a deeper understanding of non-clinical drivers of patient-centered outcomes in hospital settings.

2. Method

Study population

This study included 209 valid questionnaires collected from inpatients at the First People's Hospital of Luoyang City and its three affiliated hospitals. Among the participants, 56.46% (n = 118) were female and 43.54% (n = 91) were male. Regarding age distribution, the largest proportion of respondents were aged 46–55 years (31.58%), followed by those aged 66 years and older (27.27%), and those aged 56–65 years (25.84%). Patients aged 36–45 years accounted for 6.70%, while those aged 18–25 and 26–35 years both represented 4.31%.

In terms of education level, most patients held college or undergraduate degrees (46.89%). High school or junior college degrees were reported by 32.06% of participants, followed by junior high school (9.09%), graduate or higher degrees (7.66%), and elementary school or below (4.31%).

The length of hospitalization varied across respondents: 33.97% were hospitalized for 1–3 days, 31.10% for 4–7 days, 26.32% for 8–14 days, 5.74% for 15–30 days, and 2.87% for more than 30 days.In terms of meal frequency during hospitalization, 54.07% of patients reported receiving hospital meals twice daily, 29.19% once daily, and 16.75% three times daily.

Procedure

A structured questionnaire survey was employed as the primary method of data collection. The distribution of the questionnaire was carried out jointly by the research team and medical staff from the participating hospitals. Both online and offline modes were utilized: respondents could either scan a QR code via WeChat to complete the survey electronically or use a researcher-provided device (e.g., iPad) to respond on-site.

Snowball sampling was adopted, whereby initial participants could recommend other eligible patients to participate. Participation was strictly voluntary, and all responses were anonymous. Participants were informed of their right to discontinue at any point without any consequence. Only those patients whose physical condition permitted participation and who were not resting at the time of the survey were approached. No pressure or inducement was applied by the researchers or medical staff at any stage of the survey process.

Research Instrument

The questionnaire was developed based on established guidelines for scale design.[12-14] Measurement items were adapted from validated scales in previous studies,[15-18]and refined through consultations with domain scholars and healthcare professionals to ensure clarity and relevance.

A 7-point Likert scale was used to enhance the reliability and validity of responses.[19, 20]The final instrument consisted of 18 items, grouped under four constructs: Perceived Hospital Food Quality (PHFQ), Emotional Well-being (EWB), Perceived Value (PV), and Hospitalized Patient Satisfaction (HPS), as shown in Table 1.

Data Analysis

Partial Least Squares Structural Equation Modeling (PLS-SEM) was used to analyze the data via SmartPLS 4.0. This method is well-suited for exploratory research and theory development [13] and is capable of handling complex models involving multiple independent and dependent variables. It is also robust to non-normal data distributions.

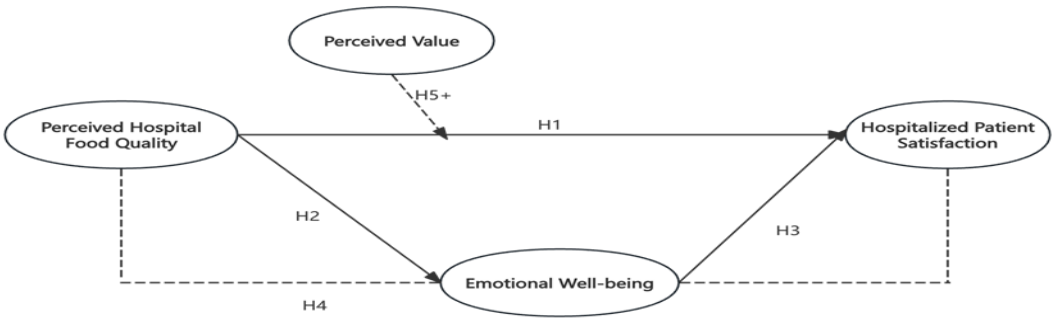
To assess the significance and stability of the path coefficients, the analysis applied bootstrapping with 5,000 resamples. This approach provided confidence intervals and statistical significance levels for all estimated parameters, ensuring the robustness of the findings.

Table 1: Measurement Items for Constructs

Construct	Item
PHFQ	The hospital food was as good as I expected.
	I was able to choose healthy meals in the hospital.
	The hospital food tasted delicious.
	I liked how the hospital vegetables were cooked.
	The hospital menu offered meals that were diverse enough and appetizing.
	The hospital meals had excellent and unique flavors
EWB	I feel optimistic about the future.
	I feel that life has a purpose.
	I feel pleased with myself.
	I feel that life is enjoyable.
PV	The hospital provides services with consistent quality.
	The hospital's medical services offer value for money.
	The hospital's services, including food costs, are reasonably priced.
	The overall experience of receiving treatment at the hospital is worth the cost.
HPS	The overall service provided by the hospital makes me feel satisfied and happy.
	After receiving medical and nursing care, I believe choosing this hospital was the right decision.
	I would recommend the medical services of this hospital to others.
	I am very satisfied with the overall hospitalization experience provided by this hospital.

Source: Measurement items adapted from previously validated instruments. [15-18]

Figure 1: Conceptual Framework of the Study



Source: Created by the authors

Research framework

The conceptual model, shown in Figure 1, explores how perceived hospital food quality influences hospitalized patient satisfaction. Perceived hospital food quality is hypothesized to have a direct effect on hospitalized patient satisfaction, as well as indirect effects through two additional constructs: emotional well-being and perceived value.

Specifically, perceived hospital food quality is expected to enhance hospitalized patient satisfaction both directly and indirectly by improving patients' emotional states. In parallel, perceived value is proposed to moderate this relationship, such that the effect of food quality on satisfaction becomes stronger when patients perceive higher value in the hospital's services.

By integrating emotional and evaluative dimensions of the patient experience, this framework offers a more comprehensive view of how food quality contributes to satisfaction during hospitalization.

3. Results

Common method bias

To assess potential common method bias, Harman's single-factor test was conducted following established guidelines.[21]The results from the principal component analysis indicated that the first factor accounted for 35.9% of the variance—well below the 50% threshold—suggesting that common method bias was not a significant concern in this study.

Variance inflation factor (VIF) values were also examined to check for multicollinearity. All VIF values ranged from 1.000 to 1.584, which is well below the accepted cut-off of 5.0.[22, 23]This indicates that multicollinearity was not present, and the results are stable and reliable.

Reliability

The measurement model was evaluated for internal consistency and validity in accordance with PLS-SEM best practices.[24]As shown in Table 2, Cronbach's alpha values for all constructs ranged from 0.826 to 0.891, exceeding the recommended threshold of 0.7,[25] indicating good internal reliability. Composite reliability scores ranged from 0.884 to 0.917, further supporting the consistency of the constructs.

Convergent validity was also established. Factor loadings for all items exceeded the recommended value of 0.7.[26, 27] Specifically, the loadings for items measuring hospitalized patient satisfaction ranged from 0.754 to 0.876, for perceived hospital food quality from 0.758 to 0.868, for perceived value from 0.776 to 0.863, and for emotional well-being from 0.809 to 0.907.In addition, all constructs showed satisfactory average variance extracted (AVE) values, ranging from 0.648 to 0.704, which are above the 0.5 threshold,[28] indicating good convergent validity.

Discriminant Validity

Discriminant validity was assessed using two methods. First, the Fornell–Larcker criterion was applied by comparing the square root of AVE for each construct with its correlations with other constructs. As shown in Table 3, each construct's AVE square root (diagonal values) exceeded its correlations with other constructs (off-diagonal values), indicating adequate discriminant validity.

Second, the heterotrait–monotrait (HTMT) ratio was examined. All HTMT values were below the conservative threshold of 0.90,[29] further confirming discriminant validity among the latent constructs.

Table 2: Reliability and Validity of Measurement Model

Construct	Item	Loadings	Cronbach's alpha	Composite reliability	AVE
EWB	EWB1	0.907	0.859	0.905	0.704
	EWB2	0.823			
	EWB3	0.809			
	EWB4	0.815			
HPS	HPS1	0.876	0.827	0.885	0.66
	HPS2	0.805			
	HPS3	0.809			
	HPS4	0.754			
PHFQ	PHFQ1	0.868	0.891	0.917	0.648
	PHFQ2	0.758			
	PHFQ3	0.779			
	PHFQ4	0.801			
	PHFQ5	0.809			
	PHFQ6	0.81			
PV	PV1	0.863	0.826	0.884	0.656
	PV2	0.776			
	PV3	0.801			
	PV4	0.797			

Note: EWB=Emotional Well-being, HPS=Hospitalized Patient Satisfaction,PHFQ=Perceived Hospital Food Quality, PV=Perceived Value

Table 3: Discriminant Validity Analysis

Fornell-Larcker criterion					
	EWB	HPS	PHFQ	PV	
EWB	**0.839**				
HPS	0.511	**0.812**			
PHFQ	0.475	0.486	**0.805**		
PV	0.377	0.295	0.035	**0.81**	
HTMT ratio					
	EWB	HPS	PHFQ	PV	PV x PHFQ
EWB					
HPS	0.603				
PHFQ	0.54	0.562			
PV	0.445	0.348	0.104		
PV x PHFQ	0.286	0.424	0.327	0.075	

Note: Diagonal values represent the square root of AVE, off-diagonal values are correlations between constructs.

Table 4: Results of Hypotheses Testing

Hypothesis	Path	Beta	t-values	p-values	95% CI	Result
Direct effects						
H1	PHFQ → HPS	0.294	4.654	<0.001	[0.175, 0.424]	Supported
H2	PHFQ → EWB	0.475	9.662	<0.001	[0.381, 0.571]	Supported
H3	EWB → HPS	0.242	3.918	<0.001	[0.116, 0.358]	Supported
Mediation effects						
H4	PHFQ → EWB → HPS	0.115	3.548	<0.001	[0.054, 0.181]	Supported
Moderation effects						
H5	PV × PHFQ → HPS	0.243	4.306	<0.001	[0.123, 0.343]	Supported

Note: β=standardized path coefficient; CI=Confidence Interval (95%); Bootstrap resampling = 5000 samples. Significant at p<0.001.

Hypothesis testing

The research hypotheses were tested using Partial Least Squares Structural Equation Modeling (PLS-SEM) combined with a bootstrapping procedure involving 5000 resamples. The results, as summarized in Table 3, provide support for all proposed direct, mediating, and moderating effects.

Specifically, Hypothesis H1 was supported, as Emotional Well-being exerted a significant positive effect on Hospitalized Patient Satisfaction ($\beta = 0.242$, $t = 3.918$, $p < 0.001$, 95% CI [0.116, 0.358]). Hypothesis H2 was also supported, indicating that Perceived Hospital Food Quality significantly influenced Emotional Well-being ($\beta = 0.475$, $t = 9.662$, $p < 0.001$, 95% CI [0.381, 0.571]). Similarly, Hypothesis H3 was validated, as Perceived Hospital Food Quality had a significant direct effect on Hospitalized Patient Satisfaction ($\beta = 0.294$, $t = 4.654$, $p < 0.001$, 95% CI [0.175, 0.424]).

With respect to mediation, the results supported Hypothesis H4, showing that Emotional Well-being significantly mediated the relationship between Perceived Hospital Food Quality and Hospitalized Patient Satisfaction ($\beta = 0.115$, $t = 3.548$, $p < 0.001$, 95% CI [0.054, 0.181]).

Regarding moderation, Hypothesis H5 was confirmed. Perceived Value significantly moderated the relationship between Perceived Hospital Food Quality and Hospitalized Patient Satisfaction ($\beta = 0.243$, $t = 4.306$, $p < 0.001$, 95% CI [0.123, 0.343]).

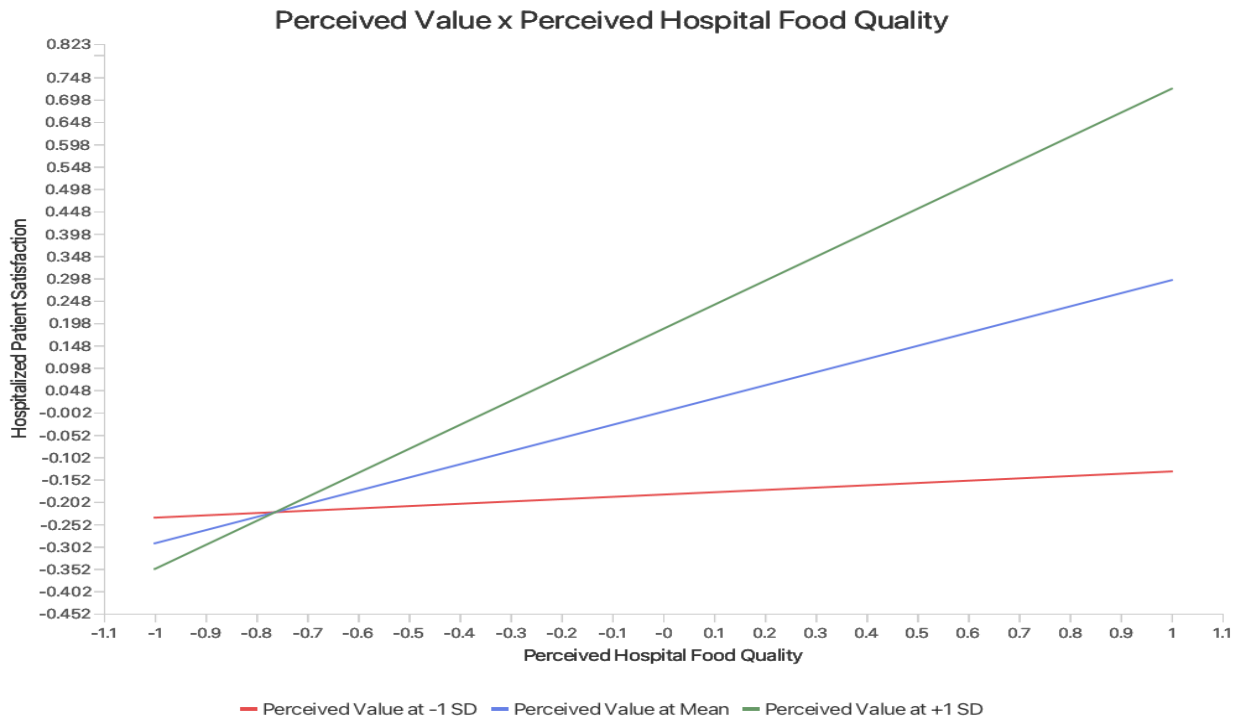
In terms of explanatory power, the model accounted for 22.6% (adjusted 22.2%) of the variance in Emotional Well-being and 40.8% (adjusted 39.7%) of the variance in Hospitalized Patient Satisfaction. These values indicate that the model possesses moderate to strong explanatory capability.[13]

Moderating effect

To further illustrate the moderating role of perceived value, a simple slope analysis was conducted (see Figure 2). The results revealed that the positive relationship between perceived hospital food quality and hospitalized patient satisfaction was strongest when perceived value was high (+1 SD), weaker at the mean level of perceived value, and weakest when perceived value was low (−1 SD).

This suggests that patients' perceptions of service value shape the extent to which food quality contributes to satisfaction. When hospital services—such as meals and medical care—are perceived as cost-effective and worthwhile, the positive effect of food quality on satisfaction is amplified. Conversely, if patients view the overall service value as low, even high-quality food has a diminished impact on their satisfaction.

Figure 2: Moderating Effect of Perceived Value on the Relationship between Perceived Hospital Food Quality and Hospitalized Patient Satisfaction



Source: Output from SmartPLS 4.0

4. Discussion

This study proposed and tested an integrative framework to explain how perceived hospital food quality influences hospitalized patient satisfaction, introducing emotional well-being as a mediator and perceived value as a moderator. The results confirmed all proposed hypotheses and offer both theoretical contributions and practical implications for hospital food service management.

First, perceived hospital food quality was found to have a significant direct effect on hospitalized patient satisfaction ($\beta = 0.294$, $p < 0.001$). This finding carries weight in the Chinese healthcare context. In Chinese culture, food is deeply embedded in concepts of well-being, healing, and cultural identity.[30] The longstanding tradition of therapeutic diets suggests that food serves not only a nutritional function but also a symbolic and emotional one. Thus, the influence of food quality on patient satisfaction may be especially salient in China compared to Western contexts.

Second, the results showed that perceived hospital food quality significantly improves patients' emotional well-being ($\beta = 0.475$, $p < 0.001$). This highlights that food services affect more than physical recovery—they can uplift emotional states. In a hospital setting, where patients often face stress, uncertainty, and discomfort, providing high-quality meals may serve as a form of emotional support. This finding encourages a broader view of hospital food, framing it not just as a functional service, but as a component of holistic patient care.

Third, emotional well-being was found to significantly enhance hospitalized patient satisfaction ($\beta = 0.242$, $p < 0.001$), reaffirming the central role of affective responses in shaping evaluations of service quality. This is consistent with Affect-as-Information Theory,[10]which posits that individuals rely on their emotional states as information when making judgments. In this context, patients experiencing more positive emotions—partly due to better food—are more likely to view their overall hospital experience

favorably.

Fourth, the study identified a significant mediating effect of emotional well-being in the relationship between perceived hospital food quality and hospitalized patient satisfaction ($\beta = 0.115$, $p < 0.001$). This underscores a key psychological mechanism: high-quality food enhances emotional well-being, which in turn raises satisfaction with the hospital stay. This mediating pathway moves beyond purely functional models of food provision and frames hospital meals as a vehicle for psychological uplift. Practically, this suggests that improving meal quality, meal presentation, dining environment, and service style could collectively contribute to a more emotionally supportive inpatient experience.[31, 32] In environments where patients often feel anxious or isolated, such efforts could help reduce emotional distress and enhance perceived quality of care.[33, 34]

Finally, the study confirmed that perceived value significantly moderates the effect of food quality on satisfaction ($\beta = 0.243$, $p < 0.001$). Patients do not evaluate food quality in isolation, but within the broader context of how they perceive the overall value of hospital services. This aligns with Perceived Value Theory,[11] which suggests that satisfaction is shaped by a trade-off between quality and cost. When patients believe that the hospital offers services—including meals—at a fair value, the positive impact of food quality on satisfaction is magnified. If patients feel services are overpriced or lacking value, the benefits of better food may not translate into higher satisfaction. For administrators, this highlights the importance of not only improving meal quality, but also communicating the value proposition clearly—through transparency in pricing, visible quality assurance practices, and differentiated meal services for diverse patient groups.

These findings offer several actionable implications. Hospitals should view food services as a strategic tool for enhancing patient satisfaction and emotional well-being. Personalized menus, improved dining environments, and greater attention to meal aesthetics could significantly elevate the patient experience.Highlighting both the nutritional benefits and the cost-effectiveness of hospital meals may help enhance patients' sense of value, thereby reinforcing the impact of food quality on overall satisfaction. From a resource allocation perspective, investing in food services may yield strong returns not only in satisfaction metrics but also in emotional outcomes, making it a cost-effective lever in patient-centered healthcare.

While the study yields valuable insights, it is not without limitations. Its cross-sectional design limits the ability to draw causal inferences. Future studies could adopt longitudinal approaches to better capture temporal dynamics. Moreover, the sample was limited to hospitals in a single region. Expanding the geographic scope may uncover regional variations in perceptions of food quality and satisfaction. Finally, incorporating demographic variables such as age, income, and illness type as control variables could provide more granular understanding of subgroup differences.

5. Conclusion

This study developed a comprehensive model to examine how perceived hospital food quality influences hospitalized patient satisfaction by incorporating emotional well-being as a mediating factor and perceived value as a moderator. The findings demonstrate that hospital food quality contributes to satisfaction not only directly, but also indirectly by enhancing patients' emotional states. Additionally, the strength of this relationship is shaped by patients' perceived value of hospital services.

These results provide a clearer understanding of how non-clinical service elements, such as food, affect patient satisfaction and emotional well-being. While clinical excellence remains essential, this study emphasizes the value of holistic care that also addresses patients' psychological and experiential needs. By improving the quality of food services and reinforcing the perceived value of care, hospitals can meaningfully elevate patient satisfaction and gain a strategic advantage in an increasingly experience-driven healthcare environment. Although subgroup analysis was not conducted in this study, future research may explore whether demographic and clinical characteristics, including

age, sex, type of illness, and frequency of food consumption, influence patients' perceptions and emotional well-being in the hospital context.

Ethical Approval

This study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Ethical approval was obtained from theEthics Committee of Luoyang First People's Hospital, and the approval number is EC-2025-0403. All participants were informed of the study's purpose, procedures, and their rights. Participation was entirely voluntary, with no coercion or incentives involved. Respondents were assured of anonymity and confidentiality and had the right to withdraw at any time without consequence.

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Social Medicine
Health For All
ISSN: 1557-7112