

# Patient-centered Care: Insights into Satisfaction Drivers

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**ABSTRACT** **Background:** Patient satisfaction is a key indicator of health-care quality, influencing treatment adherence, clinical outcomes, and hospital reputation. The relationship between length of hospital stay (LOS) and patient satisfaction in neurological inpatients remains understudied, particularly regarding sex differences and neurological diagnosis types. **Objectives:** To understand how LOS influences satisfaction and patient experience. To evaluate care strategies and improve communication in neurological settings. **Methods:** We conducted a retrospective observational study of 181 patients admitted to the neurology department at Sheba Medical Center between January 2023 and January 2025. Patient satisfaction was assessed using a standardized survey covering overall experience, communication with medical staff, and the discharge process. We used partial correlation analyses and multivariate ANOVA to explore associations of LOS, sex, diagnosis, and satisfaction. **Results:** A significant negative correlation was found between LOS and patient satisfaction ( $r = -0.19$ ,  $P = 0.012$ ), as well as with perceptions of competency ( $r = -0.22$ ,  $P = 0.004$ ), physician communication, and involvement in treatment decisions. Females reported lower satisfaction than males, particularly regarding hospitalization conditions, the discharge process, and staff communication. Diagnosis-specific differences also emerged, with females diagnosed with headache consistently reporting the lowest satisfaction ratings. **Conclusions:** Longer hospital stays were associated with lower patient satisfaction. Female sex and diagnosis of headaches influenced patient satisfaction the most. These findings highlight the need for improved communication and enhanced discharge planning to optimize patient satisfaction in neurological settings. Addressing these factors may contribute to more patient-centered care and better overall experiences for hospitalized neurological patients.

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**KEY WORDS:** healthcare quality, length of hospital stay (LOS), neurological diagnosis, patient satisfaction, sex differences

Patient satisfaction is a critical component of health-care quality. It influences perceived care, treatment adherence, clinical outcomes, and re-admission rates [1,2]. It also affects hospital reimbursement and reputation, especially in value-based care models, making satisfaction a priority for institutions aiming to improve quality and financial sustainability [3].

The relationship between hospital length of stay (LOS) and patient satisfaction is complex and mediated by multiple factors, including care quality, discharge planning, and post-discharge support [4]. While shorter LOS may increase satisfaction in procedures such as total hip arthroplasty [5], perceptions of premature discharge can lower satisfaction, highlighting the need for adequate recovery time [4]. Some studies found no significant correlation between LOS and satisfaction [6], underscoring its context-specific nature and the need to balance efficient LOS with comprehensive care.

Accurate diagnosis of neurological complaints often requires time-consuming tests such as lumbar puncture and magnetic resonance imaging, potentially prolonging LOS and affecting satisfaction [7,8]. Specialized neurological evaluation improves satisfaction compared with care by non-experts [9]. The satisfaction can vary by condition type, with chronic disorders (e.g., Parkinson's disease, multiple sclerosis) having distinct determinants [10]. Although shorter stays often correlate with higher satisfaction, excessively brief stays may raise concerns about inadequate recovery [11–14].

To broaden this analysis, in addition to neurology, we included two additional departments, internal medicine and dermatology, to compare LOS and satisfaction dynamics across varied clinical settings [15]. While patient satisfaction was examined primarily among individuals hospitalized in the neurology department, descriptive

comparisons with internal medicine and dermatology are presented to provide clinical context rather than formal between-department analyses.

Despite growing interest, limited literature examines how LOS interacts with patient satisfaction among neurological patients, including the roles of the sex of the patient or diagnosis type. We hypothesized that patients with chronic conditions would show higher satisfaction with shorter LOS, and that LOS-satisfaction relationships would differ between male and female patients. In this study, we aimed to help to guide providers in optimizing LOS and care strategies to enhance satisfaction in neurological settings.

## PATIENTS AND METHODS

### STUDY DESIGN AND PARTICIPANTS

This retrospective observational study included 181 adult patients admitted to the neurology department at the Sheba Medical Center between January 2023 and January 2025.

Although satisfaction data were available from additional departments, the present analyses focused on patients hospitalized in the neurology department. Data from internal medicine and dermatology were used solely for contextual comparison and were not subjected to the same multivariable analyses.

### INCLUSION AND EXCLUSION CRITERIA

Eligible participants were adults ( $\geq 18$  years) who completed the satisfaction survey at discharge and were diag-

nosed with one of the predefined neurological conditions. Exclusion criteria included age  $< 18$ , incomplete surveys, or diagnoses outside the six established study categories.

### DATA EXTRACTION

Data were extracted from electronic medical records, including age, sex, LOS, primary neurological diagnosis, and satisfaction survey results. Surveys were sent via SMS at discharge and included questions regarding medical care, staff interactions, and overall experience.

A satisfaction survey was assessed using institutional questionnaires routinely administered at Sheba Medical Center for more than 7 years. The questionnaires are based on the Israeli Ministry of Health national *Patient Experience Survey* introduced in 2015 and were adapted for ongoing internal quality assessment.

Over time, minor modifications were introduced to refine question wording and improve clarity, while preserving the core domains of patient experience. The surveys are used consistently across all inpatient departments at Sheba Medical Center as part of routine clinical practice.

### DEFINITIONS AND CATEGORIZATION

LOS was measured in days from admission to discharge. Neurological diagnoses were categorized into six groups: headaches, seizures, visual disturbances, sensory disturbances, transient ischemic attack (TIA), and stroke. Patient satisfaction was evaluated using a standardized Likert-type survey, producing an overall satisfaction score.

### ANALYSIS PLAN AND STATISTICAL METHODS

Partial correlation analysis examined associations between LOS and satisfaction across 29 survey items. Analyses were conducted first unadjusted, then controlling for sex and diagnosis. The survey comprised one general satisfaction question (1–10) and 28 domain-specific items (1–5). Partial correlation coefficients ( $r$ ) and  $P$ -values were calculated, with statistical significance set at  $P < 0.05$ . Statistical analyses were performed using IBM Statistical Package for the Social Sciences statistics software, version 26 (SPSS, IBM Corp, Armonk, NY, USA).

The satisfaction questionnaire consisted of 29 items in total. However, the present analysis focused on 19 core items that were consistently completed and deemed most relevant to the study objectives.

### ETHICS CONSIDERATIONS

Ethical approval was obtained from the institutional review board (1574-24-SMC-D). Informed consent was

**Table 1.** Demographics and type of diagnosis

	Males (n=64)	Females (n=117)	Adjusted residuals	P-value
Age, mean $\pm$ SD	59.47 (15.8)	56.09 (18.8)		0.2*
Stroke, n (%)	12 (18.75)	14 (12)	1.2	0.01***
TIA, n (%)	16 (25)	16 (13.68)	1.9	
Headache, n (%)	4 (6.25)	28 (23.93)	3	
Seizure, n (%)	18 (28.13)	23 (19.66)	1.3	
Sensory disturbance, n (%)	5 (7.81)	14 (11.97)	0.9	
Visual disturbance, n (%)	9 (14.06)	22 (18.8)	0.8	

\*Independent samples  $t$ -test

\*\*Fisher's Exact Test

$P < 0.05$  was considered statistically significant

SD = standard deviation, TIA = transient ischemic attack

waived due to the retrospective design. The study adheres to STROBE guidelines.

**RESULTS**

The study included 181 neurology inpatients: 64 males (35.4%) and 117 females (64.6%). The primary aim was to assess correlations between hospital LOS and satisfaction based on a 19-question survey. The mean age was  $59.47 \pm 15.8$  years for males and  $56.09 \pm 18.8$  years for females, with no significant difference ( $P = 0.2$ ).

Six major neurological diagnoses were examined: stroke, TIA, headache, seizures, sensory disturbances, and visual disturbances. Fisher’s exact test showed a significant difference by sex in diagnosis distribution ( $P < 0.05$ ), driven by a higher prevalence of headaches among females (Cramer’s  $V = 0.28$ ) [Table 1].

Significant negative correlations were found between LOS and multiple satisfaction measures. Overall satisfaction ( $r = -0.19$ ,  $P = 0.012$ ) and *being in good hands* ( $r = -0.22$ ,  $P = 0.004$ ) showed weak but significant associations. Physician-related items including respectful treatment ( $r = -0.29$ ,  $P < 0.001$ ), clarity of explanations ( $r = -0.25$ ,  $P = 0.001$ ), and involvement in decisions ( $r = -0.26$ ,  $P = 0.001$ ) demonstrated moderate negative correlations. Additional staff-related factors, such as familiarity with the patient’s condition ( $r = -0.21$ ,  $P = 0.005$ ), departmental teamwork ( $r = -0.25$ ,  $P = 0.001$ ), clarity of next steps ( $r = -0.25$ ,  $P = 0.001$ ), discharge instructions ( $r = -0.23$ ,  $P = 0.002$ ), and willingness to recommend the department ( $r = -0.18$ ,  $P = 0.018$ ), also correlated negatively with LOS [Table 2].

A partial correlation analysis controlling for diagnosis showed consistent sex differences: females reported lower satisfaction across multiple items. The strongest effect was for room conditions ( $r = -0.26$ ,  $P < 0.001$ ). Females were also less likely to recommend the department ( $r = -0.25$ ,  $P = 0.001$ ). They reported lower overall satisfaction ( $r = -0.22$ ,  $P = 0.003$ ) and rated both the admission ( $r = -0.22$ ,  $P = 0.003$ ) and discharge processes ( $r = -0.22$ ,  $P = 0.002$ ) less favorably. Lower scores were also observed in nurse availability ( $r = -0.17$ ,  $P = 0.024$ ), clarity of doctor explanations ( $r = -0.15$ ,  $p = 0.045$ ), and departmental coordination ( $r = -0.15$ ,  $P = 0.044$ ), indicating broad sex-related differences in patient experience [Table 3].

A multivariate ANOVA controlling for sex found no significant satisfaction differences across diagnoses in the full sample. However, when analyzed separately, significant differences emerged among females. Female patients differed significantly in overall satisfaction ( $2.92$ ,  $P = 0.016$ ),

feeling *in good hands* ( $3.35$ ,  $P = 0.007$ ), doctors respect ( $3.86$ ,  $P = 0.003$ ), clarity of explanations ( $3.52$ ,  $P = 0.005$ ), involvement in decisions ( $F = 2.52$ ,  $P = 0.033$ ), clarity of next treatment step ( $3.92$ ,  $P = 0.003$ ), privacy and confiden-

**Table 2.** Correlation of patient experience measures and length of stay in the neurology department

Patient experience measure	Correlation (r)	P-value*
Overall satisfaction	-0.19	0.012
Feeling of being in good hands	-0.22	0.004
Physicians treated with kindness and respect	-0.29	< 0.001
Physicians provided clear explanations	-0.25	0.001
Involvement in treatment decisions	-0.26	0.001
Staff familiarity with medical condition	-0.21	0.005
Teamwork and coordination within department	-0.25	0.001
Understanding the next steps in treatment	-0.25	0.001
Clarity of discharge instructions	-0.23	0.002
Willingness to recommend treatment in the department	-0.18	0.018

\*Statistically significant partial correlations test

**Table 3.** Partial correlations of sex and patient experience measures, adjusted for diagnosis

Survey question	Correlation (r)	P-value*
The conditions in the hospitalization room (air conditioning, bed, mattress, crowding, etc.)	-0.26	< 0.001
If needed, would you recommend the neurology department at Sheba Medical Center to friends and family?	-0.25	0.001
Overall satisfaction	-0.22	0.003
The admission process to the department was simple and quick	-0.22	0.003
You were satisfied with the discharge process from the department	-0.22	0.002
The cleanliness of the room and restrooms	-0.19	0.009
The explanations from the nurses were clear	-0.19	0.013
You were satisfied with the waiting time for the discharge letter	-0.19	0.013
To what extent did you feel that you were in good hands?	-0.17	0.020
The nurses treated you with kindness and respect	-0.17	0.026
The nursing staff was available and attentive to your needs	-0.17	0.024
The staff were familiar with your medical condition	-0.17	0.022
The physicians treated you with kindness and respect	-0.16	0.038
The department staff worked in coordination and collaboration regarding your treatment	-0.15	0.044
The physicians provided clear explanations	-0.15	0.045

\*Statistically significant partial correlations test

tiality (2.51,  $P = 0.034$ ), and likelihood of recommending the department (2.7,  $P = 0.024$ ). Bonferroni post-hoc testing showed that most differences originated from the headache group, which consistently reported the lowest satisfaction. These findings suggest that among females, unlike males, diagnosis type, particularly headache, significantly influenced satisfaction independent of LOS.

## DISCUSSION

This study highlights key factors influencing patient satisfaction in neurology, emphasizing the roles of LOS, sex of the patient, and diagnosis type. We observed a significant negative correlation between LOS and satisfaction, aligning with reports that prolonged hospitalization may increase stress and discomfort [16]. At the same time, premature discharge may also reduce satisfaction when patients feel unprepared for post-discharge care [9], underscoring the need for balanced discharge planning tailored to neurological conditions.

A consistent finding was the sex disparity in satisfaction, with females reporting lower ratings across multiple domains, including overall experience, environment, and staff interactions. Prior studies have suggested that females may have higher expectations and greater sensitivity to communication gaps [16], and our results extend these differences to the inpatient neurology setting. Although several associations reached statistical significance, the observed effect sizes were modest. These findings likely reflect multifactorial influences on patient satisfaction and should be interpreted in terms of population-level trends rather than strong individual-level predictors.

Pain-related diagnoses, particularly among females, were associated with lower satisfaction. While prior research has linked chronic disease to reduced satisfaction, few studies have specifically connected pain with dissatisfaction in neurology patients [16]. Future studies should explore mechanisms driving pain-related dissatisfaction and evaluate pain management interventions [17].

Physician–patient interaction quality strongly influenced satisfaction. Negative correlations between LOS and domains such as clarity of explanations and involvement in decisions reinforce the importance of communication, especially in neurology where diagnostic complexity demands patient engagement [15]. The relatively small correlation coefficients observed are consistent with prior patient satisfaction research and underscore that satisfaction is influenced by a wide range of clinical and non-clinical factors, rather than any single dominant variable.

Residual confounders among sex, primary diagnosis, and LOS cannot be fully excluded. These factors are closely interrelated in clinical practice, and although multivariable adjustment was applied, unmeasured aspects of disease severity or care complexity may still have influenced satisfaction ratings.

Although our primary focus was neurology, comparison with dermatology and internal medicine offers broader perspective. Dermatology patients with chronic skin disorders (e.g., psoriasis, atopic dermatitis) reported lower satisfaction than those with acute conditions, likely due to limited short-term improvement during hospitalization. Internal medicine patients with gastrointestinal diagnoses also reported lower satisfaction, potentially due to invasive diagnostic procedures and reliance on sanitary facilities. Collectively, these cross-departmental patterns emphasize the influence of disease chronicity, procedural burden, and environmental factors on patient perceptions. Comparisons with other departments should be interpreted cautiously, as detailed multivariable analyses were performed exclusively in the neurology cohort.

Future research should examine additional contributors to satisfaction, such as socioeconomic status, health literacy, and cultural background, and assess whether satisfaction predicts long-term outcomes. Interventions such as structured communication training, sex-sensitive care models, and enhanced pain-management strategies may meaningfully improve patient experience [9].

Efforts to reduce LOS must be balanced with patient-centered outcomes. The negative correlation between LOS and satisfaction, particularly in domains of communication and perceived care quality, highlights potential unintended consequences of prolonged admissions. In neurology, where longer stays often reflect diagnostic complexity, proactive communication, early discharge planning, and patient engagement are essential to maintaining satisfaction.

Last, satisfaction surveys may at times be completed by family members rather than patients, especially in neurological populations with cognitive or speech impairment. This finding reinforces the need to integrate family communication into routine care. Survey selection also remains important. Although our questionnaire was adapted from validated models, the field would benefit from a standardized satisfaction tool specific to neurology departments.

## CONCLUSIONS

Patient satisfaction in neurology inpatient care is shaped

by multiple interrelated factors, including length of stay, sex, and pain-related diagnoses. By examining these elements within a neurological population and comparing patterns across dermatology and internal medicine, we showed that disease characteristics, chronicity, and environmental conditions also influence patient perceptions. Tailored strategies that address these factors, such as improved communication, better pain management, and setting realistic expectations, may enhance care quality and patient experience. Strengthening these approaches could contribute to improved outcomes and institutional reputation. Further research is needed to refine and evaluate such interventions across diverse neurological patient groups.

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**Capsule**

**STAT3 on a sugar high**

Colorectal cancer (CRC) growth is frequently attributed to persistent activity of the transcription factor STAT3. **Buscher** and co-authors found that this overactivity was mediated by secreted proteins modified with glucose metabolites in a process called N-glycosylation. Disrupting glycolysis, N-glycosylation, or vesicle secretion abolished STAT3 activity in CRC cells, whereas supplementing

glucose starved cells with the building blocks for N-glycosylation activated it. These effects were decoupled from canonical regulation, suggesting that reducing glucose availability to colorectal tumors may effectively restrict STAT3-driven growth.

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