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A Study on the Current Situation of Supportive Care Needs and Influencing Factors of Postoperative Patients with Muscle-Invasive Bladder Cancer

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Abstract

Objective: To explore the current status and influencing factors of supportive care needs in patients with muscle-invasive bladder cancer after surgery, and to provide a reference for the development of targeted intervention strPan ategies. **Methods:** A general data questionnaire and supportive care needs scale were used to investigate 107 patients with muscle-invasive bladder cancer after surgery. **Results:** The total score of supportive care needs in patients with muscle-invasive bladder cancer after surgery was (98.48 ± 9.07). Multiple linear regression analysis showed that age, primary caregiver, medical payment method, number of hospitalizations and postoperative time were important influencing factors of supportive care needs in patients with muscle-invasive bladder cancer after surgery ($P < 0.05$), which could explain 49.5% of the total variance. **Conclusion:** The supportive care needs of patients with muscle-invasive bladder cancer after surgery are at a low level. Medical staff should identify them early, pay more attention to young patients, patients without medical insurance and patients with multiple hospitalizations, and provide targeted nursing measures to meet their supportive care needs.

Keywords

Muscle-Invasive Bladder Cancer, Supportive Care Needs, Influencing Factors

1. Introduction

Bladder cancer (BC) is the most common malignant tumor in the urinary system

and ranks 10th among malignant tumors worldwide in incidence [1] [2]. There are approximately 500,000 new cases and 200,000 deaths each year [3]. Bladder cancer can be divided into muscle-invasive bladder cancer (MIBC) and non-muscle-invasive bladder cancer (NMIBC) according to the degree of invasion of the muscularis propria of the bladder wall [4]. Muscle-invasive bladder cancer accounts for approximately 25% of new bladder cancer patients each year. Radical cystectomy (RC) combined with neoadjuvant therapy is the standard treatment for MIBC patients [5]. Studies have found that the quality of life of MIBC patients is lower than that of NMIBC patients [6]. Compared with other cancer patients, MIBC patients experience more physical and psychological suffering during diagnosis and treatment [7]. Therefore, MIBC patients have a large number of unmet care needs in terms of physical, psychological and social support. Especially for post-MIBC patients, due to the wide range of surgical resection and functional damage, most of the patients have changes in urination mode, living habits and personal image, etc. It is difficult for the patients to accept the permanent abdominal wall urinary stoma formed after the operation, and during the long process of accepting, adapting to and caring for the stoma, the patients are burdened with heavy psychological and self-perception burdens, and the quality of their lives is seriously affected [8]. Supportive care needs increase. Supportive care needs refer to the sum of various needs of cancer patients and their families. Supportive care aims to meet the physiological, social and emotional needs of patients to improve their quality of life. At present, domestic research on supportive care needs is mostly focused on lung cancer, breast cancer, colorectal cancer and other diseases. There is no report on the supportive care needs of patients after MIBC surgery. Compared with other cancer patients, MIBC patients are more seriously affected and tortured in terms of their physical and mental health and quality of life. Therefore, it is necessary to understand the status quo of supportive care needs and influencing factors of patients after muscle-invasive bladder cancer surgery, so as to provide a theoretical basis for future intervention studies on supportive care needs of patients after MIBC surgery.

2. Objects and Methods

2.1. Object

A convenience sampling method was used to select patients who underwent MIBC surgery and were admitted to our hospital from August 2022 to July 2023 as the research subjects. Inclusion criteria: 1) Patients diagnosed with muscle-invasive bladder cancer according to the 2020 European Association of Urology Guidelines for the Diagnosis and Treatment of Muscle-Invasive Bladder Cancer [5]; 2) Patients who had undergone cystectomy; 3) Patients who voluntarily participated in the study after informed consent; 4) Patients with clear consciousness and no language communication barriers. Exclusion criteria: 1) Patients with other types of tumors; 2) Patients with serious complications; 3) Patients with mental problems. According to the sample size estimation method proposed by Kendall *et al.* [9], the sample size can be 5 to 10 times the number of variables. This study included 15 variables for analysis, and the required

sample size was calculated to be 75 to 150 cases. Considering the 20% loss rate, the actual required sample size was 90 to 180 cases, and 107 cases were effectively investigated. This study was reviewed by the hospital ethics committee (KY202306).

2.2. Methods

2.2.1. Survey Tools

1) General Information Questionnaire Includes: age, gender, marital status, method of medical expense payment, number of children, postoperative time, surgical method and number of hospitalizations, etc.

2) Supportive Care Needs Scale the Supportive Care Needs Scale for Chinese Cancer Patients by Hong Kong SAR, China researcher Au *et al.* [10] was used, which consists of five dimensions with 34 entries, including physiological and daily living needs, care and support needs, sexual needs, psychological needs and health information needs. Each item was scored using the Likert 5-point scoring method, ranging from 1 to 5 points, with 1 point indicating "no needs"; 2 points indicating "needs met"; 3 points indicating "low needs"; 4 points indicating "moderate needs"; and 5 points indicating "high needs". The score range is 34 to 170 points, with 68 points as the critical value. The higher the score, the more unmet needs the patient has [11]. The average score of the item is 2 to 3 points, indicating low needs; 3 to 4 points, indicating moderate needs; and 4 to 5 points, indicating high needs [12]. Yang Pu *et al.* [13] conducted a reliability and validity test on the scale, with factor loadings ranging from 0.639 to 0.902 and Cronbach's α reliability coefficients greater than 0.85, indicating that the scale has good reliability and validity and is suitable for assessing the supportive care needs of cancer patients in China.

2.2.2. Survey Methods

The purpose and significance of the study and the method of filling out the questionnaire were explained to the patients. After obtaining informed consent, the questionnaires were distributed on site and the patients were instructed to fill them out independently. After the questionnaires were filled out, they were collected on site and preliminarily checked to ensure that there were no missing or incorrect items. A total of 112 questionnaires were distributed, and 107 valid questionnaires were collected, with an effective recovery rate of 95.5%.

2.2.3. Statistical Methods

SPSS 22.0 software was used for statistical analysis. The measurement data were described by mean ± standard deviation, and the count data were described by frequency and percentage. The *t*-test, analysis of variance and multivariate linear regression analysis were used. The test level was $\alpha = 0.05$.

3. Results

3.1. Scores of Supportive Care Needs of Patients after MIBC Surgery, See Table 1

The total score of supportive care needs of patients after MIBC was (98.48 ± 9.07),

and the items were all divided into (2.90 ± 0.27) points. The scores of different dimensions were sexual needs, care and support needs, physiological and daily life needs, psychological needs and health information needs in order from low to high. The dimensions of care and support needs and sexual needs are low needs, and the dimensions of health information needs, psychological needs, and physical and daily life needs are moderate needs.

Table 1. Supportive care needs scores of patients after MIBC surgery ($\overline{x} \pm S$).

Variable	Total score	Item Average
Health Information Requests	36.92 ± 5.05	3.36 ± 0.46
Psychological needs	30.07 ± 4.85	3.01 ± 0.48
Physiological and daily living needs	15.04 ± 3.10	3.01 ± 0.62
Care and support needs	11.75 ± 1.94	2.35 ± 0.39
Sexual needs	4.70 ± 2.38	1.57 ± 0.80

3.2. Comparison of Supportive Care Needs Scores among Patients with Different Characteristics after MIBC Surgery

There were statistically significant differences in the overall scores of supportive care needs among MIBC postoperative patients with different ages, marital status, number of children, primary caregivers, medical expense payment methods, postoperative time and number of hospitalizations ($P < 0.05$), see Table 2.

Table 2. Comparison of supportive care needs scores among patients with different characteristics after MIBC surgery.

Project	*n*	Supportive Care Needs Score ($\overline{x} \pm S$)	*F/t*	*P*
Age (years)			12.765	<0.05
<60	18	102.83 ± 6.99		
60 - 70	46	101.30 ± 8.05		
>70	43	93.63 ± 8.81		
Gender			−1.950	0.054
Male	100	98.03 ± 9.10		
Female	7	104.86 ± 6.18		
Education				
Primary school	52	99.37 ± 9.40	0.798	0.498
Junior high school	34	98.41 ± 8.31		
High school or technical secondary school	17	95.53 ± 7.06		
College	4	100.00 ± 17.80		
Bachelor's degree and above	0			

Continued

Marital status			4.774	<0.05
Unmarried	2	102.00 ± 8.49		
Married	83	99.75 ± 8.82		
Divorced or widowed	22	93.36 ± 9.07		
Working status			1.869	0.139
Resignation or retirement	30	96.13 ± 11.13		
Farmers	44	99.23 ± 8.97		
Working	7	104.57 ± 7.46		
Individual	26	98.27 ± 5.98		
Average monthly household income			1.206	0.303
<4000	25	100.00 ± 8.64		
4000 - 6000	81	97.88 ± 9.18		
>6000	1	109.00		
Number of children			3.200	<0.05
No children	2	102.00 ± 8.49		
1	35	101.60 ± 8.89		
2	35	98.63 ± 9.63		
3	23	96.65 ± 7.63		
4 or more	12	91.83 ± 7.15		
Primary Caregiver			9.049	<0.05
Spouse	58	102.05 ± 8.12		
Child	46	93.87 ± 8.37		
Parents	0			
Brothers and sisters	1	108.00		
Other	2	96.00 ± 0.00		
Long-term residence			2.347	0.077
Urban area	38	100.55 ± 9.12		
Suburbs	25	98.56 ± 6.32		
County	11	92.54 ± 11.45		
Rural	33	98.00 ± 9.40		
Medical expense payment method			8.511	<0.05
At your own expense	0			
Resident Medical Insurance	77	96.70 ± 7.76		
Employee Medical Insurance	23	100.09 ± 9.53		
Commercial Insurance	1	116.00		

Continued

Other	6	112.17 ± 9.20		
Postoperative time			−4.553	<0.05
≤6 months	37	93.43 ± 8.83		
>6 months	70	101.14 ± 8.06		
Number of hospital admissions			17.978	<0.05
1 - 3 times	73	95.47 ± 7.46		
4 - 6 times	24	103.54 ± 8.05		
6 times	10	108.30 ± 10.50		
Disease awareness			0.964	0.385
Familiar	58	98.64 ± 9.40		
Learn	26	99.96 ± 7.41		
Don't understand	23	96.39 ± 9.90		
Surgical method			0.254	0.776
Ureterostomy	40	98.95 ± 9.33		
Ileum replaces bladder	65	98.31 ± 9.02		
Other	2	94.50 ± 9.19		
Whether to receive neoadjuvant therapy			1.307	0.194
Yes	27	100.44 ± 9.87		
No	80	97.81 ± 8.76		

3.3. Multivariate Linear Regression Analysis of Supportive Care Needs of Patients after MIBC Surgery

The variables with statistical significance in univariate analysis were used as independent variables, and the supportive care needs score of patients after MIBC surgery was used as the dependent variable. The equation was established using the multivariate linear stepwise regression method. The independent variable assignments are detailed in Table 3. The results showed that the five variables of age, number of hospitalizations, medical expense payment method, postoperative time, and primary caregiver entered the regression equation, which could explain 49.5% of the total variation in supportive care needs, as shown in Table 4.

Table 3. Independent variable assignment table.

Independent Variable	Assignment method
Age (years)	<60 = 1; 60 - 70 = 2; >70 = 3
Marital status	Single ($Z_1 = 1$, $Z_2 = 0$); Married ($Z_1 = 0$, $Z_2 = 1$); Divorced or widowed ($Z_1 = 0$, $Z_2 = 0$)
Number of children	None = 1; 1 = 2; 2 = 3; 3 = 4; 4 or more = 5
Primary Caregiver	Spouse ($Z_1 = 1$, $Z_2 = 0$, $Z_3 = 0$; $Z_4 = 0$); Children ($Z_1 = 0$, $Z_2 = 1$, $Z_3 = {}_{0;}$ $Z_4 = 0$); Parents ($Z_1 = 0$, $Z_2 = 0$, $Z_3 = 1$; $Z_4 = 0$); Siblings ($Z_1 = 0$, $Z_2 = 0$, $Z_3 = 0$; $Z_4 = {}_{1);}$ *Others* ($Z_1 = 0$, $Z_2 = 0$, $Z_3 = 0$; $Z_4 = 0$)

Continued

Medical expense payment method	Out-of-pocket expenses ($Z_1 = 1$, $Z_2 = 0$, $Z_3 = 0$; $Z_4 = 0$); Resident medical insurance ($Z_1 = 0$, $Z_2 = 1$, $Z_3 = 0$; $Z_4 = 0$);Employee medical insurance ($Z_1 = 0$, $Z_2 = 0$, $Z_3 = 1$; $Z_4 = 0$); Commercial insurance ($Z_1 = 0$, $Z_2 = 0$, $Z_3 = 0$; $Z_4 = 1$); Other types ($Z_1 = 0$, $Z_2 = 0$, $Z_3 = 0$; $Z_4 = 0$)
Postoperative time	≤6 months = 1; >6 months = 2
Number of hospital admissions	1 to 3 times = 1; 4 to 6 times = 2; > 6 times = 3

Table 4. Multivariate linear regression analysis coefficients of factors affecting supportive care needs of patients after MIBC surgery.

Independent Variable	Partial regression coefficient	Standard error	Standardized coefficient	*t*	*P*
Constant term	92.379	3	—	23.255	<0.05
age	−3.960	1.002	−0.315	−3.952	<0.05
Primary Caregiver	−1.788	0.887	−0.144	−2.015	<0.05
Medical expense payment method	2.800	0.916	0.239	3.056	<0.05
Number of hospital admissions	4.123	1.119	0.299	3.686	<0.05
Postoperative time	3.763	1.406	0.198	2.676	<0.05

Note: $R^2 = 0.524$, adjusted $R^2 = 0.495$, $F = 18.350$, $P < 0.05$.

4. Discussions

4.1. Supportive Care Needs of Patients after MIBC Surgery

In this study, the total score of supportive care needs of MIBC patients after surgery was (98.48 ± 9.07) points, and the average score was (2.90 ± 0.27) points. The supportive care needs were at a low level, which was similar to the research results of Xiao Shudan [11] on the supportive care needs of patients undergoing first bladder irrigation after bladder cancer surgery. Compared with the research results of He Shuang [12] on the supportive care needs of lung cancer patients, the score was slightly lower, which may be related to the high mortality rate of lung cancer patients. MIBC patients after surgery scored the highest in the health information needs dimension, which was consistent with the results of Han Nana [14] on the supportive care needs of patients after cervical cancer surgery. It may be related to the following factors: Although MIBC patients after surgery have received training on stoma replacement and care during hospitalization, knowledge of stoma-related daily life and how to deal with stoma-related complications have not been involved during hospitalization. They often gradually emerge during home care, so patients hope to obtain more knowledge and information about stoma care. It is suggested that medical staff should take multiple measures according to the patient's own condition and provide targeted nursing measures to meet the patient's information needs.

4.2. Supportive Care Needs of Patients after MIBC Surgery Being Affected by Multiple Factors

4.2.1. Age

This study shows that as age increases, patients' supportive care needs decrease, which is consistent with the results of Chung *et al.* [6] who found that the younger the patient, the higher the information needs. In this study, patients under 60 years old had significantly higher supportive care needs scores than those over 60 years old. The reason may be that as age and life experience increase, older patients accumulate rich life experience and life wisdom, their psychological tolerance gradually increases, and they have a deeper and more mature understanding of the challenges and difficulties in life. Therefore, they can calmly face diseases and health problems, actively cooperate with treatment, and recover from the blow of illness more quickly. Compared with young patients, the role status of older patients in society and family has changed. In this study, 83.18% of the patients were of retirement age, and most of their children had started their own families. Therefore, their social pressure and family responsibilities were relatively light, so their needs were relatively low. Most young patients assume multiple roles in society and family, and are often the backbone of their families and important sources of income. Illness can lead to poor role adaptation and worries about the future. Patients face greater psychological pressure, which leads to more needs, especially health information needs and psychological needs. Therefore, when formulating nursing plans, nursing staff should provide different levels of intervention measures according to the age of the patient; in particular, they should pay more attention to young patients, attach importance to their psychological counseling, encourage them to express their psychological feelings and experiences, and actively provide health education on disease-related knowledge to increase the compliance and sense of security of patients and their families.

4.2.2. Primary Caregiver

In this study, the patients cared for by their spouses had a high level of supportive care needs. Research [15] showed that 35% of patients with advanced cancer avoided discussing their condition and financial issues when communicating with their spouses. Since MIBC patients are often treated with radical cystectomy + urinary diversion surgery, and ureteral catheters and ostomy bags need to be replaced regularly after surgery, the cost of treatment is usually high. For self-paying patients, the financial burden is heavy, which can easily lead to communication problems between spouses. Huang Ting *et al.* [16] studied the status of support between spouses after MIBC urinary diversion surgery and found that because patients cannot adapt to changes in appearance within a short period of time after surgery, and there are problems such as urine leakage and odor caused by the stoma, patients are prone to have a sense of shame and negative emotions such as anxiety and depression, which will affect communication between spouses and lead to poor support between patients and their spouses. In this study, the patients after MIBC surgery were older, and their spouses were also older. Their cognitive

level and acceptance ability were not as good as those of young people. They had low acceptance of stoma care and hospital treatment procedures, which led to a high level of supportive care needs among patients. Therefore, medical staff are advised to promptly understand the communication between couples and actively take intervention measures to enhance communication and self-disclosure between couples in order to enhance the relationship between the two, reduce patients' postoperative anxiety, depression and other negative emotions, and improve patients' quality of life.

4.2.3. Methods of Payment for Medical Expenses

This study shows that compared with other patients, patients covered by the resident or employee medical insurance have a lower level of supportive care needs, because medical insurance reimbursement reduces the economic burden of patients. However, for patients with poor economic conditions such as those receiving minimum living allowances or targeted poverty alleviation, the cost of treatment after MIBC surgery is high, which brings huge economic pressure to patients, resulting in a higher level of supportive care needs. Zhu Bifan *et al.* [17] found that adjusting medical insurance policies can help stoma patients return to normal work and life, improve patients' sense of access to medical care and ensure social fairness. Therefore, it is suggested that medical staff need to pay attention to the actual situation of each patient, especially to patients with poor economic conditions, strengthen communication with patients, formulate appropriate treatment plans for patients according to their own conditions and medical payment types, select stoma accessories suitable for patients, etc., and use multiple methods and channels to reduce patients' medical costs, thereby reducing their supportive care needs and improving their quality of life. At the same time, diversified measures should be taken to strengthen social support intervention, strive for support and subsidy policies from governments at all levels, and ask public welfare organizations and social groups to provide financial assistance to patients to reduce the economic burden of patients after MIBC surgery.

4.2.4. Postoperative Time

This study showed that the longer the time after surgery, the higher the supportive care needs of patients, which is different from the research results of Guo Can [18]. This may be related to the fact that the patients with a longer time after surgery in this study were mostly patients who were readmitted to the hospital due to postoperative complications. The occurrence of complications increased the patient's body energy consumption, causing changes in the patient's physiology and psychology, affecting the patient's life, treatment and work, etc. The patient will experience negative emotions such as anxiety and depression, which leads to higher levels of demand for physiological and daily life. Research [19] shows that the more severe the patient's symptom distress, the higher the level of supportive care needs. The discomfort symptoms will trigger the patient's emotional response and cognitive dysfunction, prompting the patient to actively seek professional help.

It is suggested that medical staff should strengthen the patient's self-management ability during the treatment and rehabilitation of MIBC patients, guide patients to correctly understand the various symptoms that occur during treatment, and provide timely psychological counseling.

4.2.5. Number of Hospitalizations

This study shows that the more times a patient is hospitalized, the higher their supportive care needs are. The main reason for multiple hospitalizations is complications. Patients with frequent complications experience more pain both psychologically and physically, which causes an imbalance in their psychological and physiological function states, leading to increased patient needs. Guo Can's [18] study showed that the occurrence of complications is one of the factors affecting the supportive care needs score of urinary stoma patients. The above situation suggests that medical staff should strengthen health education according to the actual situation of patients at different time points during hospitalization, before discharge, and after discharge, especially strengthen the continuing care of patients after discharge, and use Internet technology as a carrier to provide patients with professional care, so as to reduce the incidence of urinary stoma complications, improve discharge outcomes, and reduce patients' supportive care needs.

5. Conclusion

The results of this study showed that the supportive care needs of patients after MIBC surgery were at a medium to low level. The main influencing factors included age, number of hospitalizations, payment methods for medical expenses, postoperative time, and primary caregivers. Medical staff should identify early and implement targeted nursing intervention measures to meet patients' supportive care needs. The samples of this study came from only one hospital and the sample size was small. The cross-sectional study design could not clarify the complex relationship between the variables. A more rigorous research design is needed to explore the mechanism of action between the factors. Multicenter and large sample surveys should be conducted in the future.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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