



Patient Satisfaction with Preoperative and Postoperative Health Care Treated at the Surgery Clinic of "Sveti Duh" Clinical Hospital

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Abstract

Introduction. Good preoperative preparation as one of the most important predictors of overall patient satisfaction increases cooperation and their desire to continue treatment.

Aim. The aim of the research was to examine the respondents' satisfaction with the pre-operative preparation and post-operative health care of patients treated at the Surgery Clinic of the "Sveti Duh" Clinical Hospital in Zagreb, Croatia.

Methods. The measuring instrument of this research was an anonymous questionnaire created for the purposes of the research itself. The survey included 60 respondents with an average age of 51.

Results. The results of the conducted research showed that the majority of respondents were satisfied with the healthcare provided, with 53 (88.3%) responding that they were satisfied, and 54 (90%) of the respondents answered that they could confidently contact the health workers of the clinic, who showed concern and understanding for their problem. An important factor in postoperative satisfaction was postoperative pain. After the procedure, the median pain (on a scale of 0 to 5) was 4, and immediately after the subjects started to feel pain and asked the nurse/technician for analgesic, 35 (58%) patients received it. A total of 44 (73%) patients expressed satisfaction with the speed of the nurses' intervention after they reported feeling pain.

Conclusion. A survey conducted at the Surgery Clinic of the "Sveti Duh" Clinical Hospital showed that the

largest number of respondents, a total of 53 (88.3%) were satisfied with the healthcare provided during hospitalization. It was observed that women were more satisfied than men, and that respondents aged 46 to 60 reported significantly higher levels of satisfaction compared to those aged up to 45.

Introduction

Patient's readiness for surgery is one of the factors on which the postoperative outcome largely depends and it is necessary that when entering the operating room, i.e., just before the operation, the patient is optimally physically and emotionally prepared. Readiness is achieved through preoperative preparation, that is, through a series of procedures during the preoperative period (1, 2). Preoperative care includes preoperative interventions aimed at reducing later complications, providing procedural information to the patient and their family, interventions aimed at promoting patient cooperation in the post-procedure process, and interventions aimed at reducing psychological stress before surgery (3, 4).

Preoperative preparation of the patient for surgery begins after the doctor's indication for the surgery. It is divided into three periods: preoperative, intraoperative, and postoperative phase. Each phase of preoperative health care includes activities from the scope of work of health professionals, and the importance of preparation is to ensure the patient's readiness for surgery. The preoperative phase includes mental and physical preparation of the patient and ends with the patient's arrival in the operating room. The intraoperative phase begins with the patient's arrival in the operating theater and ends at the end of the operation. The postoperative phase begins with the patient's arrival at the ward and lasts until the patient is discharged from the hospital (5 - 7).

The importance of health care at each stage is that the patient receives important information, understands the treatment plan and is well prepared for each upcoming step (8). Numerous studies have shown that ineffective preparation endangers the patient, contributes to dissatisfaction and increases the risk of readmission to the hospital (9 - 11).

It is important to ensure that patients are well prepared for the transition phases in surgical care, to identify the most effective resources in increasing the feeling of readiness (conversation with the doctor, nurse, family support, etc.). Greater exposure to information before and after surgery enables patients to feel more prepared for the transitions of health care phases (12 - 14).

Aim

The aim of the research was to examine the respondents' satisfaction with the pre-operative preparation and post-operative health care of patients treated at the Surgery Clinic of the "Sveti Duh" Clinical Hospital in Zagreb, Croatia.

Methods

Structure of the study

A cross-sectional scientific study was conducted.

Respondents

The survey included 60 respondents with an average age of 51. In this research, the appropriate sample was a group of patients hospitalized at the Department of Surgery of the "Sveti Duh" Clinical Hospital after elective or emergency surgery under general anaesthesia. The approval of the Ethics Committee of the "Sveti Duh" Clinical Hospital was obtained for the implementation of the research (Class: 01-03-1014/10). The research was conducted between April and June 2022. The criteria for the inclusion of subjects in this research were the following: the participants were patients undergoing surgery under general anaesthesia older than 18 and they had been admitted to the hospital via emergency or regular hospital admission. The criteria excluded vitally endangered patients or patients with poor general health status.

Instrument

The study was conducted through a written survey consisting of a total of 29 questions. Of these, five questions pertained to the general characteristics of the respondents, 12 questions focused on preoperative preparation and postoperative care, while the remaining 12 statements assessed satisfaction with preoperative preparation and postoperative care following surgical procedures performed under spinal or general anaesthesia.

Respondent anonymity was ensured by the following measures: no personal data were collected (the survey did not request personal information such as name, surname, address, or any other details that could identify the respondents); the collected data were coded and processed in a manner that prevented linking responses to specific individuals; all participants provided informed consent by signing a consent form, which explicitly stated that the study was anonymous; data were securely stored (protected against unauthorized access and used exclusively for scientific research purposes); and the results were analyzed and presented solely at the group level, without the possibility of isolating individual responses or identifying participants. The required time to fill out the questionnaire was 15 minutes.

Statistics

The statistical methods utilized in the research included absolute and relative frequencies. The normality of the distribution of numerical variables was assessed using the Shapiro-Wilk test. Given the normal distribution of the data, the results were described using the mean and standard deviation. Comparisons between two independent groups were conducted using the t-test, while differences among three or more groups were analyzed using ANOVA, with post hoc comparisons performed using the Student-Newman-Keuls test. All P-values were two-sided, and statistical significance was set at $\alpha=0.05$. Data analysis was performed using MedCalc® Statistical Software version 23.1.1 (MedCalc Software Ltd, Ostend, Belgium; <https://www.medcalc.org>; 2025).

Results

Table 1. Basic characteristics and characteristics related to hospitalization and surgery

Gender	n (%)
Male	36 (60)
Female	24 (40)
Age (years) [Mdn (IQR)]	51 (39 - 65)
Age group	
18 - 45 years	22 (37)
46 - 60 years	24 (40)
60+ years	14 (23)
Vocational training	
Lower vocational education	3 (5)
High school education	35 (58)
College education	12 (20)
Higher vocational education	10 (17)
Admission to hospital	
Through emergency admission	22 (37)
Planned arrival	38 (63)
Department where they were hospitalized	
Trauma ward	23 (38)
Vascular or plastic surgery	8 (13)
Abdominal surgery	29 (49)
Surgery performed on the day it was planned	
Yes	50 (84)
No	8 (13)
It was an emergency operation	2 (3)
If the procedure was not performed on the day it was planned, who informed the patients that they would not be operated on	
Doctor	8 (13)
Someone else	2 (3)
They were operated on the day it was planned	50 (83)
They would recommend treatment in surgical departments to others [n (%)]	
Yes	55 (92)
No	0 (0)
I do not know	5 (8)

The research was conducted on 60 patients, of whom 36 (60%) were men and 24 (40%) were women. The median age of the respondents was 51, ranging from 18 to 60 years. When it comes to the level of education, the largest share had secondary vocational education (58%). A total of 63% of patients had a planned visit to the hospital. Most of them were being treated at the department of abdominal surgery (49%). The surgery was not performed on the day it was planned for 10 (16%) patients, and in most cases, they were informed about that by the physician. A total of 92% of respondents would recommend treatment at the surgical departments of "Sveti Duh" Clinical Hospital (Table 1).

The behavior of the nurses/technicians at the department was stated by 72% of the patients as extremely kind, ranging from correct to extremely kind. For the most part, patients or their families had no problems with getting information about health care. A total of 53% of the patients were extremely satisfied with the health care provided by the nurse/technician. After the procedure, the median pain (on a scale of 0 to 5) was 4, and immediately after they had started to feel pain and asked the nurse/technician for an analgesic, 35 (58%) patients received it. A total of 44 patients expressed satisfaction with the speed of the nurses' intervention after they had reported pain (Table 2).

The self-assessment of patient satisfaction with health care is shown in Table 3. A total of 53 (88.3%) participants were satisfied with the health care provided, the largest number of participants 54 (90%) answered that they could confidently turn to the clinic's health workers who showed concern and understanding for their problem.

Women rated significantly higher than men the following aspects of healthcare satisfaction: confidence in turning to the clinic's healthcare workers ($p=0.01$), the concern and understanding shown by nurses/medical technicians for their health problems ($p=0.01$), the education provided by nurses/medical technicians regarding post-hospital discharge lifestyle ($p=0.02$), the verbal instructions given by nurses/medical technicians for each intervention ($p=0.005$), the explanation of the importance of preoperative preparation ($p=0.001$), overall satisfaction with the healthcare provided ($p=0.009$), satisfaction with postoperative pain management ($p=0.005$), and satisfaction with the encouragement provided by healthcare staff to achieve independence after surgery ($p=0.002$) (Table 4).

Table 2. Patients' opinions/remarks/ answers on preoperative preparation and postoperative pain management by nurses/ technicians

	n (%)
If personal hygiene was carried out by a nurse/technician, how satisfied patients were they with the health care provided?	
Extremely satisfied	32 (53)
Satisfied	13 (22)
Partially satisfied	1 (2)
They take care of personal hygiene themselves	14 (23)
Assessment of pain on a scale from 0 (no pain) to 5 (the strongest possible pain) [Median (IQR)]	4 (3 - 5)
The behavior of the nurses/technicians at the ward was:	
Correct	6 (10)
Kind	11 (18)
Extremely kind	43 (72)
Have they or their family had problems getting information about health care?	
They haven't, they've received all the information they were interested in	55 (92)
Partially	5 (8)
Did they ask the nurse/technician for an analgesic immediately after they started feeling pain?	
Yes	35 (58)
No	15 (25)
I do not know	1 (2)
They endured pain until they couldn't tolerate it anymore	2 (3)
They felt no pain	7 (12)
Are they satisfied with the timeliness of response to their problem?	
Yes, the nurse applied an analgesic immediately after the patient had reported pain	44 (73)
Yes, the nurse administered the analgesic after some time, after the patient had said that there are no issues with pain	1 (2)
They had no problem with pain	15 (25)

Table 3. **Self-assessment of patient satisfaction with health care**

	Number (%) of patients					Mean (SD)
	I completely disagree	I disagree	I neither agree nor disagree	I agree	I completely agree	
The information I received during my stay at the Clinic was clear.	0	1 (1.7)	2 (3.3)	15 (25)	42 (70)	4.60 (0.6)
I received more information about my illness at the Clinic.	1 (1.7)	2 (3.3)	7 (11.7)	20 (33.3)	30 (50)	4.27 (0.9)
I was able to turn to the Clinic's health workers with confidence.	0	0	0	6 (10)	54(90)	4.90 (0.3)
The nurse/medical technician showed concern and understanding for my health problem.	0	0	0	6 (10)	54 (90)	4.90 (0.3)
The nurse/medical technician educated me about the lifestyle after dismissal from hospital.	0	1 (1.7)	8 (13.3)	14 (23.3)	37 (61.7)	4.45 (0.8)
The nurse/medical technician gave me verbal instructions for each intervention.	0	0	2 (3.3)	10 (16.7)	48 (80)	4.77 (0.5)
The nurse/medical technician explained to me the importance of preparing for surgery intervention.	0	0	6 (10)	14 (23.3)	40 (66.7)	4.57 (0.7)
My privacy was ensured.	1 (1.7)	1 (1.7)	7 (11.7)	7 (11.7)	44 (73.2)	4.50 (0.9)
The environment in which I stayed was safe.	0	1 (1.7)	2 (3.3)	10 (16.7)	47 (78.3)	4.70 (0.6)
I am satisfied with the health care provided.	0	0	1 (1.7)	6 (10)	53 (88.3)	4.90 (0.4)
I am satisfied with the postoperative pain relief.	0	0	1 (1.7)	7 (11.7)	52 (86.6)	4.9 (0.4)
I am satisfied with the encouragement of the health care staff to become independent after surgery.	0	0	3 (5)	10 (16.7)	47 (78.3)	4.7 (0.55)

SD – standard deviation

The study examined the patients' self-assessment of satisfaction with healthcare services in relation to their age. The results indicate that respondents aged 46 - 60 years reported significantly higher satisfaction levels compared to those aged up to 45 years. Specifically, older patients expressed greater agreement with statements regarding the healthcare staff's including the perception that the nurse/medical technician showed concern and understanding for their health problem ($p=0.04$) and explained the importance of preparing for surgical intervention ($p=0.008$). Additionally, the respondents in the 46 -

60 age group reported a significantly greater sense of privacy being ensured ($p=0.01$) and perceived the environment in which they stayed as safe compared to respondents younger than 45 years. No significant differences were found in satisfaction levels across other assessed aspects of healthcare services in relation to the patients' age. These findings suggest that age-related factors may be associated with the patients' perceptions of the quality and adequacy of care received (Table 5).

There is no significant difference in satisfaction with healthcare in relation to the level of education (Table 6).

Table 4. Self-assessment of patients' satisfaction with health care in relation to gender

	Mean (standard deviation)		<i>t</i>	<i>p</i> *
	Men	Women		
The information I received during my stay at the Clinic was clear.	4.6 (0.73)	4.8 (0.44)	-1.28	0.21
I received more information about my illness at the Clinic.	4.17 (0.91)	4.4 (0.93)	-1.03	0.31
I was able to turn to the Clinic's health workers with confidence.	4.83 (0.38)	5 (0)	-2.65	0.01
The nurse/medical technician showed concern and understanding for my health problem.	4.83 (0.38)	5 (0)	-2.65	0.01
The nurse/medical technician educated me about the lifestyle after dismissal from hospital.	4.28 (0.88)	4.7 (0.55)	-2.33	0.02
The nurse/medical technician gave me verbal instructions for each intervention.	4.64 (0.59)	5 (0.2)	-2.98	0.005
The nurse/medical technician explained to me the importance of preparing for surgery intervention.	4.36 (0.76)	4.9 (0.34)	-3.56	0.001
My privacy was ensured.	4.4 (1.03)	4.7 (0.64)	-1.03	0.31
The environment in which I stayed was safe.	4.7 (0.57)	4.7 (0.69)	0.09	0.93
I am satisfied with the health care provided.	4.8 (0.48)	5 (0)	-2.75	0.009
I am satisfied with the postoperative pain relief.	4.8 (0.5)	5 (0)	-3.0	0.005
I am satisfied with the encouragement of the health care staff to become independent after surgery.	4.6 (0.65)	5 (0.2)	-3.23	0.002

*T-test; Bold denotes statistical significance

Discussion

A study conducted at the Surgery Clinic of the "Sveti Duh" Clinical Hospital showed that 53 (88.3%) participants were satisfied with the healthcare provided, and the largest number of participants, 54 (90%) of them, responded that they could safely turn to healthcare professionals who showed care and understanding for their problem. There is a statistically significant difference in the satisfaction of respondents with preoperative preparation depending on the age and gender of the respondents. It was observed that women were significantly more satisfied than men, and considering the differences by age groups, the respondents up to 45 years of age were significantly less satisfied compared to those aged 46 to

60. There were no significant differences in overall satisfaction with health care according to other characteristics of the respondents. In Saudi Arabia, a study was conducted on the topic of satisfaction after surgical procedures, and female respondents expressed greater satisfaction in similar questions compared to male respondents (15). During the postoperative care of the patients at the "Sveti Duh" Surgery Clinic, in addition to all interventions, special attention was paid to the problem of pain, which was tried to be reduced to a minimum level and could affect the overall satisfaction/dissatisfaction in the postoperative period. The research conducted at "Sveti Duh" Clinical Hospital showed that the median pain (on a scale of 0 to 5) was 4, and pain was reported by 35 (58%) respondents immediately after they started feeling it. A total of 44 (73%) respondents stated that the nurse applied an analgesic immediately after they had reported the pain, while

Table 5. **Patients' self-assessment of satisfaction with healthcare in relation to the age**

	Mean (SD) Age			<i>p</i> [*]
	≤ 45	46 - 60	> 60	
The information I received during my stay at the Clinic was clear.	4.59 (0.8)	4.71 (0.6)	4.57 (0.5)	0.60
I received more information about my illness at the Clinic.	3.95 (1.1)	4.54 (0.7)	4.29 (0.7)	0.12
I was able to turn to the Clinic's health workers with confidence.	4.91 (0.3)	4.88 (0.3)	4.93 (0.3)	0.86
The nurse/medical technician showed concern and understanding for my health problem.	4.77 (0.4)	4.96 (0.2)	5 (0)	0.04[†]
The nurse/medical technician educated me about the lifestyle after dismissal from hospital.	4.32 (0.8)	4.54 (0.8)	4.5 (0.8)	0.43
The nurse/medical technician gave me verbal instructions for each intervention.	4.64 (0.5)	4.83 (0.6)	4.86 (0.4)	0.08
The nurse/medical technician explained to me the importance of preparing for surgery intervention.	4.27 (0.7)	4.79 (0.6)	4.64 (0.6)	0.008[†]
My privacy was ensured.	4.14 (1.1)	4.75 (0.7)	4.79 (0.6)	0.01[†]
The environment in which I stayed was safe.	4.45 (0.9)	4.96 (0.2)	4.71 (0.5)	0.02[†]
I am satisfied with the health care provided.	4.73 (0.5)	4.92 (0.4)	5 (0)	0.09
I am satisfied with the postoperative pain relief.	4.68 (0.6)	4.96 (0.2)	4.93 (0.3)	0.06
I am satisfied with the encouragement of the health care staff to become independent after surgery.	4.55 (0.7)	4.79 (0.5)	4.93 (0.3)	0.09

*ANOVA (*Post hoc test* Student-Newman-Keuls); Bold denotes statistical significance.[†]a statistically significant difference (*p*<0.05) was observed between (≤ 45) vs (46 – 60)

15 (25%) of them stated that they had no problem with feeling pain. In a study conducted in the Netherlands, postoperative pain was reported by 69.4% of patients. Some studies report that psychological preparation techniques reduce post-procedure pain, improve recovery (individuals return to daily activities faster), and reduce the length of hospital stay as well as negative emotions (e.g. feelings of anxiety or depression) (16). The research carried out at the "Sveti Duh" Clinical Hospital Surgery Clinic shows that many respondents (90%) answered that they could always turn to health professionals with confidence, who would show concern and understanding for their problem. The respondents were almost always satisfied with the health care provided (88.3%). Communication and interpersonal aspects of health care are often ranked as very important. They in-

clude: friendliness, competence, access, communication and availability of doctors and nurses (17). In a study conducted in Ethiopia on the topic of patient satisfaction with preoperative preparation, 20.1% of respondents were completely satisfied with the information provided about treatment options and the occurrence of postoperative pain. In that research, it was concluded that providing information before and after the procedure is crucial for patient satisfaction (18, 19). The patient's overall satisfaction is an important measure of the outcome of the treatment previously associated with the patient's general health condition and numerous physical and psychosocial predictors (20, 21). Considering the relatively small sample in the research conducted in Zagreb, it opens up possibilities for further research that would include a larger number of respondents.

Table 6. Patients' self-assessment of satisfaction with healthcare in relation to their level of education

	Mean (standard deviation)				<i>p</i> *
	Lower vocational education	High school education	College education	Higher vocational education	
The information I received during my stay at the Clinic was clear.	4.33 (0.6)	4.57 (0.7)	4.83 (0.4)	4.7 (0.7)	0.53
I received more information about my illness at the Clinic.	3.67 (1.5)	4.2 (0.9)	4.5 (0.9)	4.4 (0.7)	0.49
I was able to turn to the Clinic's health workers with confidence.	5 (0)	4.94 (0.2)	4.83 (0.4)	4.8 (0.4)	0.45
The nurse/medical technician showed concern and understanding for my health problem.	5 (0)	4.91 (0.3)	4.83 (0.4)	4.9 (0.3)	0.81
The nurse/medical technician educated me about the lifestyle after dismissal from hospital.	3.67 (1.2)	4.37 (0.8)	4.5 (0.9)	4.9 (0.3)	0.08
The nurse/medical technician gave me verbal instructions for each intervention.	4.67 (0.6)	4.83 (0.4)	4.75 (0.6)	4.6 (0.7)	0.63
The nurse/medical technician explained to me the importance of preparing for surgery intervention.	4 (1)	4.51 (0.7)	4.67 (0.7)	4.8 (0.4)	0.29
My privacy was ensured.	4 (1.7)	4.54 (0.9)	4.42 (0.9)	4.8 (0.4)	0.55
The environment in which I stayed was safe.	5 (0)	4.66 (0.7)	4.75 (0.5)	4.8 (0.4)	0.77
I am satisfied with the health care provided.	5 (0)	4.89 (0.3)	4.75 (0.6)	4.9 (0.3)	0.67
I am satisfied with the postoperative pain relief.	4.33 (1.2)	4.91 (0.3)	4.92 (0.3)	4.7 (0.5)	0.06
I am satisfied with the encouragement of the health care staff to become independent after surgery.	4.33 (1.2)	4.71 (0.6)	4.92 (0.3)	4.7 (0.5)	0.40

SD – standard deviation; *ANOVA

Conclusion

A study conducted at the Surgery Clinic of the "Sveti Duh" Clinical Hospital showed that the largest number of respondents, a total of 53 (88.3%), were satisfied with the health care provided during hospitalization. There is a statistically significant difference in the satisfaction of respondents with preoperative preparation depending on their age and gender. It was observed that women are significantly more satisfied than men, and considering the differences by age group, the respondents up to 45 years of age are significantly less satisfied compared to those aged 46 to 60. An important factor in postoperative satisfaction was postoperative pain. A total of 44 (73%) patients expressed satisfaction with the timeliness of the nurses' intervention after they had reported pain.

The conducted study did not prove that the professional qualifications of the respondents and the type of admission to the hospital affect satisfaction with preoperative preparation. The factors that led to a small share of dissatisfied respondents in the survey are younger age and poorer understanding of the information received.

Author contributions

Conceptualization (ŠK, VK, JP, FL, MK, MH, MB); Data Curation (ŠK, VK, JP, FL, MK, MH, MB); Formal Analysis (ŠK, VK, JP, FL, MK, MH, MB); Investigation (ŠK, VK, JP, FL, MK, MH, MB); Methodology (ŠK, VK, JP, FL, MK, MH, MB); Project Administration (ŠK, VK, JP, FL, MK, MH, MB); Resources (ŠK, VK, JP, FL, MK, MH, MB); Supervision (ŠK, VK, JP, FL, MK, MH, MB); Validation: (ŠK, VK, JP, FL, MK, MH, MB); Visualization (ŠK, VK, JP, FL, MK, MH, MB); Writing – Original Draft (ŠK, VK, JP, FL, MK, MH, MB); Writing – Review & Editing (ŠK, VK, JP,

FL, MK, MH, MB). All authors have approved the final manuscript.

Conflict of interest

The authors declare no conflicts of interest.

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