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ORIGINAL RESEARCH

Readiness for Discharge, Quality of Discharge Teaching, Anxiety and Depression in Surgical Patients With Cervical Cancer: A Cross-Sectional Survey

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Purpose: This quantitative study aimed to determine whether the quality of discharge teaching, anxiety, depression, and various demographic and disease-related factors predict discharge readiness among cervical cancer surgical patients in Western Region of China.

Methods: From November 2023 to May 2024, a convenience sampling method was employed to administer a questionnaire to cervical cancer surgery patients at a tertiary Grade A specialized hospital in Xinjiang. The survey included a patient general information questionnaire, the Quality of Discharge Teaching Scale (QDTS), the Generalized Anxiety Disorder 7-item Scale (GAD-7), a questionnaire assessing the readiness for discharge of gynecological malignant tumor surgery patients under the enhanced recovery after surgery (ERAS) model, and the Patient Health Questionnaire-9 (PHQ-9). Multivariate linear regression analysis was used to identify factors influencing discharge readiness.

Results: A total of 180 cervical cancer surgery patients participated, yielding an average score of 190.46±25.36 on the gynecological malignant tumor discharge readiness questionnaire under the ERAS model. Multiple linear regression analysis indicated that education level, chronic diseases, medication use, quality of discharge teaching, and depressive mood were significant predictors of discharge readiness of cervical cancer surgery patients.

Conclusion: The overall discharge readiness of cervical cancer surgery patients was found to be at a moderate. Nurses should prioritize patients with lower education levels, chronic conditions, depression, and those requiring medication post-discharge. Personalized health guidance and targeted interventions should be developed to enhance the quality of discharge teaching, thereby improving patients' readiness for discharge.

Keywords: cervical cancer, surgery, discharge readiness, quality of discharge instructions, depression

Introduction

Cervical cancer is one of the most common forms of gynecological malignancy. In 2022, it was the fourth most prevalent cancer among women globally, both in terms of incidence and mortality, with approximately 660,000 new cases and 350,000 deaths reported.[1] In China, both the incidence and mortality rates of cervical cancer are also increasing.[2] Currently, surgery remains one of the effective treatment methods for cervical cancer.[3] However, as an invasive procedure, surgery also poses surgical risks and complications while achieving therapeutic outcomes.[4] The common complications after cervical cancer surgery include vaginal or cervical stump bleeding,[5] poor wound healing,[6] bladder dysfunction,[7] lower extremity lymphedema and so on.[8] These complications are important factors that affect patient discharge, readmission rates and overall prognosis.[9,10] Mild complications may lead to physical discomfort, while severe

complications can significantly impact the patient's quality of life and even threaten survival. Furthermore, the uterus serves not only a reproductive function but also embodies an emotional core of femininity. As a result, individuals undergoing hysterectomy may experience psychological burdens due to the perceived absence of these feminine attributes.[11]

The reform of China's medical and health system has resulted in an acceleration in the turnover rate of hospital beds and a reduction in the average length of stay for surgical patients.[12] Additionally, the implementation of Enhanced Recovery After Surgery (ERAS) protocols in gynecological surgery has further reduced hospitalization durations, allowing for earlier patient discharge.[13,14] This expedited discharge process has led to patients being discharged in the early stages of recovery, reducing the time that medical staff can focus on communicating with patients. Consequently patients frequently lack adequate preparation for discharge and self-care, hindering their ability to effectively manage potential health issues. Insufficient discharge and self-care preparation may negatively impact their quality of life and potentially lead to postoperative complications that require readmission, thereby increasing the medical burden on patients.[15] A study has shown that approximately 9.6% of cervical cancer patients are readmitted to hospital within 30 days of discharge.[9] Therefore, it is essential to equip patients with fundamental self-care skills prior to discharge to mitigate these risks and enhance postoperative outcomes.

Patients' reported readiness for discharge reflects their genuine feelings about their condition and their confidence in managing with potential health problems after discharge. It serves as an essential assessment index for determining whether patients can be safely discharged.[16,17]

Studies have shown that patients with high discharge readiness experience a better quality of life after discharge and lower rates of rehospitalization.[18] Previous research have demonstrated that high-quality discharge instructions significantly enhance patients' readiness for discharge.[19] When a woman is diagnosed with cervical cancer, she may experience a range of negative emotions, including anxiety, depression, and sadness.[20] Surgery is one of the treatment methods for cervical cancer.[21] However, patients may encounter adverse events related to the treatment, as well as physical and sexual changes following surgery, which can make them vulnerable to negative emotions such as depression and anxiety.[22] Furthermore, these negative emotions can, to some extent, reflect the patient's readiness for discharge.[23]

Despite the growing emphasis on patient discharge readiness, negative emotions, and discharge instructions in the cancer treatment process, limited attention has been given to patients undergoing cervical cancer surgery. A comprehensive examination of the intricate interactions among these factors as well as the identification of potential influencing elements is essential for developing effective intervention strategies and optimizing patient care.

In summary, ensuring high discharge readiness is essential for enhancing postoperative quality of life and reducing rehospitalization rates. It is crucial to address the emotional well-being of cervical cancer patients and to provide high-quality discharge instructions that facilitate a smoother transition from hospital to home. By understanding and addressing these factors, we can contribute to better patient outcomes and more efficient healthcare delivery.

The objectives of this study were as follows: (1) To investigate the current status of discharge preparedness, the quality of discharge instructions, and the levels of anxiety and depression among cervical cancer patients after surgery. (2) To identify the factors influencing discharge preparedness in cervical cancer patients post-surgery. (3) To explore the correlation between discharge preparedness, the quality of discharge instructions, and the levels of anxiety and depression among cervical cancer patients post-surgery. The results of this research aim to provide actionable recommendations for healthcare professionals, particularly doctors and nurses, to enhance the discharge preparedness of cervical cancer surgery patients.

Methods
Study Design and Setting
This descriptive cross-sectional study was conducted at a gynecology center of a university hospital located in the Northwest region of China between November 2023 to May 2024. This prospective observational study followed the guidelines outlined in "Strengthening the Reporting of Observational Studies in Epidemiology (STROBE)".[24]

Participants

The sample consisted of individuals who met the inclusion criteria for cervical cancer; having 4 to 12 hours remaining before discharge; accepted relevant surgical treatment; the age above eighteen years old; being able to understand and speak Chinese; volunteering to participate and consenting to provide information for the study; without cognitive disabilities. Exclusion criterion was a diagnosis of any communication barrier; impaired consciousness or mental disorders; terminated the completion of questionnaires due to medical activities; were unaware of their disease. Patients who dropped out and were lacking more than 20% of their information were also excluded from the study.

Study Size

The sample size for this Cross-Sectional study was calculated based on formula for calculating sample size in cross-sectional design embedded in the PASS v15.[25]

In the above formula, = 1.96(α stands for bilateral tests of 0.05, the standard deviation of readiness for hospital discharge is 25.49,[26] the number of predictor variables was 5. The sample size was calculated as 100. To account for a potential drop-out rate of 20%, the final sample size at least 120 cases need to be included in this study as research subjects.

Instruments

Patient General Information Questionnaire

The patient general information questionnaire was collaboratively developed by the research team after reviewing relevant data and through discussion. It comprises demographic information, such as age, education level, marital status, as well as disease-related information, including FIGO staging, postoperative hospitalization duration, and whether patients have any chronic diseases.

The Discharge Readiness Survey Form for Gynecological Malignancy Surgery Patients Under the ERAS Mode

The questionnaire was developed by Yuan-Yuan Chen in 2022 and consists of 27 items that can be categorised into four dimensions: physical function, psychological state, knowledge of disease care, and social support.[26] The questionnaire does not incorporate reverse scoring and utilizes a 0–10 point scale, with the lowest and highest possible scores being 0 and 270, respectively; a higher total score indicates better readiness for discharge. The scores are categorised into 3 levels: a score of 162 or less indicated low readiness for discharge, a score between 162 and 216 indicates moderate readiness, and a score of 216 or more indicates high readiness for discharge. The questionnaire has a Cronbach's alpha coefficient of 0.866 and an average content validity index of 0.96. Overall, the average content validity of the questionnaire was 0.87, and the Cronbach's alpha coefficient was 0.799, demonstrating that the questionnaire has good reliability and validity.

Quality of Discharge Teaching Scale (QDTS)

Wang and colleagues adapted the scale for use in China, modifying it to align with cultural norms.[27] The scale comprises three dimensions: pre-discharge content (six entries, not included in the total score), actual content acquisition (six entries), and guidance skills and effectiveness (twelve items). The QDTS is scored on a 0–10 scale, with the total score calculated as the sum of the three dimensions. The QDTS score is derived from the actual content acquisition score plus the skills and effectiveness score. A higher total score indicates a higher quality of discharge guidance. The QDTS demonstrates excellent reliability and validity, with a Cronbach's alpha coefficient of 0.98. The content validity coefficient is also 0.98, while a separate Cronbach's alpha coefficient of 0.92 further supports the scale's reliability and validity.

Generalized Anxiety Disorder (GAD-7)

The GAD-7 consists of seven items scored on a 4-point Likert scale, ranging from 0 to 3, with a minimum score of 0 and a maximum score of 21. A higher total score indicates more severe anxiety symptoms, with a total score of ≥5 suggesting the presence of anxiety symptoms in the patient. The study demonstrated that the scale exhibited satisfactory validity and

reliability in patients with tumours, proving to be an effective instrument for screening and assessing patients' anxiety symptoms, with a Cronbach's α coefficient of 0.86.[28]

Patients Health Questionnaire (PHQ-9)

The PHQ-9 is a nine-item instrument scored on a four-point Likert scale, ranging from 0 to 3, with a minimum score of 0 and a maximum score of 27. Higher total scores on the PHQ-9 indicate more severe depressive symptoms, with scores of greater than 4 suggesting the presence of depressive symptoms. The PHQ-9 has demonstrated satisfactory reliability and validity in patients with tumors, with a Cronbach's alpha coefficient of 0.86, enabling effective screening and assessment of patients' depressive symptoms.[29]

Data Sources/ Measurement

Before the survey, we contacted the original author of the discharge readiness survey form for gynecological malignancy surgery patients under the ERAS mode via Email and obtained her consent. Researchers entered the ward 2 to 4 hours prior to the patients' discharge from the hospital and explained the purpose, significance and approximate time consumption of this research.[30] After obtaining informed consent from the patients, researchers conducted a face-to-face questionnaire survey. Upon completion of the questionnaire, the research nurses collected it and verified its completeness and accuracy to ensure data quality.

Ethical Considerations

This study protocol has been reviewed and unanimously approved by the Medical Ethics Committee of the Affiliated Cancer Hospital of Xinjiang Medical University (K-2023050) in accordance with the standards of the Helsinki Declaration. All participants provided informed consent.

Statistical Analysis

The database was created using Microsoft Excel, with data entered by two individuals. Data analysis was performed using the SPSS version 26.0. First, the type of data was evaluated, followed by an assessment of whether the data were normally distributed, determined by the results of the P-P plot, Q-Q plot and K–S test. Subsequently, relevant data analyses were conducted. Descriptive analyses were performed using mean and standard deviation (x ± s) for data conforming to a normal distribution, the median and interquartile range [M (P25, P75)] for non-normally distributed data, and frequency and percentage for the categorical data. One-way analysis of variance (ANOVA) was employed to analyze the measured data and this involved the use of t-test when appropriate. Correlation analysis was carried out following established criteria, utilizing Spearman's rank correlation coefficient. A multifactor analysis was performed using multiple linear regression. Significant differences were identified at the 0.05 level ($P < 0.05$).

Results

Participant Characteristics and Differences According to RHD

This study involved 192 participants, of whom 180 effectively completed the questionnaire survey, resulting in a completion rate of 93.75%. Of these participants, 68.89% were aged between 45 and 60 years. Additional general information is presented in Table 1. The results of the univariate analysis indicated significant differences in the degree of readiness for discharge among cervical cancer surgery patients based on various factors, including education levels, distances from their residences to secondary hospitals, FIGO stages, the presence of chronic diseases, the presence of indwelling tubes at discharge, and medication use. The specific findings from the univariate analysis are shown in Table 1.

Score of Readiness for Discharge of Cervical Cancer Surgery Patients

The total score for discharge preparation among patients undergoing cervical cancer surgery is (190.46±25.36) points, with the highest average score in the physical function dimension, which stands at (8.97 ± 0.68) points. The lowest score is found in the disease care knowledge dimension, recorded at (6.278 ± 1.38) points. For detailed scores of the overall assessment and each dimension of the Discharge Readiness Survey Questionnaire, please refer to Table 2.

Table 1 General Data of Cervical Cancer Surgery Patients and Influencing Factors of RHD (n=180)

Variables	N (%)	Mean ± SD	t/F	p-value
Age (year)			0.04[2]	0.963
28~44	34 (18.89)	189.35 ± 22.97		
45~60	124 (68.89)	190.58 ± 25.54		
61~72	22 (12.22)	191.00 ± 28.87		
Educational level			7.07[2]	<0.001
Elementary school and below	34 (18.89)	182.65 ± 18.94		
Middle school	54 (30.00)	182.19 ± 25.36		
High school	43 (23.89)	194.14 ± 25.95		
College degree or above	49 (27.22)	201.55 ± 24.40		
Working Status			2.07[2]	0.129
Unemployed	37 (20.56)	185.97 ± 30.52		
Employed	98 (54.44)	193.90 ± 22.85		
Retirement	45 (25.00)	186.42 ± 25.39		
Marital Status			0.15[2]	0.864
Married	157 (87.22)	190.22 ± 25.33		
Widowed	15 (8.33)	189.73 ± 27.97		
Divorced	8 (4.44)	195.12 ± 23.84		
Medical insurance type			1.81[2]	0.147
Rural cooperative medical	43 (23.89)	189.79 ± 27.56		
Urban Residents' Medical	59 (32.78)	185.15 ± 24.30		
Urban Employees' Medical	76 (42.22)	195.05 ± 24.27		
Commercial Insurance	2 (1.11)	181.50 ± 37.48		
Living Arrangement			−0.47[1]	0.636
Living with family members or other caregivers	155 (86.11)	190.04 ± 25.20		
Alone	25 (13.89)	192.64 ± 26.79		
Distance between the residence and the second-tier hospital			4.10[2]	0.008
<10km	94 (52.22)	184.65 ± 24.60		
10~20km	44 (24.44)	194.00 ± 24.75		
21~30km	21 (11.67)	202.48 ± 23.43		
>31km	21 (11.67)	196.52 ± 26.51		
Chronic			−3.63[1]	<0.001
Yes	69 (38.33)	182.35 ± 21.37		
No	111 (61.67)	195.41 ± 26.44		
FIGO			6.03[2]	0.003
I	103 (57.22)	195.68 ± 25.19		
II	50 (27.78)	181.22 ± 23.89		
Other[3]	27 (15.00)	187.26 ± 24.13		
Post-operative duration (day)			0.30[2]	0.738
<7	85 (47.22)	189.72 ± 23.96		
7~14	83 (46.11)	190.31 ± 26.33		
>14	12 (6.67)	195.83 ± 29.71		
Drainage tube			−2.43[1]	0.016
Yes	106 (58.89)	184.97 ± 25.57		
No	74 (41.11)	194.19 ± 24.64		
Medications taken			−2.132[1]	0.035
Yes	129 (71.67)	184.53 ± 22.49		
No	51 (28.33)	192.85 ± 26.21		

Notes: 1) *t*-test; 2) Variance; 3) Locally Advanced.
Abbreviation: RHD, readiness for hospital discharge.

Table 2 Scores of Patient Readiness for Hospital Discharge Questionnaire

Variables	Items	Max value	Min value	Average Score per Item (Mean ± SD)	Score (mean ± SD)
Total	27	130	252	7.05 ± 0.94	190.46 ± 25.36
Physiological Function	4	7.00	10.00	8.97 ± 0.683	35.16 ± 2.732
Psychological State	3	5.00	10.00	8.29 ± 1.190	24.87 ± 3.57
Disease knowledge	16	2.75	9.50	6.278 ± 1.38	100.448 ± 22.08
Social Support	4	3.00	10.00	7.46 ± 1.31	29.84 ± 5.24

Correlation Between RHD, QDTS, Depression and Anxiety in Cervical Cancer Surgery Patients'

Among 180 cervical cancer surgery patients, the QDTS score was (133.37 ± 13.48), the PHQ-9 score was [1.0 (1.0, 4.0)], and the GAD-7 score was [3.0 (1.0, 4.0)]. Spearman's rank correlation analysis revealed a positive correlation between the readiness for hospital discharge score and the QDTS score (r = 0.484, P < 0.001), a negative correlation between the readiness for hospital discharge score and the PHQ-9 score (r=–0.186, P < 0.05), and a negative correlation between the readiness for hospital discharge score and the GAD-7 score (r = −0.220, P < 0.001). For further details, please refer to Table 3.

Multivariate Regression Analysis of Factors Influencing the Readiness for Discharge Among Cervical Cancer Surgery Patients

In the single-factor analysis, six variables with P< 0.05, including education level, distance from residence to a secondary hospital, presence of chronic diseases, FIGO stage, presence of indwelling catheters at discharge, and medication use, along with the QDTS score, GAD-7 score, and PHQ-9 score, were selected as independent variables (X). The dependent variable (Y) was the readiness score for discharge among patients following cervical cancer surgery. The results of the multiple linear regression analysis indicated that the explanatory power of the included independent variables on the dependent variable was 41.1%. Among these, lower education level, quality of discharge guidance, medication use after discharge, presence of chronic diseases, and depressive mood were identified as influencing factors for discharge readiness among cervical cancer surgery patients (P<0.05). The assignment of independent variables is presented in Table 4 and the specific results of the multiple linear regression analysis are shown in Table 5.

Discussion
Status of RHD in Cervical Cancer Patients Undergoing Surgery

The results of this study indicated that the readiness for discharge among cervical cancer surgery patients was at a moderate level, with a total score of (190.46±25.36) on the readiness for discharge questionnaire for patients with gynecological malignancies. The score was lower than that reported in a study conducted by Yuan-yuan Chen on

Table 3 Results of Correlation Analysis

Variables	RHD	Physiological Function	Psychological State	Disease knowledge	Social Support
QDTS	0.484**	−0.001	0.166*	0.467**	0.352**
Knowledge to be needed knowledge	−0.131	0.131	0.037	−0.139	−0.089
Actual knowledge acquired	0.389**	0.006	0.062	0.397**	0.238**
Health guidance skills	0.457**	0.039	0.253**	0.420**	0.352**
GAD-7	−0.220**	−0.027	0.006	−0.240**	−0.004
PHQ-9	−0.186*	0.016	−0.105	−0.174*	−0.055

Notes: *:P<o.o5; **:P<0.001.

Table 4 Assignment of Independent Variables

Independent variables	Variable assignment
Quality of discharge guideline	Original value substitution
depression	Original value substitution
anxiety	Original value substitution
Education level	Elementary school and below(1,0,0,0); middle school(0,1,0,0) high school(0,0,1,0); College degree or above(0,0,0,0)
Distance from the residence to a secondary hospital	<10km(1,0,0,0); 10~20km(0,1,0,0);21~30km(0,0,1,0); >30km(0,0,0,0)
FIGO staging	I(1,0,0); II(0,1,0); Other(0,0,0)
Medications taken	Yes=1, No=0
Drainage tube	Yes=1, No=0
Chronic	Yes=1, No=0

Table 5 Results of Multiple Linear Regression on Readiness for Discharge of Cervical Cancer Surgery Patients (n=180)

		Non Standardized Regression coefficient		Standardized Regression Coefficient	t	p-value
		Regression Coefficient	Standard Error			
(Constant)		97.743	17.444		5.603	<0.00
Education level	College degree or above	Reference				
	Elementary school and below	−16.203	4.474	−0.250	−3.622	<0.00
	Middle school	−14.561	3.940	−0.263	−3.696	<0.00
	High school	−5.125	4.201	−0.086	−1.22	0.224
	>30km	Reference				
Distance from the residence to a secondary hospital	<10km	−2.771	4.988	−0.055	−0.556	0.579
	10~20km	0.757	5.237	0.013	0.144	0.885
	20~30km	8.044	6.264	0.102	1.284	0.201
FIGO	Other	Reference				
	I	3.811	4.386	0.074	0.869	0.386
	II	−1.169	4.830	−0.021	−0.242	0.809
Chronic	No	Reference				
	Yes	−6.818	3.416	−0.131	−1.996	0.048
Drainage tube	No	Reference				
	Yes	−2.926	3.106	−0.057	−0.942	0.348
Medications taken	No	Reference				
	Yes	−8.975	3.372	−0.159	−2.661	0.009
QDTS		0.795	0.115	0.421	6.882	<0.00
PHQ-9		−1.259	0.594	−0.127	−2.119	0.036

Notes: *R2 =0.454, Adjust R2 = 0.411, F = 10.621, p < 0.001.

gynecological malignancies.[26] Contributing factors may include the extensive range of resection involved in cervical cancer surgery, inadequate postoperative preparation,[10] a high risk of postoperative complications, and patients' insufficient knowledge regarding postoperative care. Furthermore, the lowest score in the readiness for discharge questionnaire among cervical cancer surgery patients was observed in the dimension of disease care knowledge, indicating that these patients had a limited understanding and mastery of relevant nursing information at the time of discharge. Possible reasons for this shortfall include the fact that most surveyed patients were middle-aged or elderly (80%), which may

hinder their comprehension and acceptance of disease-related knowledge, leading to inadequate mastery of disease care principles. Additionally, shorter postoperative hospital stays complicate nurses' ability to provide sufficient discharge guidance during hospitalization. Therefore, nurses should select appropriate times during hospitalization to offer discharge health guidance to cervical cancer surgery patients, elucidate the symptoms and preventive measures for complications, and enhance patients' awareness of complications and their capacity to take timely preventive actions.[31] Simultaneously, establishing an online mutual assistance platform for cervical cancer patients after surgery is recommended, where medical staff can regularly share postoperative care knowledge and promote peer education among patients.

Influencing Factors of RHD for Cervical Cancer Surgery Patients

Education Level

This study shows that patients with junior high school education or below performed worse in hospital discharge preparedness compared to those with a college degree or higher. This result is consistent by Guan et al and Gao et al[18,32] on patients who have undergone hysterectomy. A possible reason for this finding is that patients with lower levels of education tend to lack the ability to acquire and comprehend health information, which adversely affects their readiness for discharge.[33] In previous similar studies, multiple linear regression analyses often used patients with low education levels as reference group to set dummy variables. However, this study utilized patients with high education levels as reference variables. The founding revealed a statistically significant difference in the discharge preparedness scores between patients with a college education or higher and those with junior high school or primary school education. This suggests that a higher level of education provides patients with greater abilities and resources to explore knowledge, which can enhance their confidence and sense of security after being discharged from the hospital and returning home.

A study shows that patients with higher education levels tend to possess a deeper understanding of disease-related knowledge, making them more likely to comprehend and accept the health education provided by medical staff.[34] In contrast, patients with a low levels of education may struggle to accurately understand their illness, exhibit poor information perception skills, and may even have their psychological states adversely affected by this.[35] This highlights the significant impact of educational background on patients' understanding of disease knowledge and their information processing capabilities. The findings of this study suggest that nurses should assess the educational background of cervical cancer surgery patients and employ educational methods suited to their level of understanding. This could include using simple, easy-to-understand language, providing informative and illustrated promotional materials, and utilizing multimedia educational resources to help patients with lower educational levels better comprehending the contents of discharge guidance.

Depression

The results of this study indicate that patient depression is a significant factor affecting the readiness for discharge among cervical cancer surgery patients, and there exists a negative correlation between the two, which aligns with the findings of Mess et al.[20] The diagnosis of cervical cancer imposes a significant psychological burden on patients. The changes in body image and sexual characteristics resulting from surgery, as well as potential complications that disrupt daily life, lead to psychological stress, ultimately contributing to depression, a relatively common negative emotion.[11] On one hand, depressive emotions can result in passive coping mechanisms, preventing patients from actively participating in treatment activities. Consequently, their interest in learning self-care knowledge after discharge is relatively low, which indirectly affects their readiness for discharge. On the other hand, depressive emotions can have negative effects on a patient's memory, executive abilities, social skills, and occupational function, which directly impact the patient's readiness for discharge.[36–38]

In the work environment, nurses should enhance their awareness of patients' emotional changes, skillfully utilize professional screening tools, and conduct effective assessments for negative emotions. At the management level, it is essential to organize training sessions for nurses to learn about professional psychological nursing practices thereby enhancing their ability to assist cervical cancer patients in alleviating post-surgery depression. A positive psychological

state can enhance patients' confidence in the prognosis of their condition, thereby improving their readiness for discharge.

Chronic and Medications Taken

The results of this study indicate that cervical cancer surgery patients with chronic diseases exhibit a low level of readiness for discharge, which aligns with the findings of Mou WenXuan et al.[39] In case involving chronic diseases, the treatment and care associated with cervical cancer tend to be more complex. After discharge, patients must not only address postoperative recovery and follow-up examinations but also manage medication for their chronic conditions, as well as diet, exercise, and other precautions. These factors may significantly affect the discharge readiness of post-cervical cancer surgery patients. Therefore, nurses should prioritize patients with chronic diseases when providing health education for those recovering from cervical cancer surgery.

Additionally, taking medication post-discharge has a negative impact on the readiness of cervical cancer patients after surgery. This is primarily because managing medication involves coping with concerns about drug side effects alongside postoperative recovery, and requires self-discipline and adherence to medication regimens, which poses a challenge for these patients. Consequently, medical staff should pay special attention to patients who require medication after discharge. They can distribute medication guidance manuals at the time of discharge or utilize "Internet +" service to offer timely medication guidance to postoperative patients.

Discharge Instruction Quality

This study shows that the QDT for cervical cancer patients undergoing surgery is positively correlated with their RHD. Numerous studies have also shown that high-quality discharge guidance can enhance RHD, patient knowledge, and home care abilities among cervical cancer patients.[40–42] As expected, the findings of this study suggest that the quality of discharge instructions is a significant determinant of cervical cancer patients' preparedness to transition from the hospital to community settings.

The emergence of objective issues, such as the implementation of fast-track surgery and the reduction of hospital stays, has placed higher demands on professional capabilities of nursing staff and impacted the quality of discharge guidance for gynecological surgeries.[15,43] Therefore, improving the quality control of nursing care for cervical cancer surgery patients and providing effective short-term discharge guidance is a crucial consideration.

Among the various dimensions of discharge guidance, the dimension of "content needed by patients" received the highest scores, reflecting patients' eagerness for knowledge related to their disease. However, the score of "actual content obtained by patients" is lower than that for "content needed by patients", indicating that the multi-level health needs of cervical cancer surgery patients during their transition from hospital to home are not fully met, and the discharge information provided by medical staff is inadequate. In the future, nurses should place significant emphasis on discharge education for cervical cancer patients post-surgery, particularly by enhancing the delivery of effective and feasible personalized guidance, understanding patients' preferences for discharge content, and improving the overall quality of discharge guidance and patient satisfaction.

Furthermore, the knowledge that patients actually acquired did not meet the preset established standards. This gap may arise from the diversity of cultural backgrounds among patients, making it challenging for general discharge instructions to fully address the individual needs of each patient. This highlights the importance of ensuring that the nursing staff pay closer attention to the immediate feedback from patients and capacity to absorb health information during discharge education.In response to this situation, there is an urgent need to develop a more precise and personalized health education strategy based on patients' cultural literacy and comprehension abilities, to ensure that the guidance content effectively meet their needs.

In addition, discharge guidance should not be restricted to the day of the patient's discharge; instead, it should be integrated throughout the entire medical service process. Nursing staff should employ appropriate teaching techniques to provide timely guidance for patients during critical moments. However, it is important to note that nearly one-third of nursing staff report difficulties in fully implementing health education due to time constraints.[44] To address this issue, hospital management must carefully consider the time cost requirements for discharge guidance when planning work

schedules and incorporate it into the supervision system for discharge quality management, ensuring that patients can receive adequate and effective health guidance.

Limitations

The survey participants in this study were all from a single hospital, which limits the representativeness of the findings. The explanatory power of the included independent variables for the dependent variable was only 41.1%, suggesting that the readiness of cervical cancer patients to be discharged from hospital after surgery is influenced by other factors that still need to be further explored. In the future, the geographic scope of the study could be expanded to include additional psychosocial variables or adopt a qualitative research approach, thus exploring the factors influencing the readiness of cervical cancer patients to be discharged from hospital after surgery from multiple perspectives. In addition, the present study was cross-sectional and could not determine the causal relationship between the variables studied and discharge readiness.

Conclusion

In this study, we found that the overall readiness for discharge among cervical cancer surgery patients was at a moderate level. This indicates that clinical nurses should place greater emphasis on the importance of discharge health education for post-operative cervical cancer patients, particularly those with low educational levels, depression, chronic illnesses, and those who require medication after discharge. Targeted health guidance should be tailored for these patients, and measures should be implemented to enhance the quality of discharge guidance and develop more comprehensive assessment tools to address patients' needs.

Abbreviations

RHDS, Readiness of Hospital Discharge; QDTS, Quality of Discharge Teaching Scale; GAD-7: Generalized Anxiety Disorder; PHQ-9: Patients Health Questionnaire.

Data Sharing Statement

The data used to support the findings of this study are available from the corresponding author upon request.

Ethical Approval

This study protocol has been reviewed and unanimously approved by the Medical Ethics Committee of the Affiliated Cancer Hospital of Xinjiang Medical University (K-2023050) in accordance with the standards of the Helsinki Declaration. All participants provided informed consent.

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Author Contributions

All authors have full access to the research data and are responsible for the integrity of the data and the accuracy of the data analysis. All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare no conflicts of interest in this work.

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