ISSN 2706-6819 Vol.5, Issue 2: 48-52, DOI: 10.25236/IJFM.2023.050209

Consistency Test of Factors in the Development of 49 Cases of Cervical Cancer Patients in Ningbo Women's and Children's Hospital

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Abstract: *Objective to provide a theoretical basis for the prevention of cervical cancer through the analysis of the consistency test of the factors for the development of 49 cases of cervical cancer patients. Methods Forty-nine patients with first diagnosis of cervical cancer and 49 healthy adult women from 2018 to 2022 at Ningbo Women's and Children's Hospital Hospital were randomly selected, and age, education level, smoking history, history of gynecological diseases, number of pregnancies, age of first delivery, family genetic history of diseases, vaccination history, menstrual history, age of first sexual intercourse, and number of sexual partners were counted, and the data were analyzed by SPSS Consistency test. Results Age, education level, and history of gynecological diseases had a consistent effect on prevalence (kappa=0.03, kappa=0.02, kappa=0.005) .There was no consistent effect of smoking history, number of pregnancies, age at first delivery, family history of disease, vaccination history, menstrual history, age at first sexual intercourse, or number of sexual partners on prevalence(kappa=-0.2, kappa=-0.076, kappa=-0.221, kappa=-0.282, kappa=-0.238, kappa=-0.141, kappa=-0.127, kappa=-0.193). Conclusion Age ≥45 years, low education level, and history of gynecological diseases are high-risk factors for the development of cervical cancer and should be taken seriously to raise awareness of personal hygiene and to achieve early screening and prevention.*

Keywords: *cervical cancer; pathogenic factors; concordance test; human papilloma virus*

1. Introduction

Cervical cancer originates from intracranial lesions of the cervix and is one of the most common gynecologic malignancies in Chinese women. In China, cervical cancer is the second most important malignant tumor threatening women's life and health, second only to breast cancer, and the age of onset is gradually younger [1]. With the popularization of the Internet, the rapid development of smart phones, and the increase of entertainment venues, young people stay up late much more frequently, and the long-term lack of sleep easily leads to the decrease of the body's immunity, thus substantially increasing the possibility of viral infection, which is one of the reasons for the younger age of tumor incidence. In addition, excessive stress in young people's lives and lack of physical exercise may also contribute to the development of cancer. The investigation and analysis of high-risk factors for the development of cervical cancer is helpful to provide relevant theoretical basis for the prevention of cervical cancer, so as to reduce the risk of cervical cancer. In recent years, some studies have reported [2] that human papilloma virus infection, unclean sexual life, early age of first delivery, and long-term oral contraceptive use are all factors for the development of cervical cancer. In most of the studies about the factors of cervical cancer incidence, χ^2 test or logistic regression analysis has been used as a research method with clear expression and reliable results. However, no relevant studies have yet adopted the research method of kappa consistency test. In this paper, a return survey was conducted in October 2022 on 49 patients with cervical cancer and 49 healthy adult women in Ningbo Women's and Children's Hospital. The morbidity factors investigated included age, education level, smoking history, history of gynecological diseases, number of pregnancies, age of first delivery, family history of disease inheritance, vaccination history, menstrual history, age of first sexual intercourse, and number of sexual partners. All data were analyzed by SPSS consistency test. Statistical results showed that female age ≥45 years, low education level, and history of gynecological diseases were high risk factors for the development of cervical cancer.

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2. Research Object and Methodology

2.1 Study subjects

Forty-nine patients with first diagnosis of cervical cancer and 49 healthy adult women in Ningbo Women's and Children's Hospital from 2018 to 2022 were randomly selected.

2.2 Methods

Ninety-eight adult women were surveyed by telephone call-back and on-site communication in the form of questions and answers. The contents included age, education level, smoking history, history of gynecological diseases, number of pregnancies, age of first delivery, family history of disease inheritance, vaccination history, menstrual history, age of first sexual intercourse, and number of sexual partners.

2.3 Statistical methods

SPSS 22.0 software was used for statistical analysis. The kappa test was used to compare the consistency of the test results for each morbidity factor.

3. Results

Table 1: Results of the consistency test for the effect of each morbidity factor on prevalence

Results of the consistency test for the effect of each morbidity factor on prevalence				
	Number of sick people	Number of healthy people	kappa	P
Age				
＜45 years old	4	9	0.03	0.971
≥45 years old	45	40		
Education level				
Below junior high school	18	4	0.02	0.771
Junior high school and above	31	45		
Smoking				
Yes	5	4	-0.2	0.005
No	44	45		
Number of pregnancies				
≤3 times	32	47	-0.076	0.262
≥3 times	17	2		
Age at first birth				
＜ 20 years old	6	1	-0.221	0.002
≥20 years old	43	48		
Age of first sexual intercourse				
＜ 20 years old	13	1	-0.127	0.065
≥20 years old	36	48		
Number of sexual partners				
≤3 people	41	48	-0.193	0.006
＞3 people	8	1		
History of gynecological disease				
Yes	26	17	0.005	0.947
No	23	32		
Family history of genetic				

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predisposition				
Yes	1	2	-0.282	0
No	48	47		
Normal physiological period				
Yes	32	37	-0.041	0.567
No	17	12		
History of HPV vaccination				
Yes	2	4	-0.238	0.001
No	47	45		

There was a consistent effect of age, education, and history of gynecological disease on prevalence (kappa=0.03, kappa=0.02, kappa=0.005). There was no consistent effect of smoking history, number of pregnancies, age at first delivery, family history of disease inheritance, vaccination history, menstrual history, age at first sexual intercourse, and number of sexual partners on prevalence(kappa=-0.2, kappa=-0.076, kappa=-0.221, kappa=-0.282, kappa=-0.238, kappa==-0.141, kappa=-0.127, kappa=-0.193). As shown in Table 1 and Figure 1.

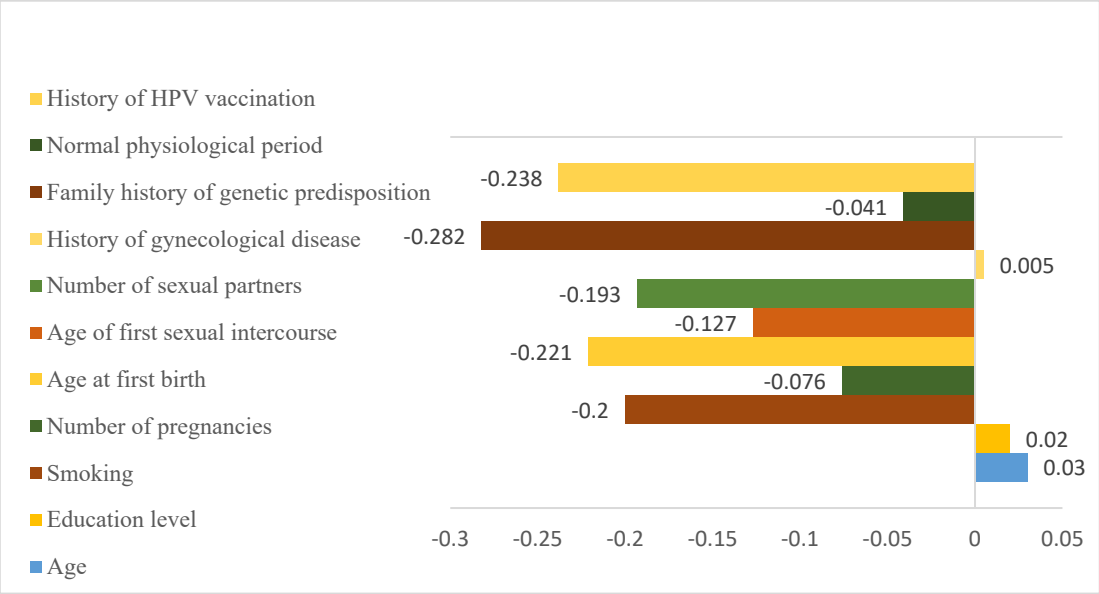

Figure 1: Results of the consistency test for the effect of each morbidity factor on prevalence

4. Discussion

This study showed that age, education level, and history of gynecological diseases all had an effect on the development of cervical cancer. In contrast, smoking history, number of pregnancies, age at first delivery, family history of disease inheritance, vaccination history, menstrual history, age at first sexual intercourse, and number of sexual partners had little effect on the incidence of cervical cancer. This may be due to the small number of sample cases, resulting in inaccurate analysis.

4.1 Effect of age on the development of cervical cancer

The high incidence age of cervical cancer is 50-55 years old [3]. The current study found that the age of onset of cervical cancer is gradually getting younger. With the popularization of the Internet, the rapid development of smartphones, and the increase in entertainment venues, young people stay up late much more frequently, and long-term sleep deprivation easily leads to a decrease in the body's immunity, thus substantially increasing the possibility of viral infection, which is one of the reasons for the younger age of tumor onset. Premature sexual intercourse can also increase the risk of cancer in young people because the cells of the cervical tissue in underage women are not yet fully developed and are susceptible to HPV infection. In addition, excessive stress in young people's lives and lack of physical exercise may also lead to the development of cancer.

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4.2 Effect of literacy on the incidence of cervical cancer

The general demographic characteristics of the women who participated in this study revealed that their average age was ≥45 years, which was related to the low level of education in this study. People with low education level are prone to be infected with HPV due to lack of knowledge related to cervical cancer and less attention to personal hygiene level, thus increasing the risk of the disease.

4.3 Influence of gynecological disease history on the development of cervical cancer

More than half of the affected patients have been diagnosed with gynecological diseases, such as vaginitis and pelvic inflammatory disease. To a certain extent, these gynecological diseases do not directly lead to the development of cervical cancer, but untreated or repeated diseases are likely to lead to mucosal damage in the relevant areas and increase the risk of HPV infection. Therefore, annual screening for gynecological diseases is an effective preventive measure for cervical cancer.

4.4 Effect of smoking on the development of cervical cancer

Several studies [4-6] have shown that there is a relationship between smoking and the development of cancer. The analysis of this study concluded that there is no consistency between smoking and cervical cancer incidence, probably due to the small sample size and the low percentage of women who actively smoke in our country itself. A study [7] pointed out that passive smoking has an effect on the development of cervical cancer. When studying the factors of cervical cancer incidence, more attention should be paid to the population of passive smokers.

4.5 Influence of sexual behavior and marital history on the development of cervical cancer

It is clear that early sexual activity, unclean sexual life, too many sexual partners, early childbearing (<20 years), and late childbearing (≥35 years) are all high-risk factors for the development of gynecologic malignancies [8]. In the present study, no consistency was found between the above factors for the development of cervical cancer, which may be related to the living environment and small sample size.

4.6 Influence of genetic history of family diseases on the development of cervical cancer

Various genes are known to be associated with genetic susceptibility to cervical cancer, such as the miR-124 rs531564 gene[9]. However, the expression of genes is more associated with regional environment. This may also be one of the reasons why the present study failed to reach a consistent conclusion. To explore the genetic susceptibility of cervical cancer, we need to find more samples in more regions for this purpose.

4.7 Effect of HPV vaccination history on cervical cancer incidence

HPV vaccine is effective in reducing HPV infection and thus reducing the risk of cervical cancer. This study found that: among 196 adult women, the HPV vaccination rate was only 0.03%. This may be related to the short supply of the vaccine, the high price and the fact that people's awareness of cancer prevention is not yet high enough.

In conclusion, the present study showed that age ≥45 years, low literacy, and history of gynecological disease are high-risk factors for the development of cervical cancer and should be taken seriously. As the only cancer that can be prevented by vaccine in the world, women of appropriate age should receive HPV vaccination in a timely manner, and at the same time raise awareness of personal hygiene, develop good lifestyle habits, regular and scheduled checkups, and actively carry out interventional treatment to achieve early screening and prevention.

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