

Research on the influence of hospitalization satisfaction of surgical patients based on 5W1H theory

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Abstract. – OBJECTIVE: This paper combines the 5W1H method to study the influencing factors of hospitalization satisfaction of surgical patients, in order to improve their quality of hospitalization.

PATIENTS AND METHODS: 100 surgical patients were selected from Henan Provincial People's Hospital, and they were randomly divided into the test group and the control group, with 50 cases in each group. The 5W1H and 5WHY hospitalization guidance interventions are used in the test group, and conventional hospitalization interventions are used in the control group. The psychological status, sleep quality, and bleeding volume of the two groups of test subjects were statistically analyzed.

RESULTS: The test research shows that compared with the control group, the test group showed better results than the control group considering mental state, sleep quality, and bleeding volume. The results are significantly different ($p < 0.05$). The research shows that 5W1H can effectively improve mental health, sleep quality, and the satisfaction of hospitalized patients, which has certain clinical practical significance.

CONCLUSIONS: The satisfaction survey shows that satisfaction with postoperative hospitalization guidance intervention methods based on the 5W1H and the 5WHY is much higher than that of traditional hospitalization guidance interventions, and the degree of patient cooperation is higher. The 5W1H and the 5WHY-based postoperative hospitalization guidance interventions can help patients improve their awareness of postoperative hospitalization guidance methods and reduce patients' doubts about hospitalization staff.

Key Words:

5W1H, Surgery, Patients, Hospitalization, Satisfaction.

Introduction

Patient satisfaction refers to the patient's inner feelings about their own needs or expectations

being met and is the patient's direct experience of medical services. As a comprehensive performance of the collaboration between multiple service departments of the hospital and the effect of multiple services on patients, a system composed of multiple indicators for evaluation is needed. This can more objectively reflect the quality of medical services, and it has become the gold standard for evaluating the quality management of modern hospitals¹. Inpatients' satisfaction with hospital services is highly important for adhering to the public welfare nature of public hospitals and making reforms in public hospitals from partial pilot projects to comprehensive advancement.

Some scholars² conducted systematic research on customer satisfaction. Moreover, the research on customer satisfaction is gradually related to the perceived quality of customers. With the development of the medical market, patient satisfaction surveys have attracted more and more attention and are widely used in hospital scale determination and medical service decision-making. Because it is closely related to the provision of better services by medical institutions, with the deepening of its research, the quality of patient satisfaction surveys has been improved. The current national customer satisfaction evaluation system, represented by the Swedish Customer Satisfaction Barometer (SCSB)³, is the mainstream in foreign customer satisfaction evaluation. The model is based on causality and puts overall customer satisfaction in the chain of causality. The chain starts with the early factors that affect customer satisfaction and ends with the final factor that affects customer satisfaction. Overall customer satisfaction is at the center of the value chain. Patients' satisfaction has also become an important indicator of medical quality evaluation. At present, some developed countries such as the United States and the United Kingdom have legislated

protection for patient satisfaction evaluation. This indicator has become a necessary condition for hospitals to start operations. However, foreign patient satisfaction survey scales are mainly surveyed by a third party, and there are differences in the content of the scales in various regions, so there is no internationally accepted inpatient satisfaction scale. Due to differences in Chinese and Western cultures, economic levels, and social backgrounds, foreign scales cannot be used directly in our country, and some content needs to be added, deleted, and modified. Related studies⁴ have shown that when the patient is satisfied, the sense of security and trust will be strengthened, the tolerance to fear will increase, the treatment will be more effective, and the occurrence of complaints and disputes can be reduced. When communicating with doctors and patients, foreign hospitalized patients pay more attention to the protection of their rights, while domestic patients hope to gain the respect and understanding of medical staff.

The research on patient satisfaction in China originated in the 1980s. In the subsequent three-level hospital review, patient satisfaction surveys are gradually used as one of the review criteria, making patient satisfaction important in the evaluation of medical services. Many inpatient satisfaction survey scale designs lack scientific design, and the content of the items is very random. It does not start from the patient's perspective, and the collection of patient satisfaction information is not comprehensive, resulting in a lack of comparison in the subsequent data analysis. During the investigation, some departments even encountered the phenomenon that in-patient guidance staff filled out the scale on their behalf to cope with the task, resulting in untrue data collection. Moreover, many hospital satisfaction results are often mere formalities and have no guiding effect on the daily management of the actual hospital, which violates the original intention of the scaling survey. Too much content on the inpatient scale can easily cause resistance and unwillingness to fill in; too little content and insufficient content will result in deviation; whether the question set on the scale represents the concern of inpatients, etc. can affect the authenticity of the satisfaction survey results. At the same time, the qualitative and quantitative questions of the scale are mixed, and questionnaires that are more open are not conducive to the later statistical analysis and will also cause a lot of discomforts.

This article combines the 5W1H method to

investigate and analyze the hospitalization satisfaction of surgical patients, which is a theoretical reference for improving the quality of hospital surgical inpatient management. The 5W1H method is a scientific analysis of certain job based on investigation and research, providing descriptions of reasons (Why), object (What), location (Where), time (When), hospitalization guide (Who), and how to be hospitalized (How), and the description to achieve the goal of completing the job task.

Related Work

One study⁵ believes that the service attitude and medical technology of medical staff have a strong positive correlation with the satisfaction of hospital inpatients. The quality of medical services that hospitals can provide is an important guarantee for the safety of the people, and it also reflects the level of diagnosis and treatment of medical institutions and the level of hospital management. The quality of medical services provided by hospitals is a key factor for the survival, development, and expansion of hospitals, and the key to improving the quality of medical services lies in improving the quality and level of hospital management⁶. Therefore, in the formulation of the management system of modern hospitals, the ultimate goal is to improve the quality of medical services and the satisfaction of inpatients. The establishment of the socialist market economic system and the tremendous changes in various fields have brought severe tests to hospitals. How modern hospitals can adapt to the new situation and changes and develop and grow rapidly in the fierce market competition, is a very real problem for every hospital management⁷.

With the in-depth reform of the medical system, hospital management methods and management systems will inevitably change and adapt, which also puts forward higher requirements on the quality and level of hospital management. The formulation of a modern hospital management system should be able to effectively plan, direct, organize, control, and coordinate all medical and living activities in the hospital in order to operate flexibly and create substantial economic and social benefits⁸. It is also worth mentioning that in terms of the concept of modern hospital management, it is necessary to understand that modern hospital management is a dynamic concept. The hospital decision-making level can widely apply the research results of social sciences and natural sciences (such as cybernetics, systems theory, and

operations research) to collect, store, transmit, and process tens of millions of projects, and adjust management strategies at any time according to the processing results to maximize the quality of hospital medical services and the satisfaction of inpatients. According to the survey results of another study⁹, before the medical reform, patients' satisfaction scores for hospital inpatients in the medical service process were all low. After nearly a year of rectification, patients' scores have been improved on several items in the hospital process; that is, continuous improvement of medical quality is of great significance for hospital patients' satisfaction.

The patient's evaluation of the environmental facilities in the ward includes the evaluation of the internal and external environmental sanitation of the outpatient clinic, the setting of the waiting area, and the protection of patient privacy. In order to maintain order and save time on patient visits and rounds during the medical activities of inpatients before admission, the hospital's decision-making management should appoint full-time personnel for triage and guidance, so as to minimize the time-consuming patient visits and improve patient satisfaction. Through the construction of the external environment, internal environment, and diagnosis and treatment environment of the hospital, the medical environment and conditions are improved, the procedure is optimized, and the service management level is getting better so that patients can feel comfortable¹⁰.

The perception of patient safety, the degree of recognition of the effectiveness of medical services, and the respect for patients will all affect the evaluation of hospital inpatient satisfaction. In addition, the enthusiasm of employees, the degree of participation, and the enthusiasm of medical staff in medical service activities affect the satisfaction of hospital inpatients¹¹.

One study¹² combines customer satisfaction theory with medical practice based on the customer satisfaction index model, uses patient satisfaction as the final result variable, and designs an inpatient experience scale based on the patient's medical experience and experience. The medical experience and value recognition constitute the main factors of satisfaction. Inpatients are more eager to obtain high-quality medical experience during medical services. Another study¹³ randomly sampled medical institutions and found that the satisfaction scores of inpatients on the basic environment, service procedures, and

treatment effects were higher than those at the township level. Age, total medical expenses, and length of hospital stay are negatively correlated with overall satisfaction at the county and township levels, while education level is positively correlated with overall satisfaction at the county and township levels. At the same time, it is pointed out that strengthening the institutional capacity building of township hospitals and reducing medical expenses are important measures to improve patient satisfaction in the county and township-level public hospitals. Another study¹⁴ proposes an 8-dimensional satisfaction evaluation index system, including service skills, medical environment, service attitude, service process, service items, service results, complaint handling, and diagnosis and treatment costs. Each dimension has 2-5 three-level indicators, and each three-level indicator is divided into several four-level indicators, with a total of 94 questions. This scale reflects the patient's degree of satisfaction with medical services more scientifically and comprehensively. The disadvantage is that there are many questions, which can easily lead to poor patient cooperation and a heavy workload. Gijzel et al¹⁵ summarized the key factors affecting patient satisfaction in existing studies and developed a 4-dimensional tool for measuring satisfaction. These are environmental facilities, medical assistance services, diagnosis and treatment procedures, and medical service quality. There are 5-11 indicators under each dimension, and an 11-level scale is used to investigate. This questionnaire is simple, highly operable, scientific, and reasonable, and is currently a widely used evaluation tool. Another study¹⁶ uses the SERVQUAL model as the theoretical basis, combined with the evaluation criteria of high-quality nursing service quality, to construct a five-dimensional scale consisting of environmental facilities, humanistic care, professional skills, patient safety, and comprehensive evaluation. Inpatient satisfaction is composed of 44 items. Degree survey questionnaires, and clarify the weight of the indicators, provide a basis for scientific evaluation of the quality of nursing services. The study¹⁷ has been improved to form a 30-item inpatient satisfaction questionnaire with 5 dimensions, namely environment and logistics, medical services, nursing services, service processes and attitudes of medical staff, as well as discharge and rounds. The cumulative interpretation of the five factors is 67.9%, and it has high reliability, validity, and feasibility.

Patients and Methods

In this study, 100 surgical patients from Henan Provincial People's Hospital between December 31, 2019, and January 1, 2021, were selected and randomly divided into the test group and the control group, with 50 cases in each group. The age distribution of patients in the control group is 22.5-34 years old, with an average age of 27.67±2.56 years old. The distribution of the disease period is 37.5-41.5 weeks, with an average of 40.17±2.23 weeks. The weight is 54-75 kg, with an average of 62.42±2.34 kg. The educational level is widely distributed, including 7 in elementary school, 15 in junior high school, 23 in high school, and 5 in junior college or above. The age distribution of patients in the test group is 22.3-34.4 years old, with an average of 27.65±2.87 years old. The disease cycle distribution is 37.2-41.6 weeks, with an average of 40.5±2.53 weeks. The weight is 55-75.5 kg, with an average of 63.43±2.35 kg. The educational level is widely distributed, including 9 in elementary school, 17 in junior high school, 21 in high school, and 3 in junior college or above. Through comparative analysis, it is found¹⁸ that the two groups of patients are relatively close in age, disease period, weight, educational background, etc., and the difference is not statistically significant ($p>0.05$), and the test results have a certain degree of reliability.

The subjects selected in this study were all hospitalized for the first time, and the hospitalization process was normal, and they were all mildly ill. After the hospitalization, their physical condition became normal, and their mood was stable.

The control group used traditional postoperative hospitalization guidance methods, including hospitalization guidance for patients to adapt to the environment after the operation, monitoring of vital signs, and postoperative cleaning. It is

necessary to clean the affected area with normal saline every morning and evening, formulate a reasonable postoperative recovery plan, guide the patient to perform appropriate activities, promote the timely recovery of the patient's gastrointestinal function, and improve the patient's digestive function. At the same time, it is necessary to develop a reasonable diet plan for the patient. The hospitalization guidance of the patients in the control group was carried out according to the plan, and the hospitalization guidance status of the patients was recorded daily. The test group used the 5W1H and the 5WHY combined with traditional hospitalization guidance methods for hospitalization guidance. The 5W1H mainly inquires about selected hospitalization guidance methods, hospitalization guidance plans, and hospitalization guidance behaviors. Moreover, it asks questions about the reasons (Why), object (What), location (Where), time (When), hospitalization instructor (Who), and how hospitalization instruction (How). In addition, it considers these issues and formulates the most reasonable plan. The 5WHY is to find the root cause of the inpatient guidance problems by asking several questions continuously, so as to find the root cause and solve the problem fundamentally¹⁹.

For example, the formulation of the patient's diet plan can be inquired about by using the 5W1H method in Table I and formulating the best diet structure.

The 5W1H method can be used for hospitalization guidance for patients to adapt to the environment after the operation, monitoring of vital signs, postoperative cleaning, postoperative activities, and timely recovery of the patient's gastrointestinal function.

For some problems encountered by patients in hospitalization guidance, the root cause can be found through 5WHY. For example, for a patient

Table I. The 5W1H-based patient dietary and hospitalization guidance methods.

5W1H	Ask for directions
Why	Why should we formulate a corresponding diet plan, why should we choose these foods?
What	What to eat for the patient, what is the difference in the diet of different patients, and what effect can it play in the postoperative conditioning of the patient?
Where	Where are food sources, food preparation places, eating-places?
When	When to prepare the food raw materials, when to start making them to ensure the freshness of the ingredients, when the patients start to eat.
Who	Who is eating, who assists the patient in eating, and who controls the eating process?
How	How are methods used for hospitalization guidance in all hospitalization guidance steps, and how are the methods of hospitalization guidance for all details?

in a ward, some birds will be noisy when sleeping in the middle of the night, resulting in poor sleep quality, which is not conducive to postoperative physical recovery. Moreover, there are usually not sufficient beds, and it is difficult to place patients in other delivery rooms, so this problem has been plagued by hospitals. After that, the problem is analyzed by the 5WHY method, and the problem analysis is shown in Table II²⁰.

From the analysis in Table II, it can be seen that the mosquito-killing lights are the fundamental reason that attracts birds to bounce on the windows and call, which makes the patients unable to rest. Therefore, as long as the mosquito-killer light is not projected outside the window, these interferences can be eliminated. Therefore, the final plan is to draw the curtains before resting every night, and then no birds will interfere with the patient's rest²¹.

Evaluation criteria: (1) Mental state: the evaluation of mental state is mainly evaluated by two indicators, namely the self-rating anxiety scale (SAS) and the self-rating depression scale (SDS). Each evaluation has 20 items. The SAS evaluation score has a limit of 50 points. 50-60 means the patient is mildly anxious, 60-70 means the patient is moderately anxious, and a score above 70 means the patient is severely anxious. The score of the SDS is 53 points, 53-62 indicates mild anxiety, 63-72 indicates moderate anxiety, and 72 points or higher indicates severe anxiety. (2) Sleep status: the sleep status is evaluated through the Pittsburgh Sleep Quality Index (PSQI). The evaluation parameters include sleep time, time to fall asleep, whether sleep is disordered, sleep quality, whether to use

drugs to promote sleep, body function during the day, sleep efficiency, etc. (3) Postoperative blood loss is mainly the postoperative blood loss during the 2-24H period. (4) Satisfaction survey: evaluation is carried out by the supervisor evaluation method in which the hospital makes a satisfaction measurement table and conducts an anonymous satisfaction survey on the discharge output. The survey items are mainly carried out from several aspects such as hospitalization guidance service attitude, hospitalization guidance skill evaluation, communication skills, postoperative health education, and humanistic care. The evaluation results are presented in the form of scoring, with a full score of 100 points, 90-100 points are very satisfactory, 70-90 points are satisfactory, and 70 points or less are unsatisfactory. Total satisfaction is the sum of very satisfied and satisfied.

Statistical Analysis

The collected data is analyzed by SPSS 17 software (SPSS Inc., Chicago, IL, USA). The measurement data is expressed by ($\pm s$), and the *t*-test is used to count in percentage. ($p < 0.05$) indicates that the difference was statistically significant.

Results

The comparison of mental state changes in the test group and the control group before and after intervention is shown in Table III, and the SAS and SDS scores are used as the evaluation results for comparison. It can be seen from Table III

Table II. Example of 5WHY analysis method.

Question	Answer
1 Why do birds bounce and scream outside the window?	These birds are active early, and usually go out around 4 to 5 o'clock.
2 Why do these birds go out for food around 4 to 5?	In summer, the days are long, and the nights are short, and the birds start to move around four or five o'clock with the sunrise signal.
3 Why do birds move outside the delivery room window before four or five o'clock?	Because the mosquito killer lights in the delivery room were cast on the windows, the birds thought it was sunrise.
4 Why is the mosquito killer used in the delivery room to kill mosquitoes and can it be replaced by other methods?	This area has better greening, lower floors, and more mosquitoes. Chemical mosquito killing is not good for the patient's health. There is no other better mosquito repellent method for the time being.
5 Why does the mosquito killer light shine through the window?	In summer, the air conditioner controls the indoor temperature, and after closing the glass window, the glass window refracts the mosquito killer light to the outside.

Table III. Changes in the mental state of the test group and the control group ($\bar{x} \pm s$, points).

Test object	N	Evaluation stage	SAS	SDS
Test group	50	Before intervention	60.18 ± 4.21	61.46 ± 3.25
		After the intervention	22.56 ± 2.61*#	20.64 ± 1.69*#
Control group	50	Before intervention	59.94 ± 4.19	60.65 ± 3.32
		After the intervention	38.41 ± 2.51*	38.75 ± 2.31*

Compared with test group before intervention, * $p < 0.05$; compared with control group after intervention, # $p < 0.05$.

that the difference in mental state change scores between the test group and the control group after intervention is significantly reduced, and the results of the score difference are statistically significant ($p < 0.05$).

The comparison of sleep quality between the test group and the control group after the intervention is shown in Table IV. From the comparison results in Table IV, it can be seen that the total PSQI score of the study group is significantly lower than that of the control group, and the difference is statistically significant ($p < 0.05$).

The postoperative blood loss of the experimental group and the control group is shown in Table V, and the statistical period is 2-24H postoperatively. From the comparison results in Table V, it can be seen that the bleeding volume of 2-24H in the test group was significantly lower than that in the control group, and the difference was statistically significant ($p < 0.05$).

Table IV. Comparison of sleep quality between the test group and the control group ($\bar{x} \pm s$, points).

Research object	Test group	Control group
N	50	50
Time to fall asleep	0.61 ± 0.15*	1.84 ± 0.32
Sleep disturbance	0.60 ± 0.17*	2.20 ± 0.55
Sleeping time	0.10 ± 0.02*	0.29 ± 0.08
Subjective sleep quality	0.69 ± 0.20*	0.92 ± 0.25
Hypnotics application	0.68 ± 0.17*	2.30 ± 0.58
Daytime dysfunction	0.18 ± 0.03*	1.10 ± 0.30
Sleep efficiency	0.60 ± 0.14*	1.55 ± 0.47
PSQI	3.47 ± 0.84*	9.87 ± 2.42

Compared with the control group, * $p < 0.05$.

Table V. Comparison of postoperative blood loss between the experimental group and the control group ($\bar{x} \pm s$, ml).

Research object	N	2H after operation	24H after operation
Test group	50	86.69 ± 23.46*	143.576 ± 30.43*
Control group	50	153.88 ± 30.15	254.36 ± 27.34

Compared with the control group, * $p < 0.05$.

The comparison results of hospitalization guidance satisfaction of the experimental group and the control group are shown in Table VI. From the comparison results of Table VI, it can be seen that the satisfaction of the experimental group is significantly higher, and the difference is statistically significant ($p < 0.05$).

Conclusions

At present, there has been a more systematic hospitalization guidance intervention for the postoperative hospitalization guidance of clinical patients. However, conventional postoperative hospitalization guidance methods have obvious shortcomings. For example, the best hospitalization guidance methods are not used to fit the actual conditions of the patients. In the traditional postoperative hospitalization guidance method, the problems encountered in the hospitalization guidance cannot be solved fundamentally. The postoperative hospitalization guidance intervention for 5W1H and 5WHY patients proposed in this study is an improvement based on the existing hospitalization guidance experience and methods. The addition of 5W1H and 5WHY can further improve the scientific value and pertinence of hospitalization guidance and reduce the possibility of incorrect hospitalization. The 5W1H mainly inquiries about selected hospitalization guidance methods, hospitalization guidance methods, hospitalization guidance plans, and

Table VI. Comparison of satisfaction with postoperative hospitalization guidance [n (%)].

Test object	N	Very satisfied	Satisfy	Dissatisfied	Total satisfaction
Test group	50	35 (62.50)	13 (32.50)	2 (5.00)	38 (95.00)*
Control group	50	25 (51.28)	14 (25.64)	11 (23.08)	30 (76.92)

Compared with the control group, * $p < 0.05$.

hospitalization guidance behaviors. Moreover, it considers these issues and formulates the most reasonable plan.

Through the 5W1H and the 5WHY patients' postoperative hospitalization guidance intervention, it can help medical staff to grasp various health indicators of patients and infants more comprehensively and systematically. Moreover, it is possible to formulate scientific and effective plans in a targeted manner, improve the scientific value of the hospitalization guidance method through multi-faceted inquiry verification, timely and effectively solve the problems existing in the patient's hospitalization guidance, and help the patient successfully pass the postoperative recovery phase. The 5W1H is the basis for formulating a scientific hospitalization guidance plan. Different from the traditional hospitalization guidance method, the 5W1H hospitalization guidance method pays more attention to the accuracy and scientific value of the hospitalization selection guidance method. Moreover, the 5W1H evaluates multiple factors such as hospitalization guidance time, location, and characters.

This study shows that, compared with the situation before the hospitalization intervention, the SAS and SDS scores of the test group and control group were reduced to a certain extent after the intervention, and the SAS and SDS scores of the test group were significantly lower than those of the control group. The reason is that the postoperative hospitalization guidance intervention for patients, which is based on 5W1H and 5WHY conducts a comprehensive analysis of patients' postoperative adaptation to the environment, monitoring vital signs, postoperative cleaning, recovery plans, and diet plans. Moreover, each item is carefully investigated for its root cause, and there are timely feedback measures to solve the problem in time. At the same time, it can also allow patients to understand the entire hospitalization guidance process. Patients are more willing to cooperate with the work of medical staff, shorten the distance between nurses and patients,

keep the patient's emotional health good, have a positive effect on the patient's postoperative recovery, and can effectively reduce the occurrence of postoperative complications.

Comparative analysis shows that the total PSQI score of the test group is significantly lower than that of the control group. The reason for the analysis is that the postoperative hospitalization guidance intervention for the 5W1H and the 5WHY patients has formulated a strict visitation system and a rest system for the patients, and the patients' lives are more regular, and the quality of sleep is higher. The bleeding volume of 2H-24H in the experimental group was significantly lower than that in the control group. The reason for the analysis is that the patient's mentality is more relaxed after the hospitalization guidance intervention in the 5W1H and the 5WHY patients, and they are psychologically prepared to reduce the possibility of uterine weakness, thereby further reducing postoperative bleeding. Finally, the satisfaction survey shows that satisfaction with postoperative hospitalization guidance intervention methods based on the 5W1H and the 5WHY is much higher than that of traditional hospitalization guidance interventions, and the degree of patient cooperation is higher. The 5W1H and the 5WHY-based postoperative hospitalization guidance interventions can help patients improve their awareness of postoperative hospitalization guidance methods, recover their physical and mental health and reduce patients' doubts about hospitalization staff.

Conflict of Interest

The Author declares that he has no conflict of interests.

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Informed Consent

Informed consent was obtained from all individual participants included in the study.

Ethics Approval

This study was approved by Henan Provincial People's Hospital (No. LHGJ20200036).

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Availability of Data and Materials

The datasets generated during and/or analyzed during the current study are available from the corresponding author upon reasonable request.

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