

Status Quo of Acceptance of Illness among Reproductive Age Cervical Cancer Patients and Its Influencing Factors

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Abstract

Objective: To explore the status quo of acceptance of illness among reproductive-age cervical cancer patients and its influencing factors, to provide a theoretical basis for the implementation of targeted interventions. **Methods:** The convenience sampling method was used to investigate 256 reproductive-age cervical cancer patients using the general information questionnaire, Acceptance of Illness Scale, Reproductive Concerns After Cancer Scale, and Medical Coping Style Scale. **Results:** The total score of the acceptance of illness was (18.03 ± 3.24) , and reproductive concerns were (57.02 ± 6.30) , among reproductive-age cervical cancer patients. Multivariate analysis showed that age, number of children, income level, treatment method, level of reproductive concerns, and the yield and avoidance dimensions of medical coping style were the main influencing factors on patients' level of illness acceptance (all $P < 0.05$). **Conclusion:** The acceptance of illness levels in reproductive-age cervical cancer patients was low to intermediate, and medical staff should timely identify high-risk groups and take preventive management measures based on influencing factors.

Keywords

Reproductive Age, Cervical Cancer, Disease Acceptance, Reproductive Concerns, Coping Style

1. Introduction

With the advancement of medical technology and the popularization and application of cervical cancer vaccines, the mortality rate of cervical cancer has been decreasing significantly [1], but its incidence is on the rise and tends to be younger [2] [3]. The World Health Organization (WHO) has set the age of women of reproductive age as 15 - 49 years old, in which 20% - 28% of cervical cancer patients

are of reproductive age [4]. “Disease acceptance” refers to the degree to which an individual accepts the impact of the disease, objectively assesses his or her health status, and positively faces the disease, and is an important psychological indicator to clinically measure the degree of patients’ disease adaptation [5]. Previous studies have shown that cervical cancer patients’ disease acceptance is at a moderately low level [6], and disease acceptance is negatively correlated with the degree of psychological distress and positively correlated with self-assessed health status [7], which seriously affects patients’ quality of life. According to the cognitive theory of stress and coping [8], patients will engage in stress coping after evaluating the stressor and the ability to cope with the stress, and ultimately achieve disease acceptance. Patients of reproductive age are more likely to be stimulated by stressors such as disease and fertility impairment, which leads to negative coping, resulting in the inability to adapt to the disease [9]. Currently, there are fewer domestic studies on disease acceptance in cervical cancer patients of reproductive age. Therefore, this study aims to explore the influencing factors of disease acceptance in cervical cancer patients of reproductive age and to provide a reference for clinical nurses to develop personalized disease acceptance management further.

2. Objects and Methods

2.1. Subjects

The convenience sampling method was used to select cervical cancer patients of reproductive age who attended a tertiary hospital in Zhengzhou from March to December 2023 as the survey subjects. Inclusion criteria: 1) Diagnosed with cervical cancer by histopathology; 2) Aged 20 - 49; 3) Informed consent to participate in this study. Exclusion criteria: 1) Patients with mental disorders or unable to communicate normally; 2) Combined with malignant tumors in other parts of the body, or serious diseases in other systems; 3) Patients are not yet aware of their condition. This study was approved by the Hospital Ethics Committee (KY2024018). According to the sample size calculation formula, the sample size is taken as 10 times of the independent variables, this study involved 15 independent variables, and considering the 20% loss of visit rate, the final effective investigation of 256 patients, aged 24 - 49 (38.04 ± 7.237) years old.

2.2. Research Tools

2.2.1. General Information Questionnaire

Set by the researcher, including age, marital status, education level, occupation, per capita monthly family income, number of children, fertility intention, payment method, clinical staging, and treatment modality.

2.2.2. Acceptance of Illness Scale (AIS)

The scale was developed by Felton [10] and others, and in this study, we used the Chinese version of the AIS scale, which was Chineseized and revised by Zhao [11] and others, to assess the degree of acceptance of the patient’s illness. The scale consists of 8 items and is scored on a 5-point Likert scale, from “Strongly Agree”

to “Strongly Disagree” on a scale of 1 to 5, with the total score ranging from 8 to 40, of which 8 to 18 is low acceptance, 19 to 29 is medium acceptance, and 30 to 40 is high acceptance. The total score was 8 - 40, of which 8 - 18 was low acceptance, 19 - 29 was medium acceptance, and 30 - 40 was high acceptance. The Cronbach’s alpha coefficient for this scale in this study was 0.758.

2.2.3. Reproductive Concerns after Cancer Scale (RCAC)

The scale was developed by Gorman *et al.* [12] and handwritten by Tingting Qiao *et al.* [13], which was mainly used to measure the level of fertility worries in young female cancer patients. The scale includes 6 dimensions, namely, spousal knowledge, preparation for pregnancy, acceptance, ability to conceive, own health, and children’s health, with 3 entries for each dimension, totaling 18 entries. Each item was rated on a 5-point Likert scale from “strongly disagree” to “strongly agree” on a scale of 1 - 5. The total score of the scale ranged from 18 to 90, with higher scores indicating higher levels of fertility worries. The total Cronbach’s alpha coefficient of the scale in this study was 0.827.

2.2.4. Medical Coping Modes Questionnaire (MCQM)

The scale was developed by Feifel *et al.* [14] and handwritten by Jiang Qianjin *et al.* [15] to measure people’s basic coping behaviors when faced with dangerous events. The scale consists of 20 entries, including 3 dimensions of confrontation, avoidance, and submission, and each entry is rated on a 4-point scale, with 8 entries requiring reverse scoring. The higher the dimension score, the more dominant this dimension proves to be. The Cronbach’s alpha coefficients for this scale in this study ranged from 0.691 to 0.814.

2.3. Statistical Methods

SPSS 26.0 software was used for statistical analysis. Frequency was used to describe the count data, mean \pm standard deviation to describe the measurement data, and ANOVA, Pearson’s correlation analysis, and multiple linear regression analysis were performed. The test level $\alpha = 0.05$.

3. Results

3.1. General Information on Survey Respondents (Table 1)

Table 1. Univariate analysis of general information and disease acceptance of cervical cancer patients of reproductive age (n = 256).

Item	Number of cases (Percentage, %)	AIS score (points, $\bar{x} \pm s$)	F	P
Patient age (years)			3.836	0.023
20 - 30	56 (21.9)	18.29 \pm 2.39		
31 - 40	88 (34.3)	17.27 \pm 2.91		
41 - 49	112 (43.8)	17.50 \pm 3.73		
Clinical stage			9.860	0.001

Continued

Stage I	104 (40.6)	18.00 ± 2.36		
Stage II	120 (46.9)	17.01 ± 3.55		
Stage III	32 (12.5)	16.50 ± 1.68		
Literacy level			2.081	0.127
Junior high school and below	56 (21.9)	17.71 ± 3.84		
High school or junior college	64 (25.0)	17.50 ± 3.41		
College or undergraduate	136 (53.1)	18.41 ± 2.84		
Marital status			0.230	0.795
Married	16 (6.3)	17.50 ± 3.61		
Unmarried	232 (90.6)	18.07 ± 3.28		
Divorced or widowed	8 (3.1)	18.02 ± 3.24		
Occupation			1.798	0.168
Worker/self-employed	120 (46.9)	18.20 ± 2.47		
Farmer	64 (25.0)	17.38 ± 3.70		
Organization/institution	72 (28.1)	18.33 ± 3.86		
Per capita monthly household income			5.118	0.002
<3000	32 (12.5)	17.00 ± 4.19		
3000 - 5000	120 (46.9)	17.67 ± 3.02		
5000 - 10,000	80 (31.3)	18.40 ± 3.28		
>10,000	24 (9.3)	20.00 ± 1.44		
Children			5.745	0.017
0	40 (15.6)	17.00 ± 2.40		
≥1	216 (85.4)	18.22 ± 3.34		
Willingness to have children			0.025	0.875
yes	94 (36.7)	17.99 ± 2.08		
no	162 (63.3)	18.06 ± 3.76		
Payment method for medical expenses			1.507	0.224
Resident medical insurance	104 (40.6)	18.08 ± 3.21		
Employee Health Insurance	104 (40.6)	18.30 ± 3.28		
Self-financed	48 (18.8)	17.33 ± 3.18		
Treatment program			30.775	<0.001
Surgery	144 (56.3)	18.72 ± 2.73		
Radiotherapy/chemotherapy	77 (30.1)	18.36 ± 3.62		
Simultaneous radiotherapy/chemotherapy	35 (13.6)	14.45 ± 1.61		

3.2. Disease Acceptance, Post-Cancer Fertility Worries and Medical Coping Scores of Cervical Cancer Patients of Reproductive Age

The disease acceptance score of cervical cancer patients of reproductive age was 18.03 ± 3.24 , with 110 (43.5%) in medium acceptance and 143 (56.5%) in low acceptance, which is overall low to medium level. The post-cancer fertility apprehension score was (57.02 ± 6.30) . The scores of dimensions of medical coping styles were (21.93 ± 3.66) , confrontation (17.56 ± 3.62) , avoidance (17.56 ± 3.62) , and submission (12.22 ± 3.67) .

3.3. Univariate Analysis of Disease Acceptance in Cervical Cancer Patients of Reproductive Age

The results of the univariate analysis showed that the differences in disease acceptance scores for age, number of children, income level, clinical stage, and treatment regimen in the general information of patients were statistically significant ($P < 0.05$), as shown in **Table 1**.

3.4. Correlation of Disease Acceptance with Scores on Each Scale

The correlation coefficients (r) of disease acceptance with post-cancer fertility worries, the avoidance dimension of medical coping styles, and the yielding dimension in patients of childbearing age were -0.128 , -0.290 , and -0.139 , respectively, all $P < 0.05$.

3.5. Multifactorial Analysis Affecting Disease Acceptance in Cervical Cancer Patients of Reproductive Age

Using multiple linear regression analysis, the disease acceptance score of cervical cancer patients of childbearing age was used as the dependent variable, and the statistically significant variables in the univariate analysis, post-cancer fertility worries and the avoidance and yielding dimensions in the medical coping styles were gradually included in the regression model as the independent variables, and the assignment of values to the independent variables is shown in **Table 2**. The results of the multiple linear regression analysis showed that the age of the patients, the per capita monthly income of the family, the situation of the children, clinical stage, treatment modality, level of fertility worries, and medical coping styles were the influencing factors of patients' disease acceptance ($P < 0.05$), which could explain 43.6% of the total variation, as shown in **Table 3**.

Table 2. Assignment of independent variables.

Item	Mode of assignment
Number of children	0 children = 0; ≥ 1 children = 1
Clinical staging	Stage I = 1; Stage II = 2; Stage III = 3
Per capita monthly family income	<3000 = 1; 3000 - 5000 = 2; 5000 - 10,000 = 3; >10,000 = 4

Continued

Treatment modalities	Surgery ($X_1 = 0, X_2 = 0$); Radiotherapy/chemotherapy ($X_1 = 1, X_2 = 0$); Simultaneous radiotherapy/chemotherapy ($X_1 = 0, X_2 = 1$)
Age, Post-Cancer Fertility Worries Scale Score, and Yielding, Avoidance Dimension Score on the Medical Coping Style Scale	carry over the original value

Table 3. Multiple linear regression analysis of factors influencing disease acceptance in cervical cancer patients of reproductive age (n = 256).

Item	Regression coefficient	Standard error	Standardized regression coefficient	t	P	VIF
Constant	30.818	1.904	-	16.183	<0.001	-
Age	-1.994	0.388	-0.481	-5.142	<0.001	3.948
Per capita monthly household income	1.083	0.213	0.274	5.078	<0.001	1.320
Children	1.988	0.535	0.223	3.715	<0.001	1.632
Synchronized radiotherapy	-4.331	0.552	-0.460	-7.846	<0.001	1.553
RCAC score	-0.051	0.014	-0.320	-3.756	<0.001	3.285
Submission dimension	-0.209	0.057	-0.230	-3.692	<0.001	1.753
Avoidance dimension	-0.364	0.054	-0.407	-6.719	<0.001	1.656

Note: $R^2 = 0.454$, adjusted $R^2 = 0.436$, $F = 25.632$, $P < 0.001$, Dubin-Watson = 0.837.

4. Discussions

4.1. Disease Acceptance Level of Cervical Cancer Patients of Reproductive Age Is at a Low Level

The results of this study showed that the disease acceptance score of cervical cancer patients of reproductive age was 18.03 ± 3.24 , which was at a medium-low level, lower than the results of the survey of disease acceptance level of cervical cancer patients conducted by scholars at home and abroad [16]. The reason for this may be analyzed because most Chinese women are influenced by traditional culture, taking pregnancy and childbearing as the continuation of life and the hope of life [17], and it is even more difficult for patients of childbearing age to accept the disease when they perceive the impairment of their fertility, and the impact on their physical and mental health may even exceed that of cancer itself [18]. In addition, patients of reproductive age take on multiple roles, now changing from caregiver to cared for, which may weaken patients' family and social functions and face a series of psychosocial problems [19]. As the uterus is a unique female organ, removal of the uterus can lead to a sense of incompleteness and a weakened sense of self-conscious femininity. Therefore, women of childbearing

age are more likely to suffer from psychological distress when suffering from cervical cancer, which makes it difficult for them to accept the disease [20] [21]. Therefore, healthcare professionals should pay attention to the disease acceptance level of cervical cancer patients of reproductive age, identify high-risk human bodies as early as possible, and actively take targeted interventions for different characteristics of the population, so as to improve the ability of patients to accept and adapt to the disease, and thus promote the physical and mental health of cervical cancer patients of reproductive age.

4.2. Levels of Disease Acceptance in Reproductive-Age Cervical Cancer Patients Are Influenced by Multiple Factors

4.2.1. Demographic Factors

This study showed that cervical cancer patients of reproductive age who were older, had no children, and had low-income levels had low disease acceptance. In this survey, older patients had more difficulty in accepting the disease, which is consistent with the findings of Liu Yuyao *et al.* in the breast cancer population [22]. The reason for this may be analyzed because older patients, who have less knowledge about the disease, will have a greater fear of the disease. In addition, in the group of patients without children, their disease acceptance was significantly lower than that of patients with children, which is similar to a survey of patients with cancer-caused infertility [23], probably because young and infertile patients will have a higher level of infertility-related distress, which will lead to a lower level of acceptance of the disease. Moreover, income level also affects the disease acceptance of patients, and patients with higher incomes are subjected to less financial burden arising from the disease and will be more likely to accept the disease treatment plan. Therefore, when evaluating patients' acceptance of diseases, healthcare personnel should pay attention to the differences in the level and characteristics of acceptance of diseases in different age groups and should formulate targeted treatment plans for patients under the premise of fully considering patients' economic status and respecting their needs and wishes.

4.2.2. Disease Factors

This study showed that the disease acceptance of cervical cancer patients of reproductive age who received simultaneous radiotherapy was low. The reason for this analysis may be that patients receiving simultaneous radiotherapy have high disease stages, long treatment periods, and poor prognosis, which will cause patients to bear a huge psychological burden [24]. In addition, simultaneous radiotherapy will cause greater physical damage, such as fatigue, image change, ovarian hypoplasia, pelvic floor dysfunction sexual dysfunction, and a series of other problems [25], all of which will seriously affect the psychological and physiological conditions of patients with cervical cancer of childbearing age, and reduce the acceptance of the disease by the patients. It is suggested that medical personnel should compare and analyze the disease acceptance level of patients with different clinical stages, especially need to pay attention to patients with

heavy stages and poorer prognosis, take active symptom management support to reduce the symptom burden of patients, and then improve their disease acceptance level.

4.2.3. Fertility Concerns

This study shows that cervical cancer patients of reproductive age with high fertility worries have low disease acceptance. Fertility worry refers to an individual's concern about his or her reproductive status and child-rearing after cancer. In the present study, the fertility apprehension scores of cervical cancer patients of reproductive age were at a moderate level, which was slightly lower than the findings of Yuan Yuan *et al.* [26]. It may be because the proportion of patients without children in this study was small (15.6%), and with economic development and social changes, young women are more modern and aware of fertility issues [27]. However, it is undeniable that when fertility is lost women are still subject to considerable family and social pressures, and cervical cancer, as a cancer of the reproductive system, the disease itself and its treatment have a particularly serious impact on fertility, and the stress caused by infertility can seriously plague cervical cancer patients of childbearing age [28]. In addition, even patients who have children may be unable to accept the disease due to concerns about not being able to take better care of their children [29]. Therefore, healthcare professionals should provide fertility preservation counseling to patients of childbearing age who wish to have children and provide timely psychological counseling to patients who are worried about their health, so as to improve the patient's understanding and acceptance of the disease and the treatment plan, help them to establish a correct cognition, reduce the level of patients' fertility worries, and then improve the patient's acceptance of the disease.

4.2.4. Medical Coping Styles

This study shows that the coping styles of submission and avoidance are negatively correlated with the level of disease acceptance in cervical cancer patients of reproductive age. On the one hand, with the increase in adverse effects and financial burden brought about by the treatment process, patients would lose confidence in the treatment and adopt the coping style of submission, leading to an increase in the negative experience of patients [30]. On the other hand, cervical cancer patients of reproductive age will have a higher sense of shame and lose confidence in socializing and living when faced with the threat of malignancy, loss of fertility, and changes in body image, thus choosing avoidance coping [31]. When the coping styles of submission and avoidance become the primary coping mechanism, it may make fighting the disease more difficult for oneself, which is not conducive to the patient's acceptance of the disease [32]. It is suggested that healthcare professionals should identify patients' negative coping promptly, give personalized psychological guidance for patients' situations, improve patients' positive cognition of the disease, and encourage patients to face the disease positively and accept the physical and life changes brought about by the disease.

5. Conclusion

Disease acceptance among cervical cancer patients of childbearing age is at a low to moderate level, and the factors affecting it include patients' age, income level, children's status, treatment modality, fertility worry level, and coping style. Some studies have shown that social support [33] and psychological consistency [34] also have an effect on disease acceptance, and their relationship with disease acceptance can be further explored by adding more variables in the future; this study only initially explored the influencing factors of disease acceptance in patients with cervical cancer of childbearing age, and prospective longitudinal studies can be carried out in the future to determine the causality of the variables; the present study was a quantitative study, and it was not possible to obtain the qualitative data in terms of This study is a quantitative study, and it is not possible to obtain qualitative data on the facilitating and hindering factors of disease acceptance among cervical cancer patients of childbearing age; the sample source of this study is limited to one tertiary-level hospital in Zhengzhou City, which has a limited sample size and representativeness, and it is possible to expand the sample size to conduct a multicenter study in the future.

Conflicts of Interest

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

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