

ORIGINAL ARTICLE

Assessing patient satisfaction in hospital food service with SERVQUAL: A cross-sectional study

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ABSTRACT

Objective: To identify key hospital food service attributes that influence patient satisfaction and inform actionable improvements in meal delivery and service quality.

Methods: This cross-sectional study assessed patient satisfaction with hospital food service using a modified SERVQUAL-based survey instrument. Inpatients rated both expectations and experiences across multiple service dimensions. Descriptive statistics and regression analysis were conducted to identify food service features linked to satisfaction.

Results: Food quality, perceived value, empathy, and meal diversity showed strong positive influence, while longer hospital stays and slower service were associated with lower ratings. Responsiveness also played a role in shaping overall satisfaction. These findings highlight actionable opportunities for improving patient-centered care.

Conclusions: Enhancing menu design, staff engagement, and delivery efficiency may elevate meal satisfaction and support broader institutional quality goals.

Key Words: Hospital food service, Meal variety, Patient experience, Patient satisfaction, Service quality, SERVQUAL

1. INTRODUCTION

Hospital food service contributes directly to patient satisfaction and recovery. Providing healthy, appealing meals that meet patient expectations supports both well-being and rehabilitation.^[1,2] Key contributors to patient experience include food quality, taste, variety, service delivery, and food temperature.^[3] Understanding and measuring these factors enables hospitals to improve their food service and increase patient satisfaction.^[2]

While hospitals pursue multiple strategies to improve satisfaction,^[4] current assessments tend to prioritize operational metrics like meal timing and nutrition compliance.^[5,6] Patient-centered measures, such as responsiveness, empathy, and perceived value, remain underutilized.^[7] This study adapts

the SERVQUAL framework^[8] to assess hospital food service from the patient's perspective, offering a more inclusive evaluation that aligns service delivery with experiential quality.

Common tools HCAHPS (Hospital Consumer Assessment of Healthcare Providers and Systems), EASH (Environmental Assessment Survey for Hospitals), PROMIS (Patient-Reported Outcomes Measurement Information System), focus groups, and online platforms offer broad assessments but fail to capture the specific dynamics of meal-related experiences.^[2,5,9] While food service impacts recovery, frameworks integrating service quality into meal assessments remain limited and underdeveloped.^[7,10]

Most prior studies focus on non-healthcare environments, limiting their relevance to hospital food services.^[4] Hos-

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pitals need practical tools to understand and improve key drivers that influence patient satisfaction and deliver services that meet evolving patient expectations.^[11, 12]

Although the terms “patient experience” and “patient satisfaction” are commonly used interchangeably, this study separates them for clarity in interpretation. Patient satisfaction relates to patients’ evaluations of specific parts of the hospital food service after they have used them, whereas patient experience includes a broader range of perspectives, such as expectations and interactions during care. While they are closely related, satisfaction is outcome-based, whereas experience encompasses both pre-service expectations and real-time perceptions developed throughout the meal delivery process. Instrument adaptation and validation procedures are detailed in the companion methodological paper by Barros et al.^[13]

1.1 Literature review

The SERVQUAL framework, developed by Parasuraman et al.,^[8] evaluates service quality by comparing expected and perceived performance across five dimensions: reliability, responsiveness, assurance, empathy, and tangibles.^[14] Its adaptability has enabled widespread use across industries to assess customer satisfaction and improve service delivery.^[15] SERVQUAL’s dual focus on expectations and perceptions provides a structured approach to identifying service gaps and enhancing customer satisfaction. Brown et al.^[16] emphasized its versatility, noting that refining the model can extend its relevance across diverse sectors.

In healthcare, SERVQUAL has been applied to assess satisfaction and identify service delivery gaps. Ghimire et al.^[17] demonstrated its utility in a private hospital in Nepal, while Lu et al.^[18] used it in a Taiwanese intensive care unit to identify disparities between patient expectations and perceived care quality. Underscoring its value for service optimization in clinical settings.

Beyond healthcare, SERVQUAL has been utilized to investigate consumer loyalty and cultural influences on service perception. Lee and Salciuviene^[19] found that perceived value, trust, and customer satisfaction are key predictors of service loyalty, reinforcing SERVQUAL’s role in shaping user experience across contexts.

Despite its broad application, SERVQUAL remains underexplored in hospital food service. Existing assessments, such as those described by Lai and Gemming,^[7] focus on operational metrics such as meal timing and nutrition compliance but lack a formal framework for evaluating service quality dimensions that shape patient experiences. This study modifies SERVQUAL to assess hospital food service from a

patient-centered perspective, filling a major gap by integrating dimensions such as responsiveness, empathy, perceived value, meal timeliness, variety, and convenience, elements essential to patient satisfaction yet absent from current tools.

1.2 Study focus and objectives

This study responds to the lack of validated frameworks for assessing patient-centered service quality in hospital food service. The SERVQUAL instrument^[8] was adapted to capture the unique dynamics of inpatient meal experiences. The adapted survey incorporated both core service dimensions — such as tangibles, dependability, responsiveness, assurance, and empathy — and food-specific features such as food quality, variety, convenience, meal timing, and perceived value. Conducted across two hospitals, the study examined the gaps between patients’ expectations and actual meal service experiences and identified key drivers of satisfaction. Findings offer hospital administrators actionable insights into patient-value service elements and opportunities to enhance food service quality, delivery, and personalization.

To guide this investigation, the following research questions were explored:

1. How satisfied are inpatients with the food service provided?
2. Which SERVQUAL dimensions influence inpatient satisfaction and expectations regarding hospital food service?
3. How does the level of inpatient satisfaction with the food service in the healthcare facility compare to their pre-hospitalization expectations?

2. MATERIALS AND METHODS

A cross-sectional survey was conducted at two acute-care hospitals in Southern California to evaluate patient satisfaction with food service using the adapted SERVQUAL for Hospital Food Service (SERVQUAL-HF) framework. Eligible inpatients completed a 7-point Likert scale questionnaire assessing five service quality dimensions: food quality, responsiveness, perceived value, empathy, and meal diversity. Participants receiving standard hospital meals were eligible; those with severe dietary restrictions or requiring feeding assistance were excluded to ensure comparability of food service experience and reduce confounding variables.

Descriptive analysis summarized patient demographics, expectation ratings, and satisfaction scores across SERVQUAL-HF dimensions. Multilinear regression identified significant predictors of patient satisfaction, including staff responsiveness, meal timeliness, and perceived value of service. Inter-hospital comparisons revealed variation in service delivery, informing targeted operational improvements and highlight-

ing context-specific drivers of satisfaction.

This study was deemed exempt from Institutional Review Board (IRB) review under 45 CFR 46.104(d)(2) for minimal-risk survey research (IRB #5240007; approved January 31, 2024). All procedures adhered to the ethical principles of the Declaration of Helsinki. Authorization was also obtained from the executive director of nutritional services, the senior vice president of patient care services, and the chief nursing officer of the participating institutions. Results contribute to policy development and service redesign efforts, reinforcing the contribution of food service to patient recovery and hospital-wide satisfaction metrics.

2.1 Study setting

Hospital A is a large tertiary-care academic facility that houses roughly 320 licensed adult beds. It provides a wide range of quaternary treatments, including advanced cardiac care, comprehensive cancer therapy, and organ and bone marrow transplantation. The hospital also operates the region's only Level I trauma center and admits over 26,000 inpatients each year from a large multi-county catchment area. The facility's Nutrition Services section prepares meals on-site and follows a lacto-ovo vegetarian dietary norm while also offering non-vegetarian options, including chicken, fish, and beef, based on patient preference and dietary needs.

Hospital B is a 134-bed specialty hospital that specializes in inpatient rehabilitation and short-term treatment in the orthopedic, neurosurgery, and family medicine departments. Its patients often include those recuperating from strokes, spinal cord injuries, joint replacements, and chronic pain. The hospital's campus also houses outpatient diagnostic and ambulatory care facilities. Food service operations are self-managed and adhere to the same vegetarian and non-vegetarian options dietary guidelines as Hospital A.

3. RESULTS

3.1 Patient demographic summary

A total of 129 inpatients participated in the study: Hospital A ($n = 88$) and Hospital B ($n = 41$). Demographic variables, including age, gender, ethnicity, and race, were recategorized to improve clarity and support meaningful comparisons. To increase interpretability, age was grouped into three categories (18–44 years, 45–64 years, and 65 years and older). Racial groups with low representation were consolidated under "Other" to support meaningful comparisons while preserving relevant distinctions.

Hospital A had a significantly higher proportion of male patients (65.5%) than Hospital B (43.9%, $p = .02$), a difference that influenced perceptions of food service responsiveness and staff interaction. Ethnicity distributions were similar

across hospitals ($p = .84$). However, Hospital A exhibited greater racial diversity, which contributed to variation in satisfaction ratings.

3.2 Key predictors of patient satisfaction

Multilinear regression analysis identified five statistically significant predictors of patient satisfaction, narrowing the focus to β coefficients and p -values for impactful variables. The following variables had the strongest impact on hospital food service ratings:

Empathy ($\beta = 0.48$, $p < .001$) → Higher staff attentiveness significantly increased satisfaction, confirming the importance of training programs that improve interpersonal engagement in food service delivery. Supported by a positive gap (0.35), showing perceptions exceeded expectations.

Perceived Value ($\beta = 0.46$, $p < .001$) → Patients who perceived food service as valuable beyond cost reported greater satisfaction, emphasizing the role of quality and meal customization. A positive gap (0.31) confirmed that expectations were exceeded.

Meal Variety ($\beta = 0.23$, $p < .05$) → A greater range of menu options improved perceptions, reinforcing the need for diverse and flexible meal planning.

Responsiveness ($\beta = -0.24$, $p < .05$) → Delayed service interactions reduced satisfaction, indicating that timely delivery is essential to patient experience. This aligns with a negative gap in meal timeliness (-0.27), indicating unmet expectations at Hospital A.

Length of Hospital Stay ($\beta = -0.21$, $p < .05$) → Prolonged hospitalization decreased satisfaction, reflecting the impact of menu fatigue over time.

The remaining SERVQUAL dimensions (tangibles, reliability, assurance, and convenience) were not statistically significant in this dataset for Hospital A, indicating that interpersonal and experiential factors had a more substantial influence on patient satisfaction.

3.3 SERVQUAL gaps in hospital food service

The analysis prioritized service quality dimensions with statistically significant differences between Hospital A and Hospital B to guide hospital-level improvements. Food quality was a key differentiator ($p = .02$), with Hospital A receiving higher ratings for taste, presentation, and overall dining experience. Higher scores for meal appearance and flavor at Hospital A contributed to higher satisfaction, confirming the impact of food preparation and presentation on patient perception.

Hospital A's patients reported faster and more engaged meal service, indicating streamlined delivery systems and proac-

tive staff interaction directly improved satisfaction. Staff empathy and perceived value were also significant predictors that influenced patient satisfaction. Empathetic interactions enhanced perceptions of care, while higher perceived value at Hospital A reflected the benefits of personalized meal options and service customization.

Dimensions with limited statistical or practical relevance were archived for methodological reference. These findings support targeted upgrades in patient-centered meal service, including improved responsiveness, staff interaction, and menu design.

4. DISCUSSION

4.1 Demographic

While not the primary focus, demographic variables provided context for interpreting satisfaction differences. Notably, gender distribution varied considerably among hospitals ($p = .02$), with Hospital A having a higher proportion of male patients (65.5%) compared to Hospital B (43.9%). While previous research has yielded mixed results — some claiming that gender has no effect on satisfaction,^[20] while others have found demographic effects on expectations^[21] — this variation likely influenced the perception of food delivery and staff interaction. For hospital administrators, this suggests the need to consider demographic profiles when designing meal services and staff engagement strategies. Length of hospitalization negatively impacted satisfaction in Hospital A ($\beta = -0.21, p < .05$), reinforcing the importance of rotating menus and personalized meal planning to prevent menu fatigue and worsening patient experience.^[22]

4.2 Psychometric validity and methodological contributions

The SERVQUAL–HF framework, validated in a companion study by Barros et al.,^[13] provided a structured lens for evaluating patient satisfaction with hospital food service. Findings emphasize the relevance of food quality, responsiveness, perceived value, empathy, and meal variety as actionable service dimensions that can be strategically targeted to enhance hospital food service operations.^[8] Consistent with prior research on service expectations,^[2] the results underscore the importance of responsiveness and perceived treatment quality in shaping patient well-being. SERVQUAL–HF thus offers a replicable and adaptable tool for benchmarking food service performance across diverse hospital settings.

4.3 Interpreting key findings within the SERVQUAL–HF framework

Empathy and perceived value were strongly correlated, underscoring the role of staff-patient interaction in shaping satisfaction.^[19] Regression analysis indicates food quality

as the strongest predictor, aligned with prior research on its influence on recovery outcomes.^[3] Institutional differences in meal variety and responsiveness point to the impact of operational structures on patient experience. These findings reinforce the conceptual value of flexibility and customization in food service delivery, indicating that institutional adaptability may be a key lever for improving satisfaction within the SERVQUAL–HF framework.^[7]

4.4 Limitations and considerations for model refinement

This study was limited to two hospitals within the same healthcare system,^[4] which constrain generalizability. Broader sampling across diverse institutions could strengthen the applicability of findings.^[5,6] Furthermore, while pre-hospitalization expectations were captured, incorporating longitudinal tracking would allow for more dynamic assessments of patient experience, particularly in response to changing needs during extended stays.^[9,10]

4.5 Future directions for hospital food service assessment

Future research should expand SERVQUAL–HF by incorporating meal-specific parameters such as portion size, dietary modification, and cultural food preferences.^[23,24] Longitudinal studies could illuminate satisfaction trends over extended hospital stays, particularly regarding menu fatigue and flexibility.^[25] Integrating real-time feedback mechanisms, such as surveys, enhance responsiveness and supports continuous quality improvement. These innovations could strengthen the framework's role as a dynamic tool for evaluating and improving hospital food service delivery.^[26]

4.6 Applications

This study identifies actionable factors that influence food service satisfaction and provides practical suggestions to healthcare executives. Focusing on SERVQUAL–HF dimensions — empathy, responsiveness, meal variety, and perceived value — enables hospitals to tailor interventions that improve experience and outcomes. For example, on-demand meal delivery systems provide patients more control over meal selection and timing, increasing autonomy and lowering stress during hospitalization.

Enhancing food service quality can improve hospitals ratings and influence reimbursement through systems such as Medicare and Medicaid. Aligning these improvements with broader quality initiatives supports resource optimization and long-term sustainability.

Nurses, dietitians, diet technicians, and food service staff play a central role in shaping patient perceptions. Investing

in staff training programs in communication, responsiveness, and service etiquette ensures that operational changes are reinforced by compassionate care.

Hospitals can embed SERVQUAL-HF assessments into quarterly or biannual Quality and Nutrition Management reviews to monitor progress, identify gaps, and evaluate intervention effectiveness.

Standardizing hospital food service policies can reduce institutional variability and promote equitable, patient-centered care. Recognizing food service as a form of patient advocacy fosters accountability and inclusivity. Incorporating patient feedback into service design helps create healing environments that meet patients' nutritional, emotional, and cultural needs, ultimately improving recovery and strengthening community trust.

5. CONCLUSIONS

This study applied an adapted SERVQUAL-HF framework to assess patient experiences and expectations related to hospital food service. Key service dimensions — perceived value, empathy, food quality, and meal diversity — emerged as significant drivers of satisfaction. Patient-centered food service models that prioritize responsive staff, diverse menus, and flexible delivery methods can meaningfully enhance the hospital experience. In this context, perceived value reflects not only the meal itself but also the consistency and alignment of service with patient expectations.

These findings offer actionable guidance for hospital administrators, policymakers, and healthcare educators. To reduce meal fatigue and improve satisfaction, hospitals should consider embedding SERVQUAL-HF assessments into routine quality reviews, supporting data-driven improvements in food service delivery. Policymakers are encouraged to recognize food service quality as a component of institutional performance, while educators can embed these insights into staff development programs that emphasize food service as a core element of patient care.

Future research should explore how food service improvements affect clinical outcomes, patient recovery, and operational performance. In particular, understanding how medical conditions and length of stay shape food service perceptions may inform more tailored interventions. Ultimately, when hospital food service is approached strategically and empathetically, it evolves from a support function into a driver of healing, satisfaction, and patient trust.

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AUTHORS CONTRIBUTIONS

Concept — T.S.G.B., K.J.M.; definition of intellectual content — T.S.G.B., K.J.M.; content — T.S.G.B.; literature search — T.S.G.B., K.J.M.; clinical studies — T.S.G.B., C.E.H., G.S.B.; experimental studies — T.S.G.B.; data acquisition — T.S.G.B.; data analysis — T.S.G.B., W.L.B.; statistical analysis — T.S.G.B., W.L.B.

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CONFLICTS OF INTEREST DISCLOSURE

The authors declare they have no conflicts of interest.

INFORMED CONSENT

Because the research involved anonymous survey responses, formal written consent was not required. Instead, patients received an informational form outlining the study's purpose, procedures, and voluntary nature prior to participation.

ETHICS APPROVAL

The Publication Ethics Committee of the Association for Health Sciences and Education. The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

PROVENANCE AND PEER REVIEW

Not commissioned; externally double-blind peer reviewed.

DATA AVAILABILITY STATEMENT

All data generated for this study were used exclusively to address the stated research question and are not intended for public archiving. However, all analyzed data are transparently reported within the manuscript through summary statistics and response distributions. No additional datasets are available.

DATA SHARING STATEMENT

The raw survey data underlying this study are not publicly available due to the anonymous nature of data collection and institutional confidentiality requirements. De-identified datasets cannot be shared to ensure participant privacy.

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