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The effect of health literacy on spinal surgery decision in neurosurgery patients

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ABSTRACT

Aims: The aim of the study was to determine how health literacy affects Turkish neurosurgery patients' spine surgery preferences and to identify barriers to obtaining informed consent and thus create better patient education methods.

Methods: The research included 118 patients who visited the neurosurgery outpatient clinic for spinal complaints. The Turkish Health Literacy Scale (TSOY-32) was used to evaluate patients who received four different health literacy assessments: inadequate (23.7%), problematic (36.4%), sufficient (28.8%), and excellent (11.0%).

Results: Patients who demonstrated better health literacy showed decreased acceptance of surgical procedures (82.1% inadequate vs. 46.2% excellent, p=0.023) and increased second opinion seeking (25.0% vs. 69.2%, p<0.001). The logistic regression analysis demonstrated that patients with sufficient and excellent health literacy showed 72% and 81% decreased odds of accepting surgery when compared to patients with inadequate literacy. The factors that influenced patient choices depended on their literacy level because physician recommendations proved more significant for patients with low literacy (92.9% vs. 53.8%, p=0.008) and personal research became more important for patients with high literacy (25.0% vs. 92.3%, p<0.001). The study found that education level strongly correlated with health literacy (r=0.72, p<0.001) and health literacy strongly correlated with decision satisfaction (r=0.59, p<0.001).

Conclusion: The research demonstrates that health literacy assessment during surgical consultations combined with specific communication approaches helps patients make informed decisions in neurosurgical practice.

Keywords: Health literacy, neurosurgery, patient decision-making, spinal surgery

INTRODUCTION

Spinal disorders create substantial health burdens worldwide because they lead to low back pain and other musculoskeletal disorders which rank as major causes of disability-adjusted life years (DALYs) in 204 countries from 1990 to 2019.[1] The process of choosing spinal surgery requires careful evaluation because excessive surgical procedures in certain areas do not always produce better results thus necessitating thorough evaluation of indications and patient selection to prevent unneeded interventions.[2] Health literacy functions as a vital element which enables people to acquire and process health information and understand and share health knowledge to make knowledgeable healthcare decisions.[3] Health literacy deficits make it harder for patients to grasp anesthesia procedures and their associated dangers because research indicates that better education does not eliminate fears about pain or losing consciousness.[4]

Research has shown growing interest in the connection between health literacy and surgical decision-making during the last few years. Studies demonstrate that surgical patients frequently have poor health literacy which leads to inadequate understanding of perioperative information and non-compliance with preoperative instructions and unequal access to procedures such as kidney transplantation.[5] The understanding of surgical procedures and discharge instructions by patients with limited health literacy becomes difficult in orthopedic surgery which may influence treatment decisions and patient satisfaction with results.[6] The Turkish healthcare system has made progress in patient autonomy and shared decision-making yet research shows that more than half of the population lacks sufficient health literacy which creates obstacles for patient education and participation.[7] The problem of low health literacy affects neurosurgery most severely because it prevents patients from making informed decisions and creates healthcare inequities and worsens surgical results but researchers have not developed sufficient interventions to address this issue.[8]

The research aims to determine how health literacy affects Turkish neurosurgery patients' spine surgery preferences and to identify barriers to obtaining informed consent and thus create better patient education methods. The research results

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will provide essential information for clinical practice and policy development and future healthcare delivery research in this vital field.

METHODS

Ethics

The Scientific Researches Ethics Committee of Adana City Training and Research Hospital approved this study (Date: 10.04.2025, Decision No: 427). The study required all participants to sign written informed consent before joining the research. The analysis of data included anonymization and coding procedures to protect patient privacy. The research team maintained data security through password-protected computers which they accessed exclusively. The research followed both the Declaration of Helsinki principles and Good Clinical Practice guidelines.

Study Population and Sample

The research took place at the Neurosurgery Outpatient Clinic of Adana City Training and Research Hospital. The required sample number was determined by G*power software version 3.1.9.7 which used an effect size of 0.30 and α error probability of 0.05 and power of 0.90 to calculate 112 patients as the minimum sample size. The researchers selected 118 patients to ensure enough participants would complete the survey. A total of 135 patients were initially assessed for eligibility, with 17 patients excluded based on the predefined criteria (**Figure 1**). The study included patients who were at least 18 years old and had spinal complaints while being Turkish speakers and mentally competent to fill out the questionnaire. The study excluded patients with dementia and severe psychiatric conditions as well as those who were under 18 years old and non-Turkish speakers and patients with non-spinal neurosurgical complaints. The most common reasons for exclusion were non-spinal neurosurgical complaints (n=5), severe psychiatric disorders (n=4), dementia (n=3), declined participation (n=3), and non-Turkish speaking status (n=2) (**Figure 1**). The Turkish Health Literacy Scale (TSOY-32) assessed health literacy through its measurement of health information access and understanding and appraisal and application abilities. Following assessment, patients were categorized into four health literacy levels: inadequate (n=28), problematic (n=43), sufficient (n=34), and excellent (n=13) (**Figure 1**). The definition of spinal surgery decision referred to the patient's decision to either accept or decline the proposed surgical treatment.

Study Procedures

The data collection involved two sections of the questionnaire which researchers administered through personal interviews at the outpatient clinic. The first section included sociodemographic details (age, gender, education level, marital status, employment status, income level) together with clinical patient information. The TSOY-32 served as the second part of the assessment which uses 32 validated items from the European Health Literacy Survey Questionnaire (HLS-EU-Q). TSOY-32 evaluates four dimensions of health literacy: accessing information, understanding information, appraisal of information, and application of information. The

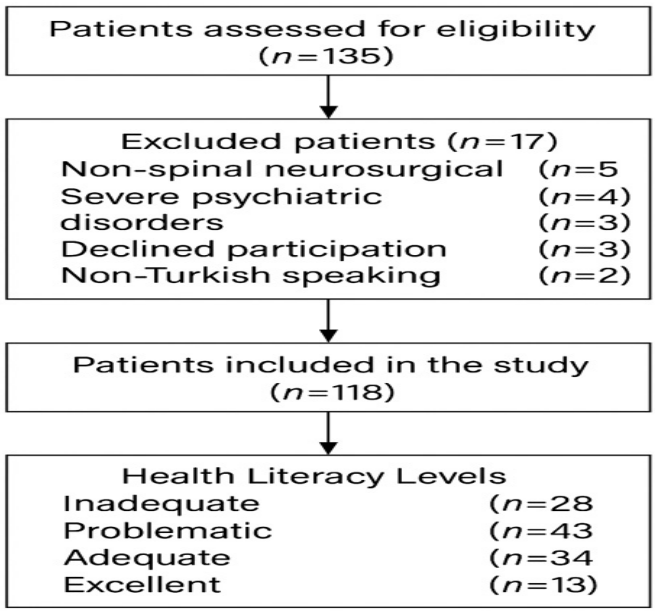

Figure 1. Patient flow diagram: recruitment, exclusion, and classification of study participants

Likert scale used for each item ranges from 1 (very difficult) to 5 (very easy). The scale achieved excellent internal consistency through previous validation studies which reported a Cronbach's alpha coefficient of 0.92 and our study population obtained 0.89. The survey included questions about factors affecting spinal surgery choices as well as surgical concerns and patient satisfaction with their decision-making process. The data collection was performed by two trained research assistants who allowed patients to fill out questionnaires either independently or with help when needed.

Surgical Decision Protocol

The patients received their health literacy scores which placed them into four categories: inadequate (0-25 points), problematic-limited (26-33 points), sufficient (34-42 points) and excellent (43-50 points). All patients had been evaluated by neurosurgeons for spinal complaints and had received a recommendation regarding potential surgical intervention. The surgical decision process was standardized across all participants, consisting of a clinical examination, review of imaging studies (MRI and/or CT scans), and a detailed explanation of the diagnosis, treatment options (conservative management versus surgery), expected outcomes, and potential complications. No randomization was performed as this was an observational study examining the relationship between existing health literacy levels and surgical decision-making. All surgical recommendations were made according to standard clinical practice guidelines by board-certified neurosurgeons with at least five years of experience in spinal procedures.

Statistical Analysis

The data analysis was conducted through SPSS software version 25.0 (IBM Corp., Armonk, NY, USA). The analysis included descriptive statistics for all variables which presented continuous data as mean (SD) and categorical data as frequency and percentage. The Kolmogorov-Smirnov test evaluated the normal distribution of the data. The comparison between

health literacy groups used one-way ANOVA with post-hoc Tukey test for normally distributed continuous variables and Chi-square test for categorical variables. Pearson's correlation coefficient analyzed the relationship between health literacy scores and other continuous variables. The analysis used binary logistic regression to identify independent factors that influenced spinal surgery acceptance after controlling for confounding variables. The analysis of missing data (less than 3% overall) used pairwise deletion. The research performed subgroup analyses to study how education level affects health literacy and surgical decision processes. The statistical significance threshold was set at $p<0.05$ while reporting actual p values to two decimal places for $p\geq0.01$ and to three decimal places for $0.001\leq p<0.01$. The research reported p values below 0.001 as such without showing the actual numerical value.

RESULTS

The research involved 118 participants whose average age was 54.3±15.7 years with female participants outnumbering males by 53.4% to 46.6%. The demographic characteristics differed significantly across health literacy groups, with patients in the inadequate health literacy group being older (58.7±16.2 years) compared to those with excellent health literacy (49.2±13.9 years, p=0.041). The educational attainment of participants showed primary school graduates as the biggest group at 31.4% followed by high school at 26.3% and middle school at 22.0% and university or higher education at 20.3%. A strong association was observed between education level and health literacy, with 64.3% of patients with inadequate literacy having only primary education, while 76.9% of those with excellent literacy had university education (p<0.001). The majority of patients were married (66.1%), and regarding employment status, 43.2% were employed while 35.6% were retired. Employment status also varied significantly across health literacy groups, with higher employment rates observed in patients with sufficient (52.9%) and excellent (61.5%) health literacy compared to those with inadequate literacy (28.6%, p=0.033). The middle income level was reported by 49.2% of participants while 38.1% had low income and 12.7% had high income. Income level was also significantly associated with health literacy, as patients with excellent health literacy were more likely to report high income (30.8%) compared to those with inadequate literacy (3.6%, p=0.027) (**Table 1**).

Analysis of health literacy levels revealed that over half of the participants had limited health literacy, with 23.7% scoring in the inadequate category and 36.4% in the problematic-limited category. Only 28.8% demonstrated sufficient health literacy, while merely 11.0% achieved excellent literacy scores. The mean health literacy score across all participants was 35.8±9.4. Examination of health literacy sub-dimensions showed consistent patterns, with scores progressively increasing from inadequate to excellent literacy groups across all four domains: access to information, understanding information, appraisal, and application (**Table 2**).

The decision-making process of patients regarding spinal surgery depended heavily on their health literacy abilities. The physician recommendations proved to be the most powerful influence in total patient decisions (81.4%) yet their impact diminished when health literacy improved from inadequate to excellent (92.9% vs. 53.8%, p=0.008). The importance of personal research grew more significant as health literacy levels increased (25.0% for inadequate vs. 92.3% for excellent, p<0.001). People with lower health literacy relied more on opinions from family and friends when making decisions (75.0% for inadequate vs. 30.8% for excellent, p=0.004). The ability to access and understand health information demonstrated a strong positive relationship with literacy levels as shown by correlation coefficients of r=0.76 and r=0.72 (p<0.001) (**Table 3**).

Regarding surgery decisions, acceptance rates declined as health literacy increased, from 82.1% among those with inadequate literacy to 46.2% in the excellent category (p=0.023). Correspondingly, patients with higher health literacy were more likely to seek second opinions (25.0% for inadequate vs. 69.2% for excellent, p<0.001). Concerning surgical worries, patients with higher literacy levels were significantly more concerned about complications (57.1% for inadequate vs. 84.6% for excellent, p=0.042) and recovery periods, though less concerned overall as indicated by lower mean concern scores (4.2 for inadequate vs. 3.3 for excellent, p=0.003) (**Table 4**).

The research showed that education level directly correlated with health literacy because scores rose substantially with each level of education (26.4±7.2 for primary school vs. 46.3±4.5 for university graduates, p<0.001, r=0.72). Patient satisfaction with surgical decisions showed a positive relationship with health literacy levels because scores rose from 6.2±2.1 in the inadequate group to 9.2±1.1 in the excellent group (p<0.001, r=0.59) (**Table 5**).

The results of logistic regression analysis showed that better health literacy was linked to decreased odds of accepting spinal surgery after controlling for demographic variables. Patients who had sufficient literacy compared to those in the inadequate literacy reference group showed 72% reduced odds of accepting surgery (OR=0.28, p=0.029) and those with excellent literacy showed 81% reduced odds (OR=0.19, p=0.017). The odds of surgery acceptance increased by 37% with every 10-year age increment (OR=1.37, p=0.015). The associations between education and income levels and lower acceptance rates showed trends but failed to achieve statistical significance (**Figure 2**).

DISCUSSION

The research analyzed the essential connection between health literacy and spinal surgery decision processes among neurosurgery patients. The research showed that patients with better health literacy skills made their surgical decisions independently while those with limited literacy depended more on physician guidance. Patients who had excellent health literacy needed physician recommendations less often and performed their own research better and avoided surgical interventions more frequently than patients with inadequate literacy. The research indicates that better health literacy enables patients to feel more confident about seeking medical information which leads to active participation in their care decisions and reduced total anxiety levels even though they become more aware of surgical risks.

Table 1. Demographic characteristics according to health literacy levels

Characteristic	Total (n=118)	Inadequate (n=28)	Problematic (n=43)	Sufficient (n=34)	Excellent (n=13)	p-value*
Age (years)	54.3±15.7	58.7±16.2	55.4±15.5	52.3±14.8	49.2±13.9	0.041
Gender						0.832
Female	63 (53.4%)	16 (57.1%)	24 (55.8%)	17 (50.0%)	6 (46.2%)	
Male	55 (46.6%)	12 (42.9%)	19 (44.2%)	17 (50.0%)	7 (53.8%)	
Education level						<0.001
Primary school	37 (31.4%)	18 (64.3%)	16 (37.2%)	3 (8.8%)	0 (0.0%)	
Middle school	26 (22.0%)	7 (25.0%)	15 (34.9%)	4 (11.8%)	0 (0.0%)	
High school	31 (26.3%)	3 (10.7%)	10 (23.3%)	15 (44.1%)	3 (23.1%)	
University/higher	24 (20.3%)	0 (0.0%)	2 (4.7%)	12 (35.3%)	10 (76.9%)	
Marital status						0.214
Single	19 (16.1%)	3 (10.7%)	6 (14.0%)	7 (20.6%)	3 (23.1%)	
Married	78 (66.1%)	18 (64.3%)	30 (69.8%)	22 (64.7%)	8 (61.5%)	
Divorced	13 (11.0%)	3 (10.7%)	4 (9.3%)	4 (11.8%)	2 (15.4%)	
Widowed	8 (6.8%)	4 (14.3%)	3 (7.0%)	1 (2.9%)	0 (0.0%)	
Employment status						0.033
Employed	51 (43.2%)	8 (28.6%)	17 (39.5%)	18 (52.9%)	8 (61.5%)	
Retired	42 (35.6%)	14 (50.0%)	16 (37.2%)	9 (26.5%)	3 (23.1%)	
Unemployed	25 (21.2%)	6 (21.4%)	10 (23.3%)	7 (20.6%)	2 (15.4%)	
Income level						0.027
Low	45 (38.1%)	15 (53.6%)	18 (41.9%)	10 (29.4%)	2 (15.4%)	
Middle	58 (49.2%)	12 (42.9%)	21 (48.8%)	18 (52.9%)	7 (53.8%)	
High	15 (12.7%)	1 (3.6%)	4 (9.3%)	6 (17.6%)	4 (30.8%)	

*p-values were calculated using Chi-square test for categorical variables and one-way ANOVA for continuous variables

Table 2. Health literacy levels and sub-dimensions according to TSOY-32 scale

Parameter	Total (n=118)	Inadequate (n=28)	Problematic (n=43)	Sufficient (n=34)	Excellent (n=13)	p-value*
Health literacy level	n (%)	28 (23.7%)	43 (36.4%)	34 (28.8%)	13 (11.0%)	-
Mean score±SD	35.8±9.4	22.4±3.8	31.7±2.6	42.3±3.5	48.9±2.2	<0.001
Sub-dimensions						
Access to information	8.6±2.7	5.2±1.9	7.8±1.5	10.4±1.3	12.7±0.8	<0.001
Understanding information	9.1±2.5	5.7±1.7	8.5±1.3	10.9±1.1	13.1±0.6	<0.001
Appraisal	8.9±2.8	5.4±1.8	7.9±1.6	10.7±1.2	12.9±0.7	<0.001
Application	9.2±2.6	6.1±1.8	8.6±1.4	11.1±1.0	13.2±0.5	<0.001

All values are presented as Mean±SD unless otherwise noted. SD: Standard deviation. p-values were calculated using ANOVA with post-hoc Tukey test. TSOY-32 scale: Turkish Health Literacy Scale

Table 3. Factors influencing spinal surgery decision and information access comfort

Parameter	Total (n=118)	Inadequate HL (n=28)	Problematic HL (n=43)	Sufficient HL (n=34)	Excellent HL (n=13)	p-value*
Decision factors	**n (%)**					
Physician's recommendation	96 (81.4%)	26 (92.9%)	38 (88.4%)	25 (73.5%)	7 (53.8%)	0.008
Personal research	67 (56.8%)	7 (25.0%)	21 (48.8%)	27 (79.4%)	12 (92.3%)	<0.001
Family/friends opinions	72 (61.0%)	21 (75.0%)	31 (72.1%)	16 (47.1%)	4 (30.8%)	0.004
Media information	43 (36.4%)	12 (42.9%)	19 (44.2%)	9 (26.5%)	3 (23.1%)	0.184
Other factors	15 (12.7%)	2 (7.1%)	5 (11.6%)	5 (14.7%)	3 (23.1%)	0.512
Information comfort	**Mean±SD**					
Comfort in accessing information (1-5)	2.9±1.1	1.8±0.7	2.6±0.8	3.5±0.7	4.2±0.6	<0.001
Comfort in understanding information (1-5)	2.7±1.2	1.6±0.6	2.3±0.7	3.4±0.8	4.1±0.7	<0.001

HL: Health literacy, SD: Standard deviation. Multiple responses were allowed for decision factors. p-values were calculated using Chi-square test for frequencies and ANOVA for mean scores. Correlation between HL and comfort in accessing information: r=0.76, p<0.001; correlation between HL and comfort in understanding information: r=0.72, p<0.001.

Table 4. Spinal surgery decisions and concerns according to health literacy levels

Parameter	Total (n=118)	Inadequate HL (n=28)	Problematic HL (n=43)	Sufficient HL (n=34)	Excellent HL (n=13)	p-value*
Surgery decisions, n (%)						
Surgery acceptance	80 (67.8%)	23 (82.1%)	32 (74.4%)	19 (55.9%)	6 (46.2%)	0.023
Surgery rejection	38 (32.2%)	5 (17.9%)	11 (25.6%)	15 (44.1%)	7 (53.8%)	0.023
Seeking second opinion	51 (43.2%)	7 (25.0%)	14 (32.6%)	21 (61.8%)	9 (69.2%)	<0.001
Surgical concerns, n (%)						
Complications	87 (73.7%)	16 (57.1%)	31 (72.1%)	29 (85.3%)	11 (84.6%)	0.042
Pain	92 (78.0%)	22 (78.6%)	36 (83.7%)	25 (73.5%)	9 (69.2%)	0.561
Recovery period	76 (64.4%)	14 (50.0%)	26 (60.5%)	25 (73.5%)	11 (84.6%)	0.077
Cost	64 (54.2%)	17 (60.7%)	25 (58.1%)	16 (47.1%)	6 (46.2%)	0.556
Time off work	59 (50.0%)	9 (32.1%)	21 (48.8%)	20 (58.8%)	9 (69.2%)	0.061
Mean concern level (1-5)	3.8±0.9	4.2±0.8	3.9±0.9	3.6±0.8	3.3±0.7	0.003

HL: Health literacy. p-values were calculated using Chi-square test for frequencies and ANOVA for mean concern level

Table 5. Relationship between education level, health literacy, and patient satisfaction

Parameter	Health literacy score (mean±SD)	Satisfaction score (mean±SD)	p-value*
Education level			
Primary school (n=37)	26.4±7.2	6.7±2.0	<0.001
Middle school (n=26)	32.6±6.8	7.4±1.9	<0.001
High school (n=31)	39.7±5.9	8.1±1.6	<0.001
University/higher (n=24)	46.3±4.5	8.7±1.4	<0.001
Health literacy level			
Inadequate (n=28)	22.4±3.8	6.2±2.1	<0.001
Problematic-limited (n=43)	31.7±2.6	7.3±1.8	<0.001
Sufficient (n=34)	42.3±3.5	8.5±1.5	<0.001
Excellent (n=13)	48.9±2.2	9.2±1.1	<0.001
Total (n=118)	35.8±9.4	7.6±2.0	-

SD: Standard deviation. p-values were calculated using ANOVA with post-hoc Tukey test. All pairwise comparisons between education levels were statistically significant (p<0.05). Correlation between education level and health literacy: r=0.72, p<0.001; correlation between health literacy and satisfaction: r=0.59, p<0.001

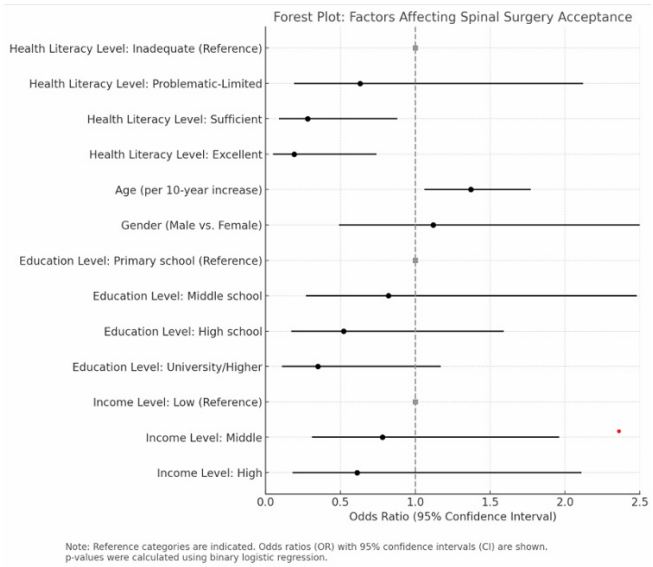

Figure 2. Forest plot of factors affecting spinal surgery acceptance: Odds ratios (OR) with 95% confidence intervals (CI) are displayed for each variable. Reference categories (Health literacy level: Inadequate, Education level: Primary school, Income level: Low) are indicated with grey squares.

CI: Confidence interval; OR: Odds ratio

The research established that health literacy acts as a determining factor for spinal surgery choices made by patients. The study shows that patients who have excellent health literacy tend to reject surgical interventions at a rate of 46.2% compared to 82.1% of those with inadequate health literacy (p=0.023). Research has demonstrated that health literacy functions as a crucial factor for orthopedic surgery patients to comprehend surgical procedures.[6] The results from logistic regression analysis showed that patients with sufficient health literacy had a 72% lower chance of accepting surgery (OR=0.28, p=0.029) and patients with excellent health literacy had an 81% lower chance (OR=0.19, p=0.017) than those with inadequate health literacy. Shahid et al.[9] observed that patients who lack sufficient health literacy experience difficulties when handling surgical or medical treatment procedures and making knowledgeable decisions. The research conducted by Muscat et al.[10] demonstrates that patients who use health literacy-specific decision support tools make better informed treatment choices. The research indicates that patients with high health literacy can evaluate surgical treatment choices more effectively and investigate additional treatment possibilities.

Our research revealed separate elements that affect surgical choices between patients with different health literacy abilities. Patients with low health literacy depended more on physician recommendations (92.9% inadequate vs. 53.8% excellent, p=0.008) and family/friend opinions (75.0% inadequate vs. 30.8% excellent, p=0.004) but personal research (25.0% inadequate vs. 92.3% excellent, p<0.001) was the most important factor for those with high health literacy. The results match those found by Aleid et al.[11] who discovered a positive relationship between health literacy and patient decision-making autonomy (r=0.852, p<0.001). The research showed that patients with higher health literacy levels became more likely to obtain additional medical opinions (25.0% inadequate vs. 69.2% excellent, p<0.001). The study by Gandhi et al.[12] shows that expert opinion stands as a primary consideration for anticoagulation initiation decisions following spinal surgery with a mean importance score of 3.2±1.3. According to Liang et al.[13] doctors believe they should base their decisions on their professional judgment rather

than patient preferences which might explain why low health literacy patients follow physician advice. The results show that better health literacy enables patients to feel more comfortable accessing information and understanding it which leads to increased decision-making autonomy.

Health literacy levels determine the specific concerns patients express about their surgery. Patients who had excellent health literacy showed increased worry about surgical complications and recovery steps but displayed lower anxiety scores (4.2 inadequate vs. 3.3 excellent on a 1-5 scale, p=0.003). The teach-back method described by Seely et al.[14] helps patients understand surgical procedures and risks better which leads to decreased anxiety about the surgical process. Zhu et al.[15] demonstrated that large language model information helps patients feel less anxious about their treatment choices and life expectancy outcomes. Baradaran et al.[16] demonstrated that patient education combined with effective communication serves as a crucial factor to decrease preoperative anxiety in spine surgery patients. The relationship between health literacy and decision satisfaction showed a strong positive correlation in our study (r=0.59, p<0.001) which matched Seely et al.'s[14] results about teach-back method participation leading to better decision satisfaction.

The research reveals that education level shows a powerful connection to health literacy (r=0.72, p<0.001). The research outcome matches Berete et al.'s[17] discovery about the link between low education and insufficient health literacy (OR 1.69, 95% CI: 1.53-1.86, p<0.001). Turhan et al.[18] discovered a weaker relationship between education level and health literacy (r=0.37, p<0.05). Theiss et al.[19] discovered no meaningful relationship between education level and health literacy in colorectal surgery patients (p>0.05). The logistic regression analysis revealed that education level no longer had a statistically significant effect on surgical acceptance rates after controlling for health literacy. Health literacy acts as a partial mediator between education level and health behaviors and health outcomes according to Berete et al.[17] who found that it explains 3.8-16.0% of the total effect. Health literacy emerges as a vital factor for surgical choices and health decision-making because it stands alone from education level and benefits patients with limited education.

Limitations

Our research contains several limitations which need to be acknowledged. The single-center study conducted at a tertiary hospital restricts the ability to generalize findings to different healthcare facilities and socioeconomic settings. The cross-sectional research design makes it impossible to determine whether health literacy causes decision outcomes. Our study benefits from three key strengths which include using validated assessment tools and performing robust statistical methods and including participants from various educational backgrounds and income brackets. Future research needs to study how surgical choices evolve in health literacy subgroups through time and create and evaluate educational programs for neurosurgical patients and analyze how digital health tools can connect with patients who have limited health literacy. Additional research using multiple centers together with qualitative methods would help explain complex decision-making processes and reveal particular educational requirements of patients deciding on spinal surgery.

CONCLUSION

Our research shows that health literacy stands as a key factor which determines how patients approach decisions regarding spinal surgery. Patients who demonstrate higher health literacy skills maintain greater independence in their choices and depend less on doctor advice and seek more information and choose surgery less often yet remain satisfied with their decisions. The strong relationship between patient education level and health literacy demonstrates that healthcare providers need to develop specific communication approaches for various patient groups. Neurosurgeons must evaluate patient health literacy during consultations to deliver communication that enables genuine informed consent. The improvement of health literacy among neurosurgical patients would result in patient-centered care and better decision satisfaction and appropriate surgical intervention use for spinal conditions.

ETHICAL DECLARATIONS

Ethics Committee Approval

The Scientific Researches Ethics Committee of Adana City Training and Research Hospital approved this study (Date: 10.04.2025, Decision No: 427).

Informed Consent

All patients signed and free and informed consent form.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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