FACTORS RELATED TO STIGMA AMONG PATIENTS WITH CERVICAL CANCER HAVING CHEMOTHERAPY AFTER SURGERY

FANGLIN WANG

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR MASTER DEGREE OF NURSING SCIENCE
(INTERNATIONAL PROGRAM)
IN ADULT NURSING PATHWAY
FACULTY OF NURSING
BURAPHA UNIVERSITY
2025

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The Thesis of Fanglin Wang has been approved by the examining committee to be partial fulfillment of the requirements for the Master Degree of Nursing Science (International Program) in Adult Nursing Pathway of Burapha University

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FANGLIN WANG : FACTORS RELATED TO STIGMA AMONG PATIENTS WITH CERVICAL CANCER HAVING CHEMOTHERAPY AFTER SURGERY. ADVISORY COMMITTEE: PORNPAT HENGUDOMSUB, Ph.D. CHUTIMA CHANTAMIT-O-PAS, Ph.D. 2025.

Stigma is a complex issue involving many disciplines, nurses in particular and have a profound effect in patients with cancer. The purposes of this study were to describe stigma and determine its relationship with self-efficacy, self-esteem, illness perception, social support, and stigma among patients with cervical cancer at postoperative chemotherapy in Wenzhou, China. The identity-threat model of stigma was served as the study conceptual framework. A total of 132 participants were recruited from the gynecology inpatient and outpatient departments of the First Affiliated Hospital of Wenzhou Medical University using a random sampling technique. Research instruments included: 1) Demographic questionnaire, 2) Social Impact Scale (SIS), 3) General Self Efficacy Scale (GSES), 4) Rosenberg Self-Esteem Scale (RSES), 5) Brief Illness Perception Questionnaire (BIPQ), 6) The Multidimensional Scale of Perceived Social Support (MSPSS). The scales (no.2-6) yielded reliabilities with the Cronbach's alpha of .900, .895, .883, .896, and .859, respectively. Data were analyzed by using descriptive statistics and Spearman's rank correlation.

The results of this study showed that the mean score of stigma was 76.3 (SD=10.84), which can be classified as a severe level. The Spearman's rank correlation coefficient analysis revealed the self-efficacy, self-esteem, illness perception, social support were all negatively correlated with stigma ($r = -.085$, $r = -.158$, $r = -.254$, $r = -.238$, respectively), with p value <. 05.

The findings can provide a theoretical basis for developing appropriate nursing interventions aimed at improving self-efficacy and self-esteem, modifying illness perception, and increasing social support to reduce the stigma among these patients.

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Fanglin Wang

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CHAPTER 1
INTRODUCTION

Statements and significant of the cervical cancer

Cervical cancer is the fourth most common cancer in women globally, after breast cancer, colorectal cancer, and lung cancer (Jain & Limaiem, 2022). The global average age at diagnosis of cervical cancer is 53 years, ranging from 44 to 68 years and the average age of death from cervical cancer is 59 years, ranging from 45 years to 76 years. (Arbyn et al., 2020). It is estimated that there are approximately 604,000 new cases of cervical cancer and 342,000 deaths worldwide each year (Sung et al., 2021). In developing countries, cervical cancer has the 2nd highest incidence and mortality rate (Abbas et al., 2020). In China, the incidence and mortality rate of cervical cancer are the 6th and 7th highest among female tumors, posing a serious threat to women's health (Sung et al., 2021; Abbas et al., 2020).

Although cervical cancer has a high incidence and mortality rate, it can be prevented and cured if it is detected at an early stage (Kang et al., 2022). Cervical cancer treatment methods mainly include surgery, radiotherapy, and chemotherapy. However, chemotherapy is widely used as an integrated treatment with surgery and radiotherapy and used in the treatment of late recurrent cervical cancer. In principle, surgery is the main treatment for early-stage cervical cancer, while radiotherapy is the main treatment for middle and late-stage cervical cancer, supplemented by chemotherapy. (Qi et al., 2021). Effective treatment of cervical cancer including surgery and concurrent chemotherapy can cure 80% of women with early-stage disease (stages I-II) and 60% of women with stage III can be cured (Koh et al., 2019).

The relevant literature shows that cervical cancer is a disease with significant stigma and that stigma is prevalent among patients with cervical cancer. The results of a review of the relevant literature show that cervical cancer is one of the diseases with significant attribution stigma in China (Rong et al.,2015; Lianhua et al.,2019). Moreover, the degree of stigma of cervical cancer patients in China is moderately high(Li et al., 2016; Zhao & Ren, 2017). The stigma of cervical cancer patients found to be related to the following points, firstly, social prejudice and

misunderstanding. Cervical cancer is often regarded as a disease related to sexual misconduct, and such a notion is prevalent in the society, leading to discrimination and rejection of patients. Patients may feel shame and self-blame as a result, and fear isolation from family, friends or society. Secondly, there is insufficient information and spread of misconceptions. The public has limited knowledge about cervical cancer, its causes, prevention and treatment methods, and is vulnerable to misinformation. Inaccurate information about cervical cancer in the media and on social media platforms may exacerbate patients' feelings of stigma. In addition to this, there is also bias in the healthcare system, where healthcare workers may also be biased against cervical cancer patients in some cases, which can affect the patient's experience of care and treatment outcomes ((Bateman et al., 2019; Min & ChunXia, 2017; Nyblade, Stockton, Travasso, & Krishnan, 2017) Although the diagnosis and treatment of cervical cancer has been developed, several dysfunctions can occur after treatment which include surgery, radiotherapy and chemotherapy. A series of problems such as loss of fertility, sexual dysfunction, changes in body image, serious side effects from radiotherapy, and long-term follow-up during or after treatment make cervical cancer patients face huge physical, psychological and financial burdens (Thapa et al., 2018). This often leads to serious negative emotions and a sense of shame and inferiority (Boden & Willis, 2019). Stigma may have the following effects on cervical cancer patients, first of all, mental health, stigma may lead to psychological problems such as anxiety and depression in cervical cancer patients. It also affects treatment adherence. Patients may avoid seeking medical treatment or following treatment recommendations due to stigma, leading to deterioration of their condition. This treatment non-adherence can further affect the patient's outcome and prognosis. In addition to this, it can lead to social isolation. Stigma may also cause patients to reduce their social activities and lose their social support network. This can make patients feel more isolated and further aggravate their psychological burden(Else-Quest & Jackson, 2014; Ginjupalli et al., 2022; Peterson et al., 2021; Shepherd & Gerend, 2014) .

Stigma is a complex issue involving many disciplines such as nurses, physicians, sociologists, and psychologists, and increasing attention from researchers and caregivers. It is becoming an important factor influencing public health. The

concept of "stigma" was first introduced by Goffmon, in 1963. The patient's stigma of the disease is the experience of stigma due to their illness. It reflects a psychological stress reaction of the patient and represents the negative perception of certain people in the society, which leads to discrimination. It also represents the shame that exists in special populations due to their own negative markers（Goffman, 1963). This study will focus on stigma which is a personal experience related to a health condition, characterized by feelings of rejection, rejection, and blame. This may lead to the development of psychological, physical, and social disorders (Cataldo et al., 2011; Major & O'Brien, 2005). Stigma is one of the psychosocial problems of cancer from diagnosis to treatment and gradually recovery (Hamann & Pujol, 2018). Stigma in cancer patients is also complex and heterogeneous. Specific cancers are stigmatized for different reasons. Multiple factors influence the stigmatization of certain types of cancer more than others; this is partly because different types of cancer have different causes, different treatments, and different outcomes (Else-Quest & Jackson, 2014).

In this study, stigma in cervical cancer was defined as a self-psychological experience of low self-esteem, humiliation, and isolation among patients with cervical cancer due to the lack of awareness of the illness, as well as the loss of female characteristic organs due to treatment and complications of treatment, which caused serious damage to the patient's body image, loss of sexual function and reduced quality of life.

Stigma not only increases the potential harm of the disease, but also causes unhealthy psychological and social conditions for the patients with chemotherapy after the surgery. Due to the stigma, some people avoid social interactions, and can even isolate themselves completely (Yuan et al., 2018). Patients with stigma may blame and criticize themselves while facing discrimination from others. Their mental state may deteriorate. Thus, a vicious cycle is created. This can have a negative impact on treatment outcomes, physical status, mental health, and social functioning (Huang et al., 2021). It also leads to poorer psychosocial and health outcomes for cancer patients, as well as workplace discrimination, poor quality of life, and increased depression and anxiety (Akin-Odanye & Husman, 2021). Some studies show stigma around cancer poses a barrier to treatment and care (Kuguyo et al., 2017; Suwankhong & Liamputtong, 2016). Fear of stigma may discourage women from

seeking care in a timely manner (Mesafint et al., 2018). Stigma can cause cancer patients to be shameful about seeking treatment (Nyblade et al., 2017). Stigma has also affected the socialization of cancer patients and their relationships with families (Lin et al., 2018).

The stigma of patients with cervical cancer undergoing postoperative chemotherapy is more prominent. The side effects of chemotherapy seriously affect the quality of life of patients (Ying & Juan, 2019; Min et al., 2017). Radical cervical cancer surgery causes loss of the uterus, loss of fertility and sexual dysfunction in women of childbearing age. Moreover, chemotherapy can cause various adverse effects such as nausea, vomiting, diarrhea, constipation, mucositis, weight and hormonal changes (Dahiya et al., 2016).

In literature review, multiple factors effect stigma in cancer population. The significant factors supported by previous empirical findings include self-efficacy, illness perception, self-esteem, and social support. First, in a study of Chinese nasopharyngeal cancer survivors, stigma was significantly and negatively related to self-efficacy ($r = -0.295$, $P < 0.001$) (Yan et al., 2022). It was shown that the level of morbidity stigma was significantly and negatively correlated with self-efficacy, i.e., the higher the patient's morbidity stigma, the lower his or her self-efficacy. In a study on the effect of a total care model on morbidity stigma and self-efficacy in patients after radical cervical cancer surgery, it was also indicated that patients with cervical cancer had lower self-efficacy and the level of morbidity stigma was significantly and negatively correlated with self-efficacy (Lu et al., 2022b).

The stigma of cervical cancer patients is closely related to the level of illness perception and improving the ability of illness perception can reduce the patients' sense of stigma (Huang & Wei, 2021). Many patients have a wrong perception of cervical cancer, believing that cervical cancer is related to risky sexual behavior. They are not aware the incidence and treatment of the disease and are not aware of the efficacy and prognosis of the disease and are more likely to suffer from external or self-discrimination, resulting in a sense of stigma (Chen et al., 2018). A qualitative study in Karnataka, India showed that people's negative illness perception about cervical cancer contribute to the stigma of cervical cancer patients. They have the misconception that cervical cancer is contagious, punishment for patients, and

incurable disease (Nyblade et al., 2017). Another qualitative study in Brazil found that women with cervical cancer were not only considered sick, but they were also considered dirty, lazy and promiscuous. These illness perceptions of cervical cancer contribute to the stigma attached to cervical cancer patients (Gregg, 2011).

Previous studies have demonstrated an association between self-esteem and stigma in cancer patients. Patients with low self-esteem will have a stronger sense of stigma than people with high self-esteem (Else-Quest et al., 2009; Liu et al., 2020; Pasmatzi et al., 2016). Results in a study on factors related to stigma in cancer patients showed that the lower the self-esteem related to the higher the stigma (Huang et al., 2021). Since the development of cervical cancer is related to HPV infection, sexual contact is one of the ways to transmit the virus, and the virus is contagious to a certain extent. Radical cervical surgery removes the female reproductive organs. This causes the loss of femininity and reproductive function in these patients. Patients may feel that they are discriminated against because of the disease and resulting in low self-esteem (Li et al., 2016; Li & Liu, 2019). In a cross-sectional study of lung cancer, it was also found that self-esteem ($r= -0.487$, $P < 0.001$) were negatively associated with stigma (Liu et al., 2020). In a cross-sectional study analyzing the factors influencing stigma in postoperative breast cancer patients, a correlation was found between stigma and self-esteem in post-operative breast cancer patients (Haimin et al., 2021).

Social support has also been shown to be associated with stigma in cancer patients (Hofman et al., 2021; Zhang et al., 2022). Data from one study of lung cancer showed that people with higher levels of stigma had less of all types of social support than people with lower levels of stigma (Johnson et al., 2019). In a Japanese study of cancer-related stigma, cancer-related stigma and perceived social support were significantly associated ($r = 0.10$) (Fujisawa et al., 2020). A descriptive cross-sectional study in Korea showed that cancer stigma had the strongest association with social support ($r = -0.49$, $p<0.001$, 95% CI [–0.34, -0.18]) (Shrestha et al., 2020). Giving patients adequate social support can reduce their sense of stigma (Liu et al., 2021).

In the context of Chinese culture and national conditions, stigma has a profound impact on postoperative chemotherapy patients with cervical cancer. This effect is not only on the psychological level, but also on their socialization, family

relationships, and attitudes toward treatment. From the psychological aspects, firstly, the sense of shame stems from the negative stereotypes and misconceptions about the disease in society. In China, “cancer” is often closely associated with “death”, and this concept is deeply rooted, leading cervical cancer patients and their families to feel a strong sense of shame and fear when facing such disease. Patients may feel inferior and depressed because of cancer, or even believe that they “deserve” the disease, and this self-depreciating state of mind will further aggravate their psychological burden. From the socialization, the sense of shame also leads to social rejection and discrimination of cervical cancer patients. In Chinese culture, the concept of “face” is very important, and many people worry that they will lose social respect and recognition if they are labeled as “cancer patients”. Therefore, many patients choose to hide their illness, avoid communication with others, and even refuse to participate in social activities. This isolation not only aggravates the patients' sense of loneliness, but also may affect their motivation for treatment and recovery. And in family relationships, stigma may also lead to conflicts and contradictions. Patients may blame themselves for fear of becoming a burden to the family, while family members may also experience anxiety and irritability due to fear and lack of understanding of the disease. These negative emotions, if not communicated and channeled in a timely and effective manner, may disrupt family harmony and affect the patient's therapeutic environment and recovery process.

Although there has the evidence of a relationship between self-efficacy, illness perception, self-esteem, and social support with stigma. However, fewer studies have been conducted in Chinese patients and few address in the field of stigma with this population. To address this gap, this study will examine stigma and its specific influences (i.e., self-efficacy, illness perception, self-esteem, and social support) in cervical cancer patients receiving chemotherapy. This study contributes to the understanding of factors influencing stigma associated with patients diagnosed cervical cancer undergoing chemotherapy and provide a scientific basis for comprehensive interventions or further clinical care practices. This study will help Chinese caregivers understand the incidence of stigma in cervical cancer patients during chemotherapy. It will also help nurses understand stigma and influencing

factors. At the same time, the corresponding nursing intervention measures can be formulated according to the influencing factors of the stigma of patients with cervical cancer chemotherapy, so as to reduce the stigma of patients.

Research objectives

1. To describe the stigma among patients with cervical cancer receiving chemotherapy after surgery.

2. To examine the relationships between self-efficacy, illness-perception, social support, self-esteem, and stigma in patients with cervical cancer receiving chemotherapy after surgery.

Research hypotheses

Self-efficacy, illness perception, self-esteem and social support are associated with stigma among patients undergoing chemotherapy after hysterectomy for cervical cancer.

1. Self-efficacy is negatively associated with stigma among patients with cervical cancer having chemotherapy after surgery in Wenzhou, China.
2. Illness perception is positively associated with stigma among patients with cervical cancer having chemotherapy after surgery in Wenzhou, China.
3. Self-esteem is negatively associated with stigma among patients with cervical cancer having chemotherapy after surgery in Wenzhou, China.
4. Social support is negatively associated with stigma among patients with cervical cancer having chemotherapy after surgery in Wenzhou, China.

Scope of study

The purpose of this study is to examine the stigma of cervical cancer patients during chemotherapy and its relationship with self- efficacy, illness perception, self-esteem, and social support. Data collection was conducted in the gynecologic oncology wards and outpatient clinics of the First Affiliated Hospital of Wenzhou Medical University in China. Data collection took place from December 2023 to April 2024.

Conceptual Framework

The conceptual framework of this study was based on the theory of the identity-threat model of stigma (Major & O'Brien, 2005) and the reviews of relevant literatures. This model assumes that having a mutually agreeable devalued social identity—stigma—increases a person's exposure to potentially stressful (or identity threatening) situations. Collective representations, immediate situational cues, and personal characteristics influence people's assessment of the importance of these situations to their well-being.

Stigma is related to both individual and external factors. Individual factors in this model refer to collective representations and personal characteristics. Whereas, external factors in this model refers to situational cues. These collective representations include an awareness that they are not valued in the eyes of others, an understanding of dominant cultural stereotypes their stigmatized identities, and the awareness that they may be victims of discrimination (Crocker et al., 1998).

Patients are likely to perceive and internalize stigma in different situation cues where their disease may be a source of identity threat. Cancer patients, in particular, have faced blatant discrimination when they return to work. When cancer patients seek support from medical providers, the discrepancy between what they actually receive and what they expect leads them to feel stigmatized. Caregiver burden can also have an impact on cancer patients and the internalization of their stigma. Cancer patients may also encounter stigma from their cultural or social groups (Knapp et al., 2014). These different situation cues correspond to the social support perceived by the patient.

Personal characteristics also influence how situations are perceived and appraised. People who expect to be treated based on their group membership rather than their personal identity, and/or who are sensitive to rejection based on their group membership are more vigilant for stigma-related threats and are more likely to appraise stigma-relevant situations as threatening. Those who see their stigmatized social identity as a central part of their self-identity are more likely to see themselves as targets of individual and group discrimination. Individuals who strongly identify with domains in which their group is negatively stereotyped are more likely to regard performance feedback in those domains as self-relevant, increasing their potential for

experiencing identity threat. Individuals' goals and motives also shape how they perceive and appraise situations (Major & O'Brien, 2005).

In this study, patients with cervical cancer receiving chemotherapy after hysterectomy for cervical cancer may have different degrees of stigma. This possibly related to collective representations (Illness perception), situational cues (social support) and personal characteristics (self-efficacy and self-esteem), based on the theory of the identity-threat model of stigma, was measured. The relationships among all of variables in this study are described in Figure 1

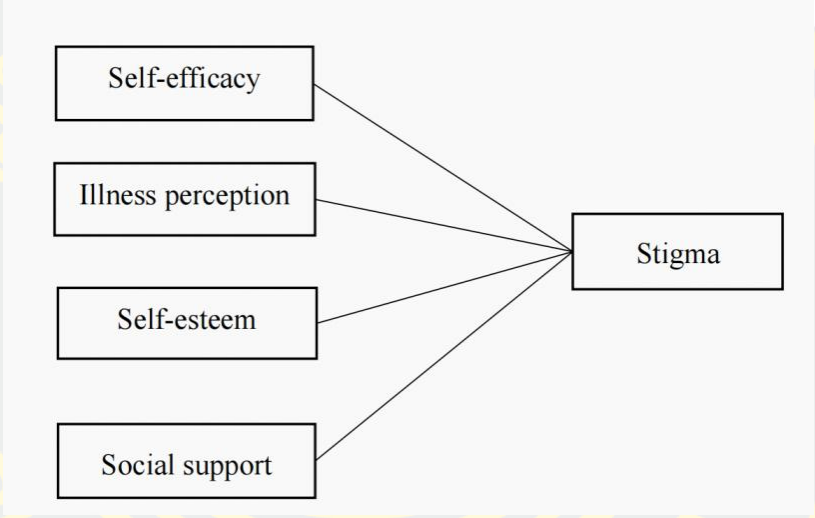

Figure 1 Conceptual framework

Definition of terms

Cervical cancer patients receiving chemotherapy after surgery

Cervical cancer patients receiving chemotherapy after surgery refers to the patients diagnosed with cervical cancer who are receiving chemotherapy after hysterectomy for cervical cancer.

Stigma

Stigma is defined as a self-psychological experience of low self-esteem, humiliation, and isolation of patients with cervical cancer patients receiving chemotherapy after surgery due to insufficient knowledge of the disease, as well as the loss of feminine characteristic organs due to treatment and complications of treatment, which may affect patients' body image, loss of sexual function and reduced

quality of life. In this study, the Social Impact Scale (SIS) wad used to measure the stigma of chemotherapy patients with cervical cancer (Pan et al., 2007).

Self-efficacy

Self-efficacy refers to one's beliefs about his or her ability to successfully complete a specific task. It would influence the level of behavior, choice, and achievement. In this study, it is defined as the belief of a cervical cancer patient receiving chemotherapy after the surgery that she is capable of successfully completing a specific task, and self-efficacy affects behavior, choice of activities, and level of achievement. The General Self Efficacy Scale (GSES) was used to measure self-efficacy in this study (Caikang, et al., 2001).

Illness perception

"Illness perception" refers to the cognitive evaluation of an individual, the psychological expression of illness, and personal thoughts when an individual's illness state or health is threatened. In this study, it refers to the cognitive evaluation of the individual, the psychological expression of the illness, and the individual's personal thoughts when the individual's disease state or health is threatened by chemotherapy received after cervical cancer surgery. There are at least five aspects of the patient's thoughts, including the identity of the disease (the name and symptoms of the disease), the cause of the disease, the consequences of the disease (the impact on life), the course or timeline of the disease, and beliefs about how to treat or manage the disease. Illness perception was measured by using the Brief Illness Perception Questionnaire (BIPQ) in this study (Tsai et al., 2018).

Self-esteem

Self-esteem is the degree to which patients receiving chemotherapy after cervical cancer surgery hold an accepting or rejecting attitude toward themselves. It is one of the characteristics of the self. In this context, it reflects whether patients receiving chemotherapy after cervical cancer surgery are satisfied with themselves, is related to a sense of self-worth, and is influenced by what the individual has experienced and the circumstances of their lives. In this study, the Chinese Version of the Rosenberg Self-Esteem Scale (RSES) was used to measure self-esteem (Lo et al., 2018).

Social support

Social support is defined as any combination of information, material, emotional, and evaluative support from family or medical professionals (Queenan et al., 2010). In this study, it refers to the perceptions related to instrumental, informational, and emotional support that patients receiving chemotherapy after cervical cancer surgery receive from their family, friends, and significant others. Social support in this study was assessed by using the multidimensional scale of perceived social support (MSPSS) (Sousa et al., 2010).

CHAPTER 2
LITERATURE REVIEW

This chapter presents overview of cervical cancer, the stigma of postoperative chemotherapy patients with cervical cancer, the theory of the identity-threat model of stigma and the factors related to the stigma of postoperative chemotherapy patients with cervical cancer and summary as outlined below:

1. Overview of cervical cancer
    1.1 Incidence of cervical cancer
    1.2 Carcinogenic factors
    1.3 Staging of cervical cancer
    1.4 Treatment of cervical cancer
2. Stigma of postoperative chemotherapy patients with cervical cancer
    2.1 Stigma
    2.2 Stigma among patients with cervical cancer after the surgery
    2.3 Stigma among patients receiving chemotherapy after cervical cancer surgery
    2.4 The impacts of stigma among cervical cancer patients
3. The theory of the identity-threat model of stigma
4. Factors related to the stigma of postoperative chemotherapy patients with. cervical cancer
    4.1 Self-efficacy
    4.2 Illness perception
    4.3 Self-esteem
    4.4 Social support
5. Summary

Overview of cervical cancer

Incidence of cervical cancer

Worldwide, cervical cancer is the fourth most common cancer among women, after breast cancer (2.1 million cases), colorectal cancer (800,000 cases) and

lung cancer (700,000 cases) (Buskwofie et al., 2020; Jain & Limaiem, 2022). The estimated global age-related incidence of cervical cancer is 13.1 per 100,000 women, with significant variation between countries. In eastern, western, central and Southern Africa, cervical cancer was the leading cause of cancer-related death among women in 2018. China and India together account for more than a third of the global burden of cervical cancer, with 106,000 cases and 48,000 deaths in China. Globally, the average age at diagnosis of cervical cancer is 53 years and the global average age at death is 59 years (Buskwofie et al., 2020).

Carcinogenic factors

Cervical cancer is a common gynecological tumor disease among women, which mainly occurs when the cells of the cervix become cancerous. Like many other types of malignancies, cervical cancer is a chronic and complex disease caused by both genetic and external influences (Hanahan & Weinberg, 2011; Shi et al., 2013). Human papillomavirus (HPV) infection is considered to be the main cause of cervical cancer (zur Hausen, 2002). Epidemiological studies have shown that infection rates may be as high as 80 per cent among sexually active women (Chesson et al., 2014). Human papillomavirus is a large family, systematically divided into 5 genera, 48 species and 206 types. The reactivity classification associated with the degree of carcinogenicity contains 13 high-risk (HR)HPV types. Among the HR HPV types, HPV type 16 accounts for more than half of cervical cancers worldwide, and HPV 18 accounts for 16.5%, making it the second most carcinogenic. HPV infection is a necessary factor in the development and progression of cervical lesions, and HPV infection is the result of a synergistic effect of multiple factors (Hu & Ma, 2018). Including early age of sexual debut, high number of pregnancies and miscarriages, uniqueness of number of sexual partners (L. Qin et al., 2021). In addition, improper vaginal cleansing (disrupts vaginal microecology), homosexual orientation (tools or instruments used during sex increase the chance of vaginal mucosal damage, thus creating an opportunity for HPV infection), and a history of vaginitis (disrupts vaginal mucosa, disrupts vaginal microecology, and suppresses immune function) can also increase the risk of persistent HPV infection, leading to cancer (Wang et al., 2023).

Staging of cervical cancer

The main factors affecting the prognosis of cervical cancer include FIGO stage at diagnosis, tumor size, pathological type, histological grading, depth or extent of cancer infiltration and lymph node metastasis, etc. These factors are key factors in determining the treatment plan for cervical cancer, so the accurate stage of cervical cancer is an important influencing factor in guiding the choice of treatment plan. FIGO staging is mainly based on clinical examination. It is simple, convenient and practical, and is recognized as a unified standard for cervical cancer diagnosis and classification and is widely used in the international arena (Juanjuan & Zhilian, 2020; Peng & Yang, 2020). In 2018, the FIGO Gynecologic Oncology Committee revised staging to allow for optional clinical, radiologic, or pathologic findings, if available, to determine staging (Bhatla et al., 2021).

Stage I indicates that the lesion is confined to the cervix. The patients with microscopic lesions but no visible lesions were considered as stage IA. Stage IA was subdivided into stage IA1 and stage IA2 according to the depth of lesion infiltration under microscope. Specifically, the maximum infiltration depth under microscope < At 3 mm, IA1 stage, 3 ~ < Stage IA2 at 5 mm, stage IB if the depth of infiltration ≥5 mm or the lesions were visible to the naked eye. In the 2018 staging, the stratification of IB is more detailed with the addition of the criterion of the maximum diameter of the lesion of 2 cm, i.e., stage IB1 when the depth of microscopic infiltration of the lesion is ≥5 mm and the maximum diameter is <2 cm; stage IB2 when the maximum diameter is ≥2 cm and <4 cm, and stage IB3 when the maximum diameter is ≥4 cm(Bhatla et al., 2018, 2021; Peng & Yang, 2020).

Stage II refers to a tumor that extends beyond the uterus but does not reach the lower third of the vagina or the pelvic wall. Stage IIA involved the upper 2/3 of the vagina without parastatal infiltration (maximum meridian of stage IIA1 tumor < 4cm, stage IIA2 tumor maximum longitude ≥4cm); Stage IIB with parastatal infiltration, not reaching the pelvic wall (Bhatla et al., 2018). Colposcopy can be used to assess vaginal involvement. Imaging studies are less accurate in assessing the involvement of the upper vaginal segment. False-negative or false-positive results can occur when the upper vaginal segment is stretched by infection or large tumors.

magnetic resonance imaging (MRI) can be used to assess parastatal infiltration with superior accuracy to CT (Li et al., 2019).

Stage IIIA refers to the invasion of the lower one-third of the vagina, with parastatal invasion not reaching the pelvic wall. Stage IIIB refers to tumor invasion of the pelvic wall, hydronephrosis, or nonfunction of the kidney (unless otherwise explained) (Bhatla et al., 2018). In the 2018 staging, stage III is further refined into stage IIIA, stage IIIB and stage IIIC. Among them, stage IIIA and stage IIIB have the same meaning as the 2009 staging. Stage IIIC is the biggest change in the 2018 staging, i.e., pelvic lymph node or para-aortic lymph node metastasis is included in the staging, regardless of the size and extent of infiltration of the lesion. In this case, only pelvic lymph node metastasis was designated as stage IIIC1, while para-aortic lymph node metastasis was designated as stage IIIC2. Obviously, it is difficult to detect pelvic lymph node or para-aortic lymph node metastasis by clinical examination alone. Therefore, FIGO points out that the determination of lymph node metastasis can be both imaging evaluation and pathological biopsy results (Peng & Yang, 2020).

Stage IV refers to tumor invasion of the bladder mucosa or rectal mucosa (confirmed by biopsy) and/or beyond the true pelvis. When the tumor invaded the pelvic adjacent organs, it was stage IVA. Stage IVB occurs when the tumor metastasizes to distant organs (Bhatla et al., 2018). The new staging highlights suspected bladder or rectal involvement, which should be confirmed by biopsy and pathological evidence. Alveolar edema cannot be classified as stage IV. The bladder and rectum should be evaluated by cystoscopy and sigmoidoscopy only when corresponding clinical symptoms are present. In patients with definite invasive cancer, chest radiographs and evaluation of hydronephrosis should be performed (Li et al., 2019).

FIGO's 2018 cervical cancer staging reflects recent developments in the field of cervical cancer diagnosis and treatment, reflecting the impact of maximum tumor diameter on the choice of surgical approach and the presumed value of lymph node status on prognosis, and is more in line with current clinical practice.

Treatment of cervical cancer

Cervical cancer treatment methods mainly include surgery and radiotherapy. Chemotherapy is widely used in the integrated treatment with surgery and radiotherapy and in the treatment of advanced recurrent cervical cancer. Currently, targeted therapy, immunotherapy and their combination can be used for systemic treatment of recurrent or metastatic cervical cancer. In principle, surgery is the main treatment for early-stage cervical cancer, while radiotherapy is the main treatment for mid-to-late-stage cervical cancer, supplemented by chemotherapy (Committee, 2021).

For more than 100 years, surgical treatment of cervical cancer has been the cornerstone of treatment for this malignancy (Brucker & Ulrich, 2016). Surgery is usually performed for early disease, fertility preservation, and smaller lesions, such as stage IA, stage IB1, and IIA1 cases. Surgical treatment for cervical cancer includes fertility preservation operation, operation without preserving fertility function, pelvic dissection, and abdominal aorta ± pelvic lymph node resection staging operation (Koh et al., 2019).

IB2 to IVA recommended concurrent chemotherapy and radiotherapy treatment. Chemotherapy is widely used in the treatment of cervical cancer, at present, it is mainly suitable for concurrent chemoradiotherapy, neoadjuvant chemotherapy and palliative chemotherapy. Concurrent chemoradiotherapy generally uses cisplatin as a single drug. Those who cannot tolerate cisplatin can use carboplatin or optional platinum-containing combination chemotherapy. Neoadjuvant chemotherapy is mainly used for stage IB3 or IIA2, that is, preoperative chemotherapy for locally advanced cervical cancer with tumor diameter ≥4.0 cm, usually for 2 to 3 courses. The combination regimen of platinum-containing drugs combined with chemotherapy and bevacizumab is the first choice for initial chemotherapy for advanced and recurrent cervical cancer. Pembrolimab is the first choice for patients with PD-L1 positive or MSI-H/dMMR when the disease progresses after chemotherapy or chemotherapy (Committee, 2021).

Stigma of postoperative chemotherapy patients with cervical cancer

Stigma

Stigma is a complex issue that involves many disciplines, and in recent years it has attracted the attention of health care professionals, psychologists, and researchers in other fields, and it is becoming an important factor influencing public health. The concept of "stigma" was first introduced by the foreign scholar Goffmon in 1963. Patient stigma is a sense of shame caused by a disease. It reflects the patient's reaction to psychological stress and represents the negative perception of certain people in society, which leads to discrimination. It also represents a stigma existing populations due to its own negative markers (Goffman, 1963). In “Conceptualizing stigma” from 2001, Link and Phelan provide a comprehensive and detailed definition of stigma. They identify six necessary conditions for stigmatization, namely labeling differences, stereotypes, separation, status loss and discrimination, power, and emotional reactions (Andersen et al., 2022). Weiss et al. define stigmatization as a social process characterized by exclusion, rejection or blame, which stems from the actual situation or perceived experience of negative social opinions (Jacoby, 1994; Weiss et al., 2006). Corrigan and other scholars divide stigma into perceived shame, actual shame, and intrinsic shame. Perceived shame refers to patients' fear and fear that they are discriminated against by others because of their incomprehensible characteristics. Actual stigma refers to the actual injustice that the patient has been treated, or the belittling and exclusion of others because of the illness. Intrinsic shame is the result of the patient's internalization of perceived and actual shame, which ultimately manifests itself in negative perceptions such as self-blame, fear, shame, and self-denial. Internalized shame is the result of the patient internalizing perceived and actual shame, which ultimately manifests itself in self-blame, fear, shame, and self-denial. Internalized shame is the result of the patient's internalization of perceived and actual shame, which ultimately manifests itself in negative perceptions of self-blame, fear, shame, and self-denial (Corrigan & Watson, 2002; Major & O'Brien, 2005; Scambler, 1998).

Stigma among patients with cervical cancer after the surgery

Previous relevant research has shown that cervical cancer is a disease with a significant stigma (Bateman et al., 2019; Nyblade et al., 2017). Postoperative cervical

cancer patients have a moderate to high level of morbidity stigma(R. Li et al., 2016). The occurrence of cervical cancer is related to HPV infection, and sexual contact is one of the ways to infect the virus, and the virus is contagious to a certain extent. Therefore, patients with cervical cancer are overly sensitive to external reactions due to their disease, and they may focus on and magnify the performance of others' words and actions in social interactions, and even have negative associations with unrelated words and actions and feel that they are discriminated against because of their disease (Li & Liu, 2019). Meanwhile, symptoms related to cervical cancer, such as abnormal vaginal bleeding and odor, may also affect the sexual life of couples to a certain extent and cause a sense of stigma for cervical cancer patients. Radical surgery causes cervical cancer patients to lose their fertility and female sex organs, resulting in low self-esteem and humiliation (Q. Li et al., 2018).

Stigma among patients receiving chemotherapy after cervical cancer surgery

Currently, surgery and postoperative radiotherapy and chemotherapy are the common treatments for cervical cancer. Patients with postoperative cervical cancer have a serious sense of shame during chemotherapy (Jiang, 2020; Li, 2018). Firstly, radical surgery removes the female reproductive organs, and the loss of femininity leads to a psychological inferiority complex in which the patient no longer believes she is a woman. Furthermore, the loss of reproductive function due to surgical removal of the reproductive organs is devastating, especially for infertile patients, and can lead to feelings of guilt towards the spouse and family, thus increasing the level of stigma (Q. q. Li et al., 2018; Thapa et al., 2018). In addition, part of the patient's vagina may be removed during the operation, leading to postoperative vaginal shortening, while changes in hormone levels lead to vaginal dryness and decreased sexual desire, which will affect sexual function, thereby affecting the couple's sex life and increasing the stigma of patients (Yu et al., 2021).

Combined treatment with chemical drugs can effectively control the metastasis and spread of cancer cells, prolong the life cycle of patients, and become the first choice of clinical treatment after radical cervical cancer (Zheng et al., 2020). However, chemotherapy has long cycles and more adverse effects. Under the influence of reproductive organ dysfunction and adverse reaction stimulation of chemotherapy, some patients have increasing negative emotions, leading to stronger

stigma (Jiang et al., 2022). Chemotherapy can cause nausea, vomiting, fatigue, and sleep disturbances, which can seriously affect patients' quality of life, hair loss can also cause loss of body image (da Silva et al., 2022; Dahiya et al., 2016; Fu et al., 2018). These adverse effects caused by chemotherapy thus cause negative emotions in patients, such as anxiety, depression, low self-esteem, etc. (Boden, 2019; Thapa et al., 2018; Yao et al., 2019).

The impacts of stigma among cervical cancer patients

Some studies show stigma around cancer poses a barrier to treatment and care (Kuguyo et al., 2017; Suwankhong & Liamputtong, 2016). Fear of stigma may discourage women from seeking care in a timely manner (Mesafint et al., 2018). Stigma can cause cervical cancer patients to be shameful about seeking treatment (Nyblade et al., 2017).

The sense of shame will cause negative psychological experiences such as shame, low self-esteem, and lower self-esteem, which will seriously affect patients' psychological health and is not conducive to the successful treatment (Chang, 2020).

Stigma can also affect socialization. Patients with cervical cancer who have a sense of shame will develop a severe sensitivity to the outside world, attaching importance to what others say and do about themselves and forming negative associations with irrelevant words and behaviors. There are some patients who are trying to protect themselves from the outside world or go out less to prevent the disgust and discomfort of others, thus gaining inner self-protection. Some patients have a greater degree of low self-esteem and are unwilling to actively express bad emotions and feelings, deliberately avoid social interactions, and do not want to communicate with others, so they will increasingly repress themselves, and eventually produce the phenomenon of autism (Rong&Lianhua, 2019).

The theory of the identity-threat model of stigma

The conceptual framework of this study based on the theory of the identity-threat model of stigma (Major & O'Brien, 2005). This model assumes that having a mutually agreeable devalued social identity (stigma) increases a person's exposure to potentially stressful (identity threatening) situations. Collective representations,

situational cues, and personal characteristics influence people's assessment of the importance of these situations to their well-being.

Stigma is related to individual factors which in this theory is collective representations and personal characteristics. Stigma is also associated with external factors, which is situational cues in this theory.

An important distinction between cancer patients and other stigmatized individuals are the collective awareness of being part of a stigmatized group. Major and O'Brien's model includes collective representations, a shared understanding of being devalued (Major & O'Brien, 2005). These collective representations include an awareness that they are not valued in the eyes of others, an understanding of mainstream cultural stereotypes, their stigmatized identities, and an awareness that they may be the victims of discrimination (Crocker et al., 1998). This includes the collective poorer illness perception of cervical cancer.

Patients in different situation cues may be perceiving and internalizing the stigma. For example, cancer patients face blatant discrimination when they return to work. When cancer patients seek support from health care providers, they acceptance and expectations can stigmatize them. Caregiver burden can also have an impact on people with cancer and their internalization of illness stigma. Cancer patients may also experience stigma from their cultural or social group (Knapp et al., 2014). These different situational cues correlated with the patient's perceived social support.

Personal characteristics also influence how people perceive and evaluate situations. Those who expect to be treated based on group membership rather than individual identity, and/or those who are sensitive to rejection based on group membership, are more alert to threats associated with stigma and are more likely to assess situations associated with stigma as threatening. Those who view their stigmatized social identity as a central part of their self-identity are more likely to see themselves as targets of individual and group discrimination. Those who strongly identify with their domains are more likely to view performance feedback in those domains as self-relevant, increasing the likelihood that they will experience identity threat. Individuals' goals and motivations also determine how they perceive and assess situations (Major & O'Brien, 2005).

Factors related to the stigma of postoperative chemotherapy patients with cervical cancer

Self-efficacy

Self-efficacy refers to one's beliefs about one's ability to successfully complete a specific task, and self-efficacy has been shown to influence levels of behavior, choice, and achievement (Kontos, 2014). Self-efficacy is characterized by level differences, intensity differences, and malleability. Differences in levels of self-efficacy reflect the ease with which individuals perceive themselves to accomplish behaviors directed toward specific goals. Different people may exhibit different levels of self-efficacy when faced with the same task due to different levels of self-confidence. Differences in the strength of self-efficacy reflect the degree to which individuals are convinced of their ability to achieve goal-specific behaviors. That is, the degree of confidence an individual has in his or her ability to successfully complete a task, and this confidence directly affects his or her behavioral performance and effort. Extensibility of self-efficacy refers to the extent to which an individual's strength of self-efficacy in one domain affects self-efficacy in other similar or different domains. This scalability allows individuals to maintain a certain level of self-efficacy in different situations and thus to cope better with challenges(Bandura, 1977; Lev, 1997). Self-efficacy, as an individual's subjective judgment of his or her abilities, plays an important role in influencing behavioral motivation, effort, emotional reactions, health and success, and social adjustment (Akin, Can, Durna, & Aydiner, 2008; Haas, 2000).

Self-efficacy can also reduce stigma by influencing several aspects of an individual's cognitive appraisal, emotional responses, and behavioral changes. Individuals with a high sense of self-efficacy tend to view their illnesses more rationally and are less susceptible to external prejudice and discrimination. They are more inclined to evaluate their condition from a positive perspective, thereby reducing the development of stigma. Self-efficacy reduces or enhances the stigma by influencing an individual's emotional responses. Individuals with a high sense of self-efficacy are able to maintain a relatively stable emotional state in the face of illness, reducing the production of negative emotions such as anxiety and depression, and thus reducing the stigma. Self-efficacy motivates individuals to adopt positive

behaviors in response to illness. Individuals with high self-efficacy are more likely to proactively seek treatment, participate in a recovery program, and adhere to it, behaviors that can help to improve disease status and reduce stigma (Li, 2018; Song, 2022; Viviana, Cindy, Evelyn, Kennedy, & Ross, 2017).

Related studies have shown that self-efficacy and stigma are negatively correlated. In a study of nasopharyngeal cancer survivors in China, stigma was significantly negatively correlated with self-efficacy ($r = -0.295$, $p < 0.001$) (Yan et al., 2022). In a cross-sectional study examining stigma and its influences in lung cancer patients, a significant negative correlation was found between stigma and self-efficacy ($r = -0.424$, $< .001$) (Liu et al., 2020). In a Chinese study observing the effect of a whole-care care model on stigma and self-efficacy in patients undergoing radical cervical cancer surgery, it was found that improving patients' self-efficacy after radical cervical cancer surgery by providing professional care and guidance after the surgery could reduce patients' stigma (Lu et al., 2022a). In a meta-analysis examining the association of cancer stigma, pooled results obtained through a random effects model showed that increased cancer stigma was associated with poorer self-efficacy (z value, − 0.74, 95% CI, − 1.12, − 0.37) (Tang et al., 2022). However, in another meta-analysis of the correlates of stigma in breast cancer patients, a positive correlation was found between breast cancer stigma and self-efficacy (Tang et al., 2022). Therefore, self-efficacy will be one of selected factors in this study which will be associated with stigma in patients undergoing chemotherapy after cervical cancer surgery. The General Self-Efficacy Scale (GSES) and the CLCSS (for lung cancer patients) or the Sickness and Stigma Scale for Chronic Illnesses (SSCI) (for patients with a broader range of chronic illnesses) are the more commonly used measurement tools in studies related to sickness and stigma and self-efficacy. Of these, the GSES has been used as a tool for assessing self-efficacy in several areas of research due to its simplicity and wide range of applications. It is also the most compatible scale with the present study(Bandura, 1977; Schwarzer, Jerusalem, Weinman, Wright, & Johnston, 1995; Zhang & Schwarzer, 1995).

Illness perception

"Illness perception" refers to the cognitive evaluation of an individual, the psychological expression of illness, and personal thoughts when an individual's

illness state or health is threatened. Illness perception is multidimensional, subjective, dynamic, and affective. Illness perception encompasses multiple dimensions, such as the identity of the illness (i.e., symptom recognition), the timeline (the expected course of the illness), the consequences (the impact of the illness on one's life), the causes (the origins of the illness), and the controllability (the degree of control over the illness by the individual and by medical treatment). Together, these dimensions make up an individual's comprehensive illness perception. Illness perception is an individual's subjective understanding and feelings about an illness, which is influenced by a variety of factors such as individual experience, cultural background, and psychological state. Therefore, there may be significant differences in different individuals' illness perception of the same disease. Illness perception is not static but is constantly adjusted and modified with the development of the disease, the treatment process, and changes in the individual's psychological state. Illness perception is often accompanied by strong emotional experiences, such as anxiety, depression, and fear. These emotional responses not only affect the individual's evaluation of illness perception but may also have a significant impact on treatment adherence and recovery effects(Goyal, Sudhir, & Sharma, 2020; Hopman & Rijken, 2015; MA & ZHAO, 2020; Petrie & Weinman, 2006).

Deviations in illness perception, such as inaccurate understanding of the patient's condition and excessive pessimism about the prognosis of the disease, may lead to strong negative emotions, such as shame, low self-esteem, and fear. These negative emotions are an important part of stigma, and they can further exacerbate the patient's psychological burden and affect his or her mental health. Illness perception also includes how individuals compare themselves to others and how they perceive society's attitudes toward patients. Patients may be more likely to perceive discrimination and rejection from society when they perceive a gap between their condition and the generally accepted standard of “health”. Such perceptions of discrimination can exacerbate the patient's stigma and increase his or her isolation. Illness perception also affects patients' coping styles, i.e. how they face and deal with their illness. Positive illness perceptions help patients to adopt positive coping styles, such as seeking social support and actively participating in

treatment, thereby, reducing the stigma. On the contrary, negative illness perceptions may lead to coping styles such as avoidance and denial, which may further exacerbate the stigma(Fan et al., 2024; Moses, 2010; Yıldız & Koç, 2021; Zahraie, Amini, & Saebi, 2018).

Previous studies have shown a positive correlation between illness perception and stigma (Gökler-Danışman, 2017; Goyal, 2020). The stigma of cervical cancer patients is closely related to the illness perception level, and modify the illness perception ability can reduce the stigma of patients (Huang & Wei, 2021). Many patients have misconceptions about cervical cancer and believe it is associated with risky sexual behavior. They do not know the incidence and treatment of the disease, nor do they know the efficacy and prognosis of the disease and are more likely to suffer from external or self-discrimination, resulting in a sense of stigma (Chen et al., 2018). A qualitative study in Karnataka, India, suggests that misconceptions about cervical cancer are contributing to the stereotype of cervical cancer patients. They mistakenly believe that cervical cancer is contagious, punishing, and incurable (Nyblade et al., 2017). Another qualitative study conducted in Brazil found that women with cervical cancer were not only considered sick, but also dirty, lazy, and promiscuous. These disease perceptions of cervical cancer contribute to the stigmatization of patients with cervical cancer (Gregg, 2011). But there is also study show no correlation between illness perception and stigma (Yıldız, 2021).

The Brief Illness Perception Questionnaire (BIPQ) is most commonly used in the study of illness perception due to its simplicity and validity.The BIPQ is able to quickly collect information on patients' illness perception and has a moderate number of entries, which is easy for patients to understand and answer. In addition, the scoring system of the BIPQ is simple and straightforward, which helps researchers to analyze and interpret the data. Therefore, the BIPQ is a reliable and practical tool in assessing patients' illness perception (Basu & Poole, 2016; Broadbent, Petrie, Main, & Weinman, 2006; Broadbent et al., 2015). The BIPQ has also been widely used in previous studies of stigma and illness perception. The BIPQ is also the most appropriate scale for this study.

Self-esteem

Self-esteem is the degree to which patients receiving chemotherapy after cervical cancer surgery hold an accepting or rejecting attitude toward themselves. It is one of the characteristics of the self. Self-esteem is characterized as subjective, persistent, multidimensional and dynamic. Self-esteem is an individual's subjective feeling of self-image, which can be excessive or unreasonable. Each individual has a different evaluation of self-worth based on his or her own experiences and feelings. Self-esteem is usually an enduring personality trait that is not susceptible to fundamental change due to transient changes in external circumstances. However, it can also fluctuate depending on life experiences, social comparisons, and other factors. Self-esteem involves not only an individual's overall evaluation of self-worth, but also self-evaluation in specific domains (e.g., academic, occupational, interpersonal, etc.). Different domains of self-esteem may be independent of each other or may influence each other. Self-esteem is a dynamic psychological process that changes continuously with the accumulation of individual experience and cognitive development. Individuals can improve their self-esteem through positive self-adjustment and efforts (Petersen, 1965). Self-esteem is important to an individual's mental health and social adaptation, it is the cornerstone of mental health. It is also a booster of social adaptation, self-esteem affects an individual's social interaction and adaptability, and individuals with high self-esteem are more self-confident and proactive and can establish good interpersonal relationships and better integrate into society. It is also a driver of motivation and behavior (Leary & Baumeister, 2000; Smith & Mackie, 2007).

Individuals with high self-esteem are more able to deal positively with their disease condition and are not easily influenced by external discrimination and rejection. They believe that their value is not diminished by their illness, which reduces stigma. Individuals with higher levels of self-esteem usually have greater coping skills and can take positive steps to deal with the challenges and difficulties posed by their illness. They are more likely to seek professional treatment and support to improve their health and quality of life(Haimin, Xiangyan, Xiaojuan, Na, & Xingzhen, 2021; Hou et al., 2022; Zheng & Wang, 2018).

Previous research has shown a link between self-esteem and stigma in cancer patients, with patients with low self-esteem reporting stronger stigma than those with high self-esteem (Else-Quest et al., 2009; Liu et al., 2020; Pasmatzi et al., 2016). The results of a study on factors related to stigma in cancer patients showed that higher stigma was associated with lower self-esteem (Huang et al., 2021). The results of the correlation analysis between the level of self-esteem and the degree of morbidity stigma in patients with malignancy showed that there was a mild negative correlation between the level of self-esteem of patients and their degree of morbidity stigma, and the higher the level of self-esteem of patients indicated the higher the degree of self-worth and self-acceptance of patients and the lower the degree of morbidity stigma, and the difference was statistically significant ($r = -0.141$, $p<0.001$) (Zhang, 2019).A cross-sectional study of lung cancer also found a negative association between self-esteem and stigma（$r = -0.487$, $p<0.001$）(Liu et al., 2020). In a cross-sectional study analyzing the factors influencing stereotypes in patients after breast cancer surgery, an association was found between stereotypes and self-esteem in patients after breast cancer surgery (Haimin et al., 2021). Because the occurrence of cervical cancer is associated with HPV infection, sexual contact is one of the ways to spread HPV, and the virus is contagious to a certain extent. Second, radical cervical surgery removes a woman's reproductive organs. This causes these patients to lose their femininity and reproductive function. Sufferers may feel that they are being discriminated against because they have the disease, resulting in feelings of inferiority (Li et al., 2016; Li & Liu, 2019). However, fewer studies have previously explored the relationship between stigma and self-esteem in patients undergoing chemotherapy for postoperative cervical cancer, and this will be explored further in this study.

The Rosenberg Self-Esteem Scale (SES) is widely used in the fields of psychology, education, and sociology, and is one of the classic tools for studying self-esteem. The Rosenberg Self-Esteem Scale (SES) has been used in most of the previous studies on stigma and self-esteem. It is also matched with this study.

Social support

Social support is defined as any combination of information, material, emotional, and evaluative support from family or medical professionals (Queenan et al., 2010).

Social support is diverse and comes from many aspects, including family, relatives, friends, colleagues, community, government, etc. The form and content of support provided by these support subjects are also different, such as emotional support, information support, tool support, etc. It is also subjective and objective, including objective and practical support, such as material assistance and direct services, as well as subjective experience support, that is, the respect, support and understanding felt by the individual. Social support is also dynamic and changes as the individual's living environment and needs change. For example, when facing major life events, individuals may need more social support to cope with stress. Social support is also reciprocal, that is, while individuals receive support, they are also providing support to others. This mutual support helps strengthen social connections and a sense of belonging (Haber, Cohen, Lucas, & Baltes, 2007; Lakey & Cassady, 1990; Procidano & Smith, 1997).

Previous research has shown a link between social support and stigma in cancer patients, with patients with poor social support reporting stronger stigma than those with high social support. In a study of stigma and factors influencing gynecologic malignancy patients, the results of Pearson correlation analysis showed that the stigma score of gynecologic nausea patients was negatively correlated with the total social support score ($r=-0.291$, $p<0.01$) (Liu, 2022). A descriptive cross-sectional study in Korea showed that stigma had the strongest association with social support ($r = -0.49$, $p<0.001$, 95% CI [–0.34, -0.18]) (Shrestha et al., 2020). In a qualitative study of black, Latino, and Chinese American cervical cancer survivors, it was also found that the more social support received, the lower the symptoms of stigma (Coleman et al., 2022). Therefore, it was necessary to explore the correlation between social support and stigma in patients undergoing postoperative chemotherapy for cervical cancer, so social support was used as an independent variable in this study.

The Social Support Rating Scale (SSRS) and the Multidimensional Scale of Perceived Social Support (MSPSS) are commonly used scales in research on the correlation between stigma and social support. Both MSPSS and SSRS have been revised and improved many times and have high reliability and validity. However, due to differences in assessment focus and purpose, their applicability may also differ.

The MSPSS is more suitable for assessing an individual's subjective perception and understanding of social support, while the SSRS may be more suitable for assessing an individual's actual position and status in the social support network. In previous studies studying stigma and social support, MSPSS was mostly used. MSPSS is also more suitable for this study(Dambi et al., 2018; Eker & Arkar, 1995; Kazarian & McCabe, 1991).

Summary

Although patients with cervical cancer can prolong their survival through radical surgery and postoperative combined radiotherapy and chemotherapy, radical surgery and radiotherapy have many side effects. Radical surgery makes patients lose female organs, and radiotherapy can cause many adverse effects, such as nausea, vomiting, hair loss, changes in skin condition, and sometimes affect the relationship between couples because of these. All of these can increase the stigma of patients who receive chemotherapy after cervical cancer surgery.

In the context of Chinese culture and national conditions, stigma has a profound impact on postoperative chemotherapy patients with cervical cancer. This effect is not only on the psychological level, but also on their socialization, family relationships, and attitudes toward treatment. From the psychological aspects, firstly, the sense of shame stems from the negative stereotypes and misconceptions about the disease in society. In China, “cancer” is often closely associated with “death”, and this concept is deeply rooted, leading cervical cancer patients and their families to feel a strong sense of shame and fear when facing the disease. Patients may feel inferior and depressed because of cancer, or even believe that they “deserve” the disease, and this self-depreciating state of mind will further aggravate their psychological burden. From the socialization, the sense of shame also leads to social rejection and discrimination of cervical cancer patients. In Chinese culture, the concept of “face” is very important, and many people worry that they will lose social respect and recognition if they are labeled as “cancer patients”. Therefore, many patients choose to hide their illness, avoid communication with others, and even refuse to participate in social activities. This isolation not only aggravates the patients' sense of loneliness, but also may affect their motivation for treatment and recovery. And in family

relationships, stigma may also lead to conflicts and contradictions. Patients may blame themselves for fear of becoming a burden to the family, while family members may also experience anxiety and irritability due to fear and lack of understanding of the disease. These negative emotions, if not communicated and channeled in a timely and effective manner, may disrupt family harmony and affect the patient's therapeutic environment and recovery process.

Although previous studies have shown evidence of a correlation between stigma and self-efficacy, illness perception, self-esteem, and social support. However, few studies in China have explored the related factors of stigma in patients undergoing postoperative chemotherapy for cervical cancer. To address this gap, this study selects self-efficacy, disease perception, self-esteem and social support as independent variables, stigma as dependent variables, and cervical cancer postoperative chemotherapy patients as the target population to investigate the correlation between the independent and dependent variables. At the same time, this study will help nursing staff understand the current status of stigma and its associated factors in postoperative chemotherapy patients with cervical cancer and develop targeted nursing preventive measures and interventions based on these to reduce the stigma of postoperative chemotherapy patients with cervical cancer.

CHAPTER 3
METHODOLOGY

This chapter presents the methodology of the study which include research design, research setting, population and sampling, research instruments, validity and reliability of instruments, ethical considerations, data collection procedures, and data analysis.

Research Design

A descriptive correlational research design was used to explore stigma and its relationships with self-efficacy, illness perception, self-esteem, and social support among patients with cervical cancer having hysterectomy.

Research setting

This study was conducted in the First Hospital of Wenzhou Medical University. There are about 30-40 patients with monthly chemotherapy after cervical cancer surgery in the gynecology department.

The average length of stay for chemotherapy patients is 1-3 days, and the average chemotherapy cycle is 21 days. On the first day of admission, the researcher will collect the patient's medical history and physical examination. After the physician evaluates the patient's blood test results and prescribes chemotherapy drugs, the patient begins receiving chemotherapy. The nurse will measure the patient's vital signs and also do some health education to tell the patient what to consider for chemotherapy. The researcher will ask the patient to answer the questionnaire for this study before the patient's chemotherapy.

Population and sample

Population

The population in this study encompassed of adult patients with cervical cancer having chemotherapy after hysterectomy for cervical cancer, who were outpatient or inpatient in the Gynecology Oncology department in the First Affiliated

Hospital of Wenzhou Medical University. Patients who have received chemotherapy at least once will feel the effects of chemotherapy on them and be able to better express how they feel about receiving chemotherapy after surgery. This study specifically focuses on adult patients whose age ranged from 18-60 years old. Since this possibly related to HPV infection, which is usually sexually transmitted. In China, fewer people under the age of 18 have sexual relations**,** therefore, the chance of having cervical cancer is lower. Therefore, people above 18 years old are chosen. The higher stigma is found in those women aged 18 and above since they are in reproductive stage and sexual desires. In addition, post-operative chemotherapy for cervical cancer will affect fertility and sexual life between couples (H. Chen, Li, & Mao, 2018). The loss of the uterus and the effects of chemotherapy in women between the ages of 15 and 60 can exacerbate the symptoms of menopause and also cause them to have a strong sense of stigma (Rong et al.,2015; Lianhua et al.,2019). Most patients' bodies need some time to recover and observe after cervical cancer surgery to ensure that they can tolerate the side effects of chemotherapy. Therefore, chemotherapy is usually started within 3-8 weeks after surgery. The number of sessions of post-surgical chemotherapy for cervical cancer usually needs to be decided according to the patient's specific situation, including the stage of the cancer, the patient's physical condition, the effect of the surgery and the presence of high-risk factors. Generally speaking, post-surgery chemotherapy for cervical cancer will be carried out 4-6 times, with each course 21 days apart.

Sample

The sample in this study was recruited from the postoperative cervical cancer patients during chemotherapy, who were hospitalized in the gynecology ward in the First Affiliated Hospital of Wenzhou Medical University in accordance with the following inclusion criteria:

1. Adult participants whose age ranged from 18- to 60-year-old.
2. After hysterectomy for cervical cancer
3. Received at least one cycle of chemotherapy.
4. Able to read and write in Chinese and have the comprehension to answer the questions

The exclusion criteria included:

1.History of psychiatric disorders from medical record

2. Having recurrent or metastatic cancer

Sample size

The sample size in this study was calculated by using the G*Power 3.1.9.7 program (Faul et al., 2007). The researcher will test the relationship between the stigma and each independent variable. Therefore, the correlation bivariate normal model will be chosen as type of statistical test in G*Power program with a significance level of .05, statistical power of .80, and according to literature review, the effect size fluctuates between .22 and .28 (S. J. Peterson & Foley, 2021; Serdar, Cihan, Yücel, & Serdar, 2021), so the researcher will choose estimated moderate effect size of .25. Based on this formula, 120 subjects were needed. 10% was added to the sample size, considering a possible 10% of incomplete rate (Faul, Erdfelder, Buchner, & Lang, 2009). Therefore, a total of 132 participants was required for this study.

Sampling technique

In this study, a simple random sampling method was used to recruit the sample, and each participant has an equal chance to be selected. Firstly, the researcher used Excel software to assign them numbers and randomly selected 50% of these patients as a sample through the generated random numbers. The researcher explained the basic information of this study to postoperative cervical cancer patients who are hospitalized for chemotherapy. If they accepted to participate in this study, researcher checked the patients who meet the inclusion criteria. Before collecting data, the researcher asked the patients for their consent to participate in this study and ask them sign an informed consent form. About 4~6 patients were recruited in each day. Data collection was continued till required number of 132 participants are obtained.

Research instruments

Data was collected using the Demographic Questionnaire, Social Impact Scale (SIS), General Self Efficacy Scale (GSES), Brief Illness Perception Questionnaire (BIPQ), Rosenberg Self-Esteem Scale (RSES) and Multidimensional Scale of Perceived Social Support (MSPSS), the details of the questionnaires are as follows:

Demographic questionnaire

This part was developed by the researcher. Demographic characteristics of the participants was assessed by asking participants ' information, including age, gender, marital status, education, employment status, body mass index (BMI), primary tumor site, cancer stage, cumulative dose, and comorbidity.

Social Impact Scale (SIS)

In this study, the Social Impact Scale (SIS) was used to evaluate the stigma of patients who received chemotherapy after radical cervical cancer surgery. The scale was developed by Fife et al. in 2000 to measure stigma among patients with cancer or HIV infection or AIDS (Fife & Wright, 2000). This scale was translated into Chinese by Pan et al. (2007). The Chinese version of the SIS has been tested and confirmed to have good reliability and usefulness for the assessment of stigma in Chinese cancer patients. Currently, the Chinese version of the SIS is widely used by Chinese scholars to measure the stigma of cervical cancer patients (Yu et al., 2021). The Cronbach's alpha reliability coefficient for the subscales of the SIS ranged from 0.85 to 0.90. (Pan et al., 2007).

The scale includes 4 dimensions of: social exclusion (9 items), economic insecurity (3 items), internalized shame (5 items), and social isolation (7 items), with a total of 24 items. The items were scored on a 4-point Likert scale, with 4 = strongly agree, 3 = agree, 2 = disagree, and 1 = strongly disagree. The total score of the scale is sum of the scores of each item, with a total score of 24 to 96. The higher scores indicate the higher sense of stigma. Social exclusion (items 3, 5, 6, 8, 9, 10, 15, 21, 22) measures the discrimination that patients experience in social life and work, including patients' own experiences of embarrassment and disrespect, dissatisfaction, and rejection from others, the possible score is 9-36. Economic insecurity (items 1, 2, 4) measures patients' experiences of economic discrimination measures the consequences of discrimination in the workplace, which is related to job instability and insufficient income, the possible score is 3-12. Internalized shame (items 11, 12, 13, 14, 19) mainly used to assess the internalized psychology of patients due to the existence of economic discrimination and social exclusion in their lives, such as feeling isolated from healthy people, feeling self-blame for their own illnesses, and worrying about disease exposure, etc. , the possible score is 5-20. Social isolation

(items 7, 16, 17, 18, 20, 23, 24) measures patients' feelings of loneliness and helplessness; social isolation measures patients' feelings of loneliness and helplessness, the possible score is 7-28.(Yanqing Li et al., 2024; Pan, Chung, Fife, & Hsiung, 2007). Stigma can be categorized into three different degrees. Mild level (24-48 scores) of stigma can be characterized by the patient hiding or disguising their illness or condition and being less willing to mention or display it in front of others. They may avoid socializing for fear of being discriminated against or ostracized, or selectively share their condition with some people. Moderate level (48-72 scores) of stigma is more severe, and patients may feel low self-esteem, shame, and embarrassment, and even feelings of self-blame and self-guilt. They may avoid any situation where they might reveal their illness or physical condition. High level of stigma (72-96 scores) may have a serious impact on the patient's life and mental health. They may avoid socializing and daily activities, and even develop a tendency towards self-isolation and isolation (R. Li et al., 2016; Ying Li & Liu, 2019; Yu, Hu, Hu, Xu, & Yi, 2021).

General Self Efficacy Scale (GSES)

General Self Efficacy Scale (GSES) is a questionnaire developed by German scholars Schwarzer et al. to examine the general self-efficacy of individuals based on Bandura's self-efficacy theory (Schwarzer et al., 1995). GSES has been translated into at least 25 languages and is widely used internationally. The Chinese version was revised by Zhang in 1995 (Zhang & Schwarzer, 1995). The good reliability and validity of the scale and its translated version have been confirmed in previous studies (Clavijo et al., 2020; Furukawa et al., 1993; Monticone et al., 2009; Wang et al., 2001). The internal consistency coefficient of the GSES was 0.87. The reliability of the retest at an interval of about 10 days was 0.83 and the half reliability was 0.90. These data indicate that the GSES is a very reliable scale (Kang, Zhongfeng, et al., 2001).

The scale has one dimension, consisting of 10 items, and is scored on a 4-point Likert scale. The total scale score ranges from 10 to 40; higher scores indicate a stronger sense of self-efficacy for the individual.

Rosenberg Self-Esteem Scale (RSES)

The Rosenberg Self-Esteem Scale (RSES) was developed by Rosenberg (Rosenberg, 1965). It has the advantages of high reliability, simplicity, and convenience, making it the most widely used self-esteem instrument at present. The Cronbach's alpha reliability coefficient for the Chinese version of the RSES is 0.84(Shuang & Xiangkui, 2018)**.** In a study of quality of life in liver cancer showed a Cronbach′s α coefficient of >0.77 for RSES (Z. Qin et al., 2021).

The SES consists of 10 items scored on a 4-point Likert scale, with 1 indicating very compliant, 2 indicating compliant, 3 indicating non-compliant, and 4 indicating very non-compliant, and a total score range of 10 to 40, with the higher scores show the higher self-esteem level.

Brief Illness Perception Questionnaire (BIPQ)

Brief Illness Perception Questionnaire (BIPQ), a measure of illness perceptions, developed by Broadbent et al. (Broadbent et al., 2006). It can be used to investigate the perception ratings of patients with different diseases about their own illness. The Cronbach's alpha reliability coefficient of the Chinese version of the BIPQ was 0.77. The coefficient is greater than 0.6, which indicates that the scale has good internal reliability. In addition, the folded half reliability of the scale was 0.81, indicating that the Chinese version of the BIPQ has good internal consistency (Yaqi et al., 2015).

The items include: affect, duration, personal control, therapeutic control, symptom recognition, concern, understanding, emotional response, and etiology. The first 8 items were scored on an 11-point scale from 0 to 10, with higher scores indicating clearer feelings and stronger cognitive beliefs about the symptoms and phenomena described in the questions. Items 3, 4, and 7 were reverse scored by summing the scores of the eight items. The questionnaire is simple, clear, easy to understand, and suitable for quick surveys with large samples, and has been published on the official website in 22 different languages, including the Chinese version for the corresponding countries. (Bergen, 2012).

The higher the score, the more serious the patient perceived the threat of the disease（Broadbent, 2006）. The 9th item was an open-ended question in which the

participant listed the 3 most important factors that he/she believed to be the cause of the disease.

The Multidimensional Scale of Perceived Social Support (MSPSS)

The Multidimensional Scale of Perceived Social Support (MSPSS) is one of most widely used social support scales in recent years. It was developed by Zimet, Dahlem, Zimet, and Farley in 1988 and consists of 12 items that measure the social support individuals receive from family, friends, and significant others.

The scale has been widely used both at home and abroad. Dambi et al. retrieved 22 translations into different languages in 70 studies, such as the female Arabic version in the United States, the Arabic version in Lebanon, the French version in France, the Hausa version in Nigeria, the Korean version in South Korea, the Malay version in Malaysia, and the Spanish version in the United States and Spain. And Pushkarev and other revised versions in Russian. The use of many translated versions shows the important role of the scale in the measurement of social support (Yang & Han, 2021). Chou introduced this scale into China and did a process of back translation (Chou, 2000). The Cronbach's alpha coefficient of the Chinese version of the MSPSS was 0.877, and the folded half reliability was 0.778, indicating that the scale has good internal consistency; the retest reliability was 0.735, indicating that the scale has good stability across time (Li et al., 2022).

The scale consists of 12 items and can be divided into three subscales: support from family (items 3, 4, 8 and 11), support from friends (items 6, 7, 9 and 12) and support from significant others (items 1, 2, 5 and 10), such as neighbours, professionals and medical staff. Patients were asked to rate each item on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). Total perceived social support scores ranged from 12 ~ 84, with higher scores being associated with higher social support (Dahlem et al., 1991).

Validity and Reliability

For validity testing, all the research instruments applied in this study were not tested for their validities since all of these instruments have already been used with Chinese population. They all are standardized instruments, and their validities have been established. The researcher used all these scales without any modification.

For the reliability of these instruments, the researcher tested them with 30 patients who have the same characteristics as participants. The instruments included the Social Impact Scale (SIS), Rosenberg Self-Esteem Scale (RSES), General Self Efficacy Scale (GSES), Brief Illness Perception Questionnaire (BIPQ) and Multidimensional Scale of Perceived Social Support (MSPSS). Cronbach's alpha of .80 is generally accepted for reliability test. All scales yielded acceptable reliabilities with the Cronbach's alpha coefficients of .900, .895, .883, .896, and .859 respectively.

Protection of human subjects

This study was conducted with respect to human rights. Human subject's approval was obtained from the Burapha University Ethics Committee on Human Research (BUU EC) as well as the Institution Review Board (IRB) of the First Affiliated Hospital of Wenzhou Medical University. IRB approval number were G-HS084/2566（BUU EC）and Clinical Research Ethics Review (2023) No. (230). In data collection process, all patients were informed carefully about the aims of the study and involvement procedure. The researcher ensured that informed consent was given to each patient who voluntary participate in this study prior to the start of the study, that a written informed consent form was signed before the patient enters any procedure in this study, and that the patient should have sufficient times to ask any questions before signing. The investigator explained the purpose of the study, the procedures, and answered any questions that the patients may have about the study in a manner appropriate to the patient's understanding. Patients' participation in the study is voluntary and they may withdraw at any time throughout the process, and their medical treatment and rights will not be affected. Researchers must protect the privacy of patients participating in the study, including clinical information and contact information of subjects. All forms were used to collect data are anonymous, participation in this study is not harmful to patients, and all data obtained from this study are treated in strict confidence. Once the data are punched on the statistical software, hard copy of the data will be securely treasured under lock and key. Similarly, the soft file will be saved in password protected computer. No unauthorized personals were not able to access to the data except researcher and thesis advisors.

Findings obtained from this study was reported as a group data without disclosing their names. The data will be destroyed after publication of the study results.

Data collection procedures

The data collection was carried out after the research protocol are approved by the Ethics Committee of Burapha University, Thailand and the First Affiliated Hospital of Wenzhou Medical University. After getting their permission, the researcher begun to recruit the sample, and the data collection was carried out by the researchers as follows:

1. After getting permission from the heads of gynecology department, the researcher met with the clinicians and nurses working at the department of gynecology department and radiochemotherapy department to ask permission and explained them regarding data collection procedure.

2. The researcher followed the registration record to find the eligible participants. Besides, researcher introduced herself to the potential research participants fulfilling the inclusion criteria.

3. The researcher recruited those participants who were willing and voluntary to take part in this study.

4. The researcher used simple random sampling technique to select the participants. The researcher randomly selected 5-10 patients based on the list in each day.

5. Data collection was conducted prior to the beginning of chemotherapy.

6. The researcher used unified instructions to explain in details the requirements for filling out the questionnaire, so that the respondents could fill it out independently after full understanding. The respondents completed the questionnaire as required. Some of the items in the general questionnaire were filled out by the investigators according to the medical records and self-selected subjects, all questionnaires were collected.

7. The participants were invited to answer the questionnaires in a separate interview room. The researcher explained participants about research purposes, method of collecting data, human protection, and asked for participation. Then participants were requested to sign in the consent form according to their willingness.

8. After obtaining participants' consents, the researcher distributed the questionnaires to the participants in order to gather data regarding demographic Questionnaire, Social Impact Scale (SIS), General Self Efficacy Scale (GSES), Brief Illness Perception Questionnaire (BIPQ), Rosenberg Self-Esteem Scale (RSES) and Multidimensional Scale of Perceived Social Support (MSPSS). For participants with mobile phones, they could also answer the questionnaires via wechat according to their preferences. If participants preferred to answer the questionnaires via wechat, the QR code were then created by the researcher and participants could able to scan the QR code to view the questionnaire. Those patients who don't have cell phones or don't want to use WeChat for questionnaires, the researcher explained how many questions are in the questionnaire and asked them to answer all the questions. It took about 30-40 minutes to complete these questionnaires.

10. Completed questionnaires were collected and saved by researcher.

11. This process was repeated until meeting the required sample size.

Data analyses

The data was entered into a statistical program and then analyzed. The alpha level of statistical significance was set at p value greater than .05. Data analyses were divided into three major parts as follows:

1. Descriptive statistics including frequency, percentage, range, mean, and standard deviation (*SD*) were used to describe demographic information, stigma, self-efficacy, illness perception, self-esteem, and social support.

2. The data was tested for normality, homoscedasticity, and outliers of the variables to verify the assumptions of Pearson's product moment correlation test.

3. Due to non-normal distribution of stigma, Spearman's rank correlation coefficient was employed to explore the association between stigma and self-efficacy, illness perception, self-esteem and social support.

4. For the strength of the size of correlation coefficient was based on （Grove et al. 2012）as follows:

Interpretation for the strength of correlation coefficients was presented in Table 1.

Table 1 Strength of the relationship

Correlation coefficients	Strength of relationship
.00 - .30	Weak relationship
.31 - .50	Moderate relationship
> .50	Strong relationship

Ethical Considerations

The Ethics Committee of Burapha University, Thailand (GHS062/2565) and the Second Affiliated Hospital of Wenzhou Medical University, China (2022-K-129-01) approved the study protocol. Participants were informed about the study objectives, benefits and risks, their rights, data extraction procedures, confidentiality, and their right to withdraw from the study until data collection was completed without consequences. All participants provided informed consent prior to data collection.

CHAPTER 4
RESULTS

This chapter presents the results of the data analysis about stigma and its related factors including self-efficacy, self-esteem, illness perception, and social support among 132 patients with cervical cancer having chemotherapy after hysterectomy in Wenzhou, China. The results are divided into three parts. The first part describes the demographic characteristics and health information of the participants. The second describes the study variables (self-efficacy, self-esteem, illness perception, social support). Finally, the third presents the relationships between stigma and self-efficacy, self-esteem, illness perception, social support in the population.

Part 1 Demographic characteristics and health information

Demographic characteristics

The demographic characteristics of the participants are showed in Table 2.

Table 2 Frequency, percentage, mean, and standard deviation of demographic characteristics of the participants (*n* =132)

Characteristics	Number (*n*)	Percentage (%)
Age(years)		
18-29	3	2.3
30-39	6	4.5
40-49	66	50
50-60	57	43.2
(*Mean*=47.7; *SD*=7.68; Min=21; Max=60)		

Table 2 (Continued)

Characteristics	Number (n)	Percentage (%)
Marital status		
Single	2	1.5
Married	105	79.5
Divorced	22	16.7
Widowed	3	2.3
Education level		
Primary School	4	3
Middle School	62	47
High School	57	43.2
University or above	9	6.8
Religious belief		
Yes	23	17.4
No	109	82.6
Employment status		
Employment	103	78
Unemployment	29	22

From Table 2, the result showed that age of the participants ranged from 18 to 60 years with a mean age of 47.7 years (*SD*=7.68). Of all the age groups, those aged 40-49 years were counted as half of the total participants (50%), followed by those aged 50-60 years (43.2%). Three young patients chose radical cervical cancer surgery because they were married with children and determined that they had no future need for children. They voluntarily requested hysterectomy because they or their families were concerned about recurrence. In terms of marital status, participants were predominantly married at 79.5%. In terms of education level, participants were predominantly middle and high school, accounting for 47% and 43.2% respectively.

In terms of religious beliefs, the majority of the participants had no religious beliefs (82.6%). In terms of employment status, 78% of the study participants were currently employed and 22.0% were unemployed.

Health information of the participants

Health information of this study participants is presented in Table 3

Table 3 Frequency, percentage, mean, and standard deviation of health information of the participants (n = 132)

Health information	Number (n)	Percentage (%)
Primary tumor site		
Cervix	132	100
Tumor stages		
Ib	3	2.3
IIa	53	40.1
IIb	59	44.7
IIIa	17	12.9
Body mass index (BMI)		
<18.5 (Underweight)	26	19.7
18.5-24.9 (Normal weight)	96	72.7
25-29.9 (Overweight)	8	6.1
≥30 (Obesity)	2	1.5
(*Mean* =22; *SD* =2.97; Min=14.85; Max=31.51)		
Cumulative dose of chemotherapy (mg/m2)		
(M= 1645.22; SD=641.02; Min=749.43; Max=3542.99)		

Table 3 (Continued)

Health information	Number (n)	Percentage (%)
Chemotherapy cycle		
3	35	26.5
4	50	37.9
5	41	31.1
6	5	3.8
7	1	0.7
Comorbid diseases		
No	102	77.3
Yes	30	22.7
High blood pressure	11	8.3
Diabetes	9	6.8
Cholecystitis	1	0.8
Pelvic inflammation	1	0.8
Gout	2	1.5
Fibroid tumor of the uterus	6	4.5

The results of the health information of the participants are shown in Table 3. All primary tumor sites of the participants were cervical, and the tumor stages were predominantly IIa and IIb. Classification of body mass index according to the WHO(WHO, 2004), 72.7% of the participants had normal BMI levels (BMI=18.5-24.9). In terms of chemotherapy cycles, 3-5 was predominant. In terms of comorbid diseases, 77.3% of the participants had no comorbid diseases, and the other 22.7% had comorbid diseases, of which hypertension and diabetes mellitus were predominant, accounting for 36.7% and 30%, respectively.

Part 2 Description of the study variables

Description of stigma

Stigma can be categorized into three different degrees or stages. Mild level of stigma can be characterized by the patient hiding or disguising their illness or condition and being less willing to mention or display it in front of others. They may avoid socializing for fear of being discriminated against or ostracized, or selectively share their condition with some people. Moderate level of stigma is more severe, and patients may feel low self-esteem, shame, and embarrassment, and even feelings of self-blame and self-guilt. They may avoid any situation where they might reveal their illness or physical condition. High stigma may have a serious impact on the patient's life and mental health. They may avoid socializing and daily activities, and even develop a tendency towards self-isolation and isolation (R. Li et al., 2016; Y. Li & Liu, 2019; Yu, Hu, Hu, Xu, & Yi, 2021).

Stigma of the participants are presented in Table 4.

Table 4 Frequency, percentage, mean and standard deviation of stigma (n =132).

Level of stigma	Possible score	Actual score	Number (n)	Percentage (%)
Mild	24-48	43-47	6	4.55
Moderate	48-72	49-71	28	21.21
High	72-96	73-94	98	74.24

(*Mean*=76.3; *SD*=10.84; Min=43; Max=94)

Table 5 Range, mean and standard deviation of stigma in each dimension.

Dimension	Range		M	SD
	Possible score	Actual score		
Social exclusion	9-36	15-34	27.48	3.82
Internalized shame	5-20	10-20	17.00	2.46
Economic insecurity	3-12	3-12	9.78	2.60
Social isolation	7-28	12-28	22.05	3.79

For Table 4, the result showed that the mean score of stigma was 76.3 (*SD*=10.84) which can be classified as a high level, and the majority of the participants was at high level of stigma with a percentage of 74.2%, while 21.2% of the participants were at a moderate level of stigma, and 4.5% had a mild level of stigma.

For Table 5, the result showed that the mean score of social exclusion was 27.48(*SD*=3.82), the mean score of internalized shame was 17.00(*SD*=2.46), the mean score of economic insecurity was 9.78(*SD*=2.60), the mean score of social isolation was 22.05(*SD*=3.79). The higher scores indicate the higher sense of stigma. The scores were all higher, representing the participants' social exclusion, internalized shame, economic insecurity and social isolation are negative.

Description of factors related to Stigma

The descriptions of factors related to stigma which include seif-efficacy, self-esteem, Illness perception, and social support were described in Table 6.

Table 6 Range, mean, standard deviation of stigma's related factors (n =132)

Variables	Range		M	SD
	Possible score	Actual score		
Self-Efficacy	10-40	10-38	18.73	7.78
Self-Esteem	10-40	10-37	16.69	5.92
Illness Perception	0-80	16-76	50.45	16
Social support	12-84	12-66	31.46	16.72
Family	4-28	3-22	11.16	6.32
Friends	4-28	3-22	9.98	4.98
Significant other	4-28	4-22	10.32	5.92

As the results are shown in Table 6, for the General Self-Efficacy, the range of possible scores was 10-40, the range of actual scores was 10-38, and the mean score was 18.73 (*SD* = 7.78). From the self-esteem, the range of possible scores was 10-40, the range of actual scores was 10-37, and the mean score was 16.69 (*SD* = 5.92). In terms of the brief illness perception, the possible scoring range was 0-80, the actual scoring range was 16-76, and the mean score was 50.45 (*SD*=16.00). In terms of the social support, the possible scoring range was 12-84, the actual scoring range was 12-66, and the mean score was 31.46 (*SD*=16.72). The possible scoring range for family support was 4-28 and the actual scoring range was 3-24, with a mean score of 11.16 (*SD*=6.32); the possible scoring range for friend support was 4-28 and the actual scoring range was 3-22, with a mean score of 9.98 (*SD*=4.98); and the possible scoring range for other factors was 4-28 and the actual scoring range was 4-22, with a mean score of 10.32 (*SD*=5.92).

Part 3 Relationships between Self Efficacy, Self-Esteem, Illness Perception, Social support, and stigma

Due to non-normal distributions of stigma, a Spearman's correlation was used to determine the relationship between stigma and general self-efficacy, self-esteem, illness perception, social support. The results were presented in Table 6

Table 7 Relationships between self -efficacy, self-esteem, illness perception, social support, and stigma

Variables	**Correlation coefficient (r)**
Self-Efficacy	-.085*
Self-Esteem	-.158*
Illness Perception	-.254**
Social support	-.238**

Note: *=$p<0.05$, **=$p<0.01$

The results of relationship between variables and stigma are presented in Table 7 Self-efficacy, self-esteem, illness perception, social support had all negatively correlated with stigma (r = -.085, r = -.158, r = -.254, r = -.238, respectively) with significant p value < .05. All associations indicate weak relationships.

CHAPTER 5
CONCLUSION AND DISCUSSION

This chapter delineates a summary and the discussion of the study results, conclusion, implication, and recommendation for the future research.

Summary of the study

The purpose of this study was to describe stigma and to determine the relationship between self-efficacy, self-esteem, illness perception, social support, and stigma among postoperative chemotherapy patients with cervical cancer Wenzhou, China. The identity-threat model of stigma served as the conceptual framework to guide this study. A total of 132 participants were recruited from the gynecology inpatient and outpatient departments of the First Affiliated Hospital of Wenzhou Medical University using a random sampling technique. Data was collected by self-reported questionnaires which include Demographic questionnaire, Social Impact Scale (SIS), Rosenberg Self-Esteem Scale (RSES), General Self Efficacy Scale (GSES), Brief Illness Perception Questionnaire (BIPQ) and The Multidimensional Scale of Perceived Social Support (MSPSS). The reliability of all questionnaires being good, the consistency and stability of the questionnaires were high. the Cronbach's coefficient alpha was .900, .883, .895, .896, and .859 respectively.

The results of the study showed that the age of the participants ranged from 18 to 60 years with a mean age of 47.7 years (*SD*=7.68). Of all the age groups, the highest number of respondents (50%) were in the age group of 40-49 years. In terms of marital status, 79.5% were married. For educational attainment, respondents were mainly in middle school and high school, accounting for 47% and 43.2% respectively. According to religious beliefs found in this study, 82.6% of the respondents had no religious beliefs. For employment status, 78% of the respondents were currently employed and 22% were unemployed.

Regarding health-related information, all primary tumor sites of the participants were cervical, and the tumor stages were predominantly IIa and IIb. 72.7% of the participants had normal BMI levels (BMI=18.5-24.9). Based on

chemotherapy cycles, 3-5 cycles was predominant. In terms of comorbid diseases, 77.3% of the participants had no comorbid diseases, and the other 22.7% had comorbid diseases, of which hypertension and diabetes mellitus were predominant, accounting for 36.7% and 30%, respectively.

The mean score of stigma was 76.3 (*SD*=10.84), which indicated that they have a high stigma. The mean score of self-efficacy was 18.73 (*SD* = 7.78). For self-esteem, mean score was 16.69 (*SD* = 5.92). Mean score of illness perception was 50.45 (*SD*=16), which indicates their low self-efficacy, low self-esteem, and poor illness perception. For the social support, the mean score was 31.46 (*SD*=16.72). They had a moderate social support from family subscale, while they have a mild support from friends' subscale and significant others subscale.

There was a negative significant correlation between self-efficacy, self-esteem, Illness Perception, social support, and stigma (r = -.085, r = -.158, r = -.254, r = -.238, with $p < 0.05$, respectively).

Based on the identity-threat model of stigma (Major & O'Brien, 2005), this model assumes that having a mutually agreeable devalued social identity (stigma) increases a person's exposure to potentially stressful (identity threatening) situations. Stigma is related to individual and external factors. Individual factors in this model refer to collective representations and personal characteristics. External factors in this model refer to situational cues. In this study, self-efficacy and self-esteem represent personal characteristics. Illness perception represents collective representations. Social support represents situational cues.

Discussion

The findings were discussed based on the objectives of this study. The first objective was to describe the stigma among cervical cancer patients receiving chemotherapy after surgery and the second was to determine the relationships between self-efficacy, illness-perception, self-esteem, social support, and stigma in cervical cancer patients receiving chemotherapy after surgery.

Stigma

In this study, 100% of the participants reported stigma. The mean score of stigma among patients with cervical cancer having chemotherapy after hysterectomy

was 76.3 (SD=10.84), which was at high level. Majority of participants (74.2%) had high levels of stigma, 21.2% had moderate levels of stigma, and 4.5% had mild levels. In a previous study(Y. Chen, Chen, Huang, Ke, & Wu, 2022), the researchers found that patients with postoperative chemotherapy for cervical cancer had a stigma score of 69.89 (*SD* =6.58), which was at a moderate to severe. In another study (Min & ChunXia, 2017), the researchers found that the prevalence of stigma in patients after radical cervical cancer surgery was 100 % and the stigma scores were high, the total score was 58.05(*SD* =16.16), with moderate to severe levels mainly. Bai and Li (Bai & Li, 2019) found that among 180 of the patients after radical cervical cancer had a stigma score of 68.09 (*SD* =12.15), which was at a moderate level. In conclusion, patients with cervical cancer having chemotherapy after hysterectomy have a high prevalence of stigma, and participants in this study reported relatively severe levels of stigma.

In this study, 50% of the participants were between the ages of 40-49 year while 43.2% were between the ages of 50 and 60. That is, almost all of them are in middle adulthood and in the period or working. Middle adulthood refers to the period of the lifespan between early adulthood and late adulthood. The most common age definition is from 40-65 (Modica, 2021). The global average age at diagnosis of cervical cancer is 53 years, ranging from 44 to 68 years (Arbyn et al., 2020). In several previous studies, it has been shown that the younger the age, the greater the sense of stigma (Bai & Li, 2019; H. Chen, Li, & Mao, 2018; R. Li et al., 2016; Liu, 2021; Min & ChunXia, 2017). On the one hand, young patients may suffer from low self-esteem because of the loss of fertility due to treatment and other factors, and worry that this may affect the relationship between couples and family well-being (Liu, 2021; Min & ChunXia, 2017; Yu et al., 2021). Patients aged <50 years have a heavier social role task and are more susceptible to external influences assigned by society and others (Y. Chen et al., 2022). In addition to this, relatively young patients are less able to cope with life and emotional experiences (Li et al., 2016; Lianhua & Xiaodan, 2019).

In this study, 79.5% of the participants were married. As the participants are still mainly between 40-49 years old. Women in this age group were originally still fertile. But after undergoing radical cervical cancer surgery, they lost their uterus. It

had a big impact on them. First, they lose their reproductive function, it will hit them hard (Yu et al., 2021). Other than that, after radical cervical cancer treatment, patients may experience a variety of adverse phenomena, including vaginal narrowing, shortening or loss of elasticity, as well as endocrine changes, leading to a series of physical symptoms. So married patients worry about the relationship between the couple (Lianhua & Xiaodan, 2019). However, there are a few previous studies that have concluded that psychological support from spouses in married patients reduces their stigma (Li et al., 2016; Yu et al., 2021).

In this study, half of the participants had only received education below the middle school level. Only 6.8% have received education above the university level. It is obvious that their lower level of education leads to a higher incidence of stigma. This is consistent with the results of a couple of previous studies. These studies found that patients with low education had a higher sense of stigma, and the reasons considered may be that patients with high education have better adaptive ability to handle interpersonal relationships and improve their state of mind, patients with high education have a higher level of perception of the disease than patients with low education and have better understanding and cognitive ability, and patients with high education have higher financial income and less financial stress (Min & ChunXia, 2017; Yu et al., 2021). However, other studies have found that patients with a higher level of education have a stronger sense of stigma. Patients with a higher level of education pay more attention to their own image and demand a higher standard of self-needs, thus creating an obvious sense of stigma (Chen et al., 2022; Li et al., 2016).

In this study, only 17.4% of the participants were in religious affiliation. Religious beliefs may help patients to reduce anxiety, so that they feel confident in their health recovery and are able to face the uncertainty of the disease progression, thus coping positively and optimistically with stressful events related to the disease and reducing the negative impact of the stigma (Yıldırım et al., 2021). 78 % of the participants in this study were in employment. Some other similar studies have shown the level of stigma was higher among those who employed than among those who unemployed. Employed patients are eager to return to social life as soon as possible, should pay attention to their own image, usually can have a stronger sensitivity to

external reactions, and will amplify the words and deeds of others in social interactions towards themselves (Chen et al., 2018; Lianhua & Xiaodan, 2019).

Factors related to stigma

The findings of this study showed that stigma was negatively correlated with self-efficacy, self-esteem, illness perception, and social support among patients with cervical cancer having chemotherapy after surgery in Wenzhou, China. The above results are in line with the objective of this study, which will be discussed as following below.

Self-efficacy

In consistent with the hypothesis of the study, self-efficacy is negatively associated with stigma among patients with cervical cancer having chemotherapy after surgery in Wenzhou, China. This result was similar to previous studies which show that self-efficacy was negatively associated with stigma among patients with cancer (X. H. Liu, Zhong, Zhang, Cheng, & Bu, 2020; Lu et al., 2022; Tang et al., 2022; Yan, Fan, & Zhang, 2022). Stigma was negatively correlated with self-efficacy ($r = -.085$).

The relationship between self-efficacy and stigma can be explained by the identity threat model of stigma. Stigma can be seen as an identity threat. Self-efficacy as a personal characteristic is related to the degree of stigma. The lower the self-efficacy of the participants, the higher the sense of stigma (Liu et al., 2020; Lu et al., 2022; Tang et al., 2022; Yan et al., 2022). In this study, the mean score showed the participants had low level of self-efficacy. In the present study, the possible reason for the low level of self-efficacy may be related to the level of education as well as chemotherapy factors. Most of the sample in this study received middle and high school education. A small portion had received higher education. A high level of education has a positive effect on self-efficacy. In addition, chemotherapy is often accompanied by side effects such as fatigue, nausea, pain, and immune system suppression, and these physical discomforts may lead to a decrease in an individual's confidence in his or her ability to complete daily activities and cope with challenges. Chemotherapy can also lead to psychological problems such as anxiety and depression, and these emotional states can significantly affect self-efficacy. When in a poor psychological state, individuals are more likely to feel helpless and lose

confidence. All of these can cause an individual's perceived low self-efficacy. Cervical cancer patients, stimulated by the double stress of disease and surgical treatment, have lower confidence in treatment and are treatment and care are more dependent on healthcare professionals, and lack of self-determination capacity makes self-efficacy lower (Zheng & Pan, 2021; Zhou, 2019). Low self-efficacy can lead to changes in the patient's behavioral patterns, which can result in some negative emotions and perceptions leading to increased feelings of stigma (Li et al., 2016).

Self-esteem

In consistent with the hypothesis of the study, self-esteem is negatively associated with stigma among patients with cervical cancer having chemotherapy after surgery in Wenzhou, China. This result is consistent with many previous studies that reported self-esteem and stigma are negatively correlated, patients with low self-esteem reporting stronger stigma than those with high self-esteem (Huang, Yu, Wu, & Hu, 2021; Liu et al., 2020; Pasmatzi, Koulierakis, & Giaglis, 2016).

In the identity threat model of stigma, self-esteem as a personal characteristic is related to identity threat (stigma). In this study, the mean score of self-esteem among patients with cervical cancer having chemotherapy after surgery was 16.69 (*SD*=5.92), showed the participants had low self-esteem. The level of stigma was negatively correlated with self-esteem (r = -.158, $p < 0.05$). In the present study, the reason for lower levels of self-esteem may be age-related. Most of the samples were concentrated in the age range of 40-49 years. Some of the patients in this age group are not yet menopausal and radical cervical cancer surgery is their loss of uterus and this makes their self-esteem decrease. Also, most of them are married and they still have sexual needs and the disease and treatment can affect their sexual life. So patients may also have low self-esteem in the couple relationship. In addition to this, when chemotherapy causes bad moods and poor psychological status, individuals are more likely to feel a decrease in self-esteem.

Firstly, the occurrence of cervical cancer is related to human papilloma virus infection, and sexual contact is one of the ways to spread human papilloma virus, which is contagious. Secondly, radical cervical cancer surgery removes the female reproductive organs. This results in the loss of femininity and reproductive function in these patients. Patients may feel discriminated against because of the disease, which

may lead to low self-esteem. Patients can suffer from low self-esteem due to adverse effects during treatment, such as image disorders caused by the side effects of chemotherapy (Chen et al., 2022; Yu et al., 2021).

Illness perception

Based on the identity threat model of stigma, illness perception as collective representations related to identity threat. In this study, the mean score of illness perception among patients with cervical cancer having chemotherapy after surgery was 50.45 (*SD*=16) which is relatively high. Based on this score result, theoretically, illness perception should be positively correlated with stigma. Nevertheless, from the analysis of this study results, it was showed that the level of stigma was negatively correlated with illness perception (r = -.254, $p < 0.01$). The results are inconsistent with previous studies. Possible explanations might be that this perception may be affected by other factors such as the patients' health condition, their own believes and values or coping strategies that they employed to relieve their tension. These may lead to this opposite result to theory. In addition, it may be a reverse causal relationship towards stigma and this illness perception. Furthermore, the high illness perception scores represent the poor illness perception. Some of the patients with cervical cancer might misinterpreted their perception due to the point that they believe that it is associated with risky sexual behavior. They are unaware of the incidence and treatment of the disease, as well as its efficacy and prognosis, and are more susceptible to external or their own discrimination (Huang & Wei, 2021).

Social support

In consistent with the hypothesis of the study, social support is negatively associated with stigma among patients with cervical cancer having chemotherapy after surgery in Wenzhou, China. This result was consistent with many studies which found that social support was negatively associated with stigma (Coleman et al., 2022; Queenan, Feldman-Stewart, Brundage, & Groome, 2010; Shrestha, Mulmi, Phuyal, Thakur, & Siwakoti, 2020).

Based on the identity threat model of stigma, social support as situational cues s related to identity threat (stigma). In this study, the mean score of social support among patients with cervical cancer having chemotherapy after surgery was 31.46 (*SD*= 16.72), showed the participants had low level perceived social support.

The mean score of social support from family was 11.16 (*SD*=6.32), represents moderate level of family support. However, support from friends and significant others are both low levels. The level of stigma was negatively correlated with social support (r = -.238, $p < 0.01$). Families are the main source of social support for patients, but not all families provide adequate support. In particular, most of the samples have jobs, and the illness and treatment will affect the work and thus the family income, which will increase the economic pressure of other family members, and they may not be able to give adequate attention and support to patients due to work and life pressure or improper support methods, resulting in insufficient perceived social support of patients. In addition to family support, friends and support from other sources are an important part of the patient's social support system. However, due to the social barriers and stigma associated with the disease, patients may reduce socializing with friends and even avoid participating in community activities, resulting in a further loss of this social support.

Cervical cancer patients are often very concerned about what their family members or people around them think of them, and they are prone to guilt and self-blame due to the disease. Social support is an important pillar for cancer patients through the disease process and has a significant impact on health promotion and disease recovery (Li et al., 2016). Actively developing a positive social support network reduces the level of stigma in cervical cancer patients (Chen et al., 2018).

Conclusion

This study found that 132 of the patients with cervical cancer having chemotherapy after hysterectomy in Wenzhou, China reported high level of stigma. All factors examined including self-efficacy, illness-perception, self-esteem and social support were all negative associated with stigma.

Implications

Findings of the current study would be useful in the following areas:

1.Nursing practice

In terms of nursing practice, the findings of this study contribute to nursing staff's further understanding of the current status of stigma among patients with cervical cancer having chemotherapy after hysterectomy. Also, the findings of this

study can be used to develop nursing interventions aimed at reducing stigma in patients with cervical cancer having chemotherapy after hysterectomy by enhancing their self-efficacy, self-esteem, social support and modifying their illness perception,

2.Nursing education

For nursing education, results obtained from this study, would help nurse educators to incorporate the identity threat model of stigma to improve nursing students' knowledge about stigma as well as related factors correlated with stigma in patients with cervical cancer having chemotherapy after hysterectomy.

Recommendations for future research

1. This study is only established correlations between self-efficacy, illness-perception, self-esteem, social support and stigma, causality or predictive studies are recommended.

2. Additional related factors to stigma in patients with cervical cancer having chemotherapy after hysterectomy can be explored through the identity threat model of stigma.

3. Further intervention studies are needed to develop appropriate nursing interventions aimed at improving self-efficacy and self-esteem, modifying illness perception, and increasing social support. These would help reduce stigma among these patients.

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APPENDICES

APPENDIX A

Questionnaires in English and Chinese version

Part I: The Demographic Questionnaire

Participant code number:

Direction: Please read the questions in part 1 and part 2 carefully and give an honest answer.

Please choose the answer as follow by tick on the □ or write down your answers in the space provided.

Part I: General information

1.Age:

2.Gender: □Male □Female

3.Marital status : □ Single □ Married □ Divorced □ Widowed

4.Education level; □ Primary School □ Middle School □ High School □ University or above

5.Religious belief: □Yes □No

6.Employment status : □Employment □Unemployment (Including retirement, unemployment, etc)

Part II: Health Information (collected by the investigator from patient records)

1. Primary tumor site: Tumor stage:

2. Height: ____ m Weight: ____ kg

3. Cumulative dose of chemotherapy:

4. Chemotherapy cycle:

5. Accompanying diseases:

□ No

□ Yes (please specify the concomitant disease) :

Investigator's signature:

Evaluation Date:

Part II：Social Impact Scale（SIS）

For the following questions， Please circle the number that best corresponds to your views:

Item	strongly disagree	disagree	agree	strongly agree
1. My employer/co-workers have discriminated against me	1	2	3	4
2. Some people act as though I am less competent than usual	1	2	3	4
3. I feel I have been treated with less respect than usual by others	1	2	3	4
4. I feel others are concerned they could "catch" my illness through contact like a handshake or eating food I prepare	1	2	3	4
5. I feel others avoid me because of my illness	1	2	3	4
6. Some family members have rejected me because of my illness	1	2	3	4
7. I feel some friends have rejected me because of my illness	1	2	3	4
8. I encounter embarrassing situations as a result of my illness	1	2	3	4
9. Due to my illness otherseem to feel awkward and tense when they are around me	1	2	3	4
10. I have experienced financial hardship that has affected how I feel about myself	1	2	3	4
11. My job security has been affected by my illness	1	2	3	4
12. I have experienced financial hardship that has affected my relationship with others	1	2	3	4
13. I feel others think I am to blame for my illness	1	2	3	4
……	……	……	……	……

Item	strongly disagree	disagree	agree	strongly agree
……	……	……	……	……
……	……	……	……	……
……	……	……	……	……
……	……	……	……	……
……	……	……	……	……
20.I feel lonely more often than usual	1	2	3	4
21.Due to my illness, Ihave a sense of being unequal in my relationships with others	1	2	3	4
22.I feel less competent than I did before my illness	1	2	3	4
23.Due to my illness, Isometimes feel useless	1	2	3	4
24.Changes in my appearance have affected my social relationship	1	2	3	4

Part III：Rosenberg self-esteem scale(RSES)

Instructions：Below is a list of statement s dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement .

1. On the whole, I am satisfied with myself.

Strongly Agree Agree Disagree Strongly Disagree

2. At times I think I am no good at all.

Strongly Agree Agree Disagree Strongly Disagree

3. I feel that I have a number of good qualities.

Strongly Agree Agree Disagree Strongly Disagree

4. .....

5. .....

6. .....

7.....

8. .....

9. All in all, I am inclined to feel that I am a failure.

Strongly Agree Agree Disagree Strongly Disagree

10. I take a positive attitude toward myself.

Strongly Agree Agree Disagree Strongly Disagree

Part IV：The General Self-Efficacy Scale(GSES)

Please read through some of the descriptions below, there are four options after each description, please circle the one that best fits your situation based on a real situation.

1 = Not at all true 2 = Hardly true 3 = Moderately true 4 = Exactly true

1. I can always manage to solve difficult problems if I try hard enough.	1	2	3	4
2. If someone opposes me, I can find the means and ways to get what I want.	1	2	3	4
3. It is easy for me to stick to my aims and accomplish my goals.	1	2	3	4
……	…	…	…	…
……	…	…	…	…
……	…	…	…	…
……	…	…	…	…
……	…	…	…	…
9. If I am in trouble, I can usually think of a solution.	1	2	3	4
10. I can usually handle whatever comes my way.	1	2	3	4

Part V：The Brief Illness Perception Questionnaire（BIPQ）

For the following questions, please circle the number that best corresponds to your views:

1.How much does your illnessaffect your life?

0 1 2 3 4 5 6 7 8 9 10

no effect at all

severely affects my life

2.How long do you think your illness will continue?

0 1 2 3 4 5 6 7 8 9 10

a very short time

forever

3.....

4.....

5.....

6.....

7.How well do you feel you understand your illness?

0 1 2 3 4 5 6 7 8 9 10

don't understand at all

understand very clearly

8.How much does your illness affect you emotionally? (e.g. does it make you angry, scared, upset or depressed?

0 1 2 3 4 5 6 7 8 9 10

not at all affected emotionally

extremely affected emotionally

Part VI：Multidimensional Scale of Perceived Social Support (SPSS)

Instructions: We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

Circle the“1”, if you Very Strongly Disagree

Circle the“2”, if you Strongly Disagree

Circle the“3”, if you Mildly Disagree

Circle the“4”, if you are Neutral

Circle the“5”, if you Mildly Agree

Circle the“6”, if you Strongly Agree

Circle the“7”, if you Very Strongly Agree

	Very Strongly Disagree	**Strongly Disagree**	**Mildly Disagree**	**Neutral**	**Mildly Agree**	**Strongly Agree**	**Very Strongly Agree**
1.There is a special person who is around when I am in need.	1	2	3	4	5	6	7
2.There is a special person with whom I can share joys and sorrows.	1	2	3	4	5	6	7
3.My family really tries to help me.	1	2	3	4	5	6	7
4……	……	……	……	……	……	……	……
5……	……	……	……	……	……	……	……
6……	……	……	……	……	……	……	……
7……	……	……	……	……	……	……	……
8……	……	……	……	……	……	……	……
9……	……	……	……	……	……	……	……
10.There is a special person in my life who cares about my feelings.	1	2	3	4	5	6	7
11.My family is willing to help me make decisions.	1	2	3	4	5	6	7
12.I can talk about my problems with my friends.	1	2	3	4	5	6	7

第一部分：人口调查问卷

参与者代码编号：

注意:请仔细阅读第一部分和第二部分的问题，并诚实地回答。
请在□ 上打勾或在提供的空白处写下您的答案。

第一部分 ：一般资料

1.年龄:

2.性别:　　□男　□女

3.婚姻状况 ：　□单身　□已婚　□离婚　□丧偶

4.教育水平 ；　□小学　□中学　□高中　□ 大学及以上

5.是否有宗教信仰；　　□有　　□无

6.工作状况：　　□在职　　□不在职 (包括退休 、失业等)

第二部分: 健康信息(由研究者从患者记录中收集)

1.原发肿瘤部位:　　肿瘤分期 ：

2. 身高:___m　　体重: ____kg

3.化疗累积剂量:

4.化疗周期 ：

5.伴随疾病 ：

□没有

□有 (请说明是那种伴随疾病) ：

研究者签名：

评估日期：

第二部分：社会影响量表（SIS）

对于以下问题, 请圈选与您的观点最相符的数字：

	极为同意	同意	不同意	极不同意
1.我曾因财务困难, 而影响到我对自己的感受。	1	2	3	4
2.我的疾病影响我工作的稳定性。	1	2	3	4
3.我的老板或同事歧视我。	1	2	3	4
4.我经历过经济困难, 这影响了我和他人的关系。	1	2	3	4
5.有些人表现出好像我的能力比平时差。	1	2	3	4
6.我的疾病让我觉得我比平常更不受尊重。	1	2	3	4
7.我感觉自己被隔绝于健康人之外。	1	2	3	4
8.我感觉他人会担心因为和我的接触, 而感染了我的病, 如与我握手或吃我准备的食物。	1	2	3	4
9.我感觉别人因为我的病而回避我。	1	2	3	4
10.一些家人因为我的病而排拒我。	1	2	3	4
11.我觉得别人认为我生这病应该怪我自己。	1	2	3	4
12.我觉得我无法对别人坦承我的疾病。	1	2	3	4
13.我担心有人在没有我的允许下告知他人我的疾病。	1	2	3	4
……	…	…	…	…
……	…	…	…	…
……	…	…	…	…
……	…	…	…	…
……	…	…	…	…
……	…	…	…	…
20.我觉得我的能力比生病前还差。	1	2	3	4
21.因为我的病我遇到一些令我难堪的状况。	1	2	3	4
22.因为我的疾病, 别人在我周遭时似乎感到尴尬和紧张。	1	2	3	4
23.因为我的疾病, 有时候我觉得自己没有用。	1	2	3	4
24.我外观的改变已经影响我的社交关系。	1	2	3	4

第三部分：罗森伯格的自尊量表 （RSES）

说明:以下是一系列关于您对自己的总体感觉的陈述。请指出您对每项陈述的同意或不同意的程度.

1. 我认为自己是个有价值的人, 至少与别人不相上下。

非常同意　同意　不同意　非常不同意

2.我觉得我有许多优点。

非常同意　同意　不同意　非常不同意

3.总的来说, 我倾向于认为自己是一个失败者。

非常同意　同意　不同意　非常不同意

4……

5……

6……

7……

8……

9.有时我的确感到自己很没用。

非常同意　同意　不同意　非常不同意

10.有时我觉得自己一无是处。

非常同意　同意　不同意　非常不同意

第四部分：一般自我效能感量表（GSES）

请仔细阅读下面的一些描述，每个描述后有四个选项，请根据真实情况，圈出最符合您情况的一项。

1=完全不正确　2=尚算正确　3=多数正确　4=完全正确

1. 如果我尽力去做的话，我总是能够解决难题的。　1　2　3　4

2. 即使别人反对我，我仍有办法取得我所要的。　1　2　3　4

3. 对我来说，坚持理想和达成目标是轻而易举的。　1　2　3　4

……　… … … …

……　… … … …

……　… … … …

……　… … … …

……　… … … …

9.有麻烦的时候，我通常能想到一些应付的方法。　1　2　3　4

10.无论什么事在我身上发生，我都能够应付自如。　1　2　3　4

第五部分：简易疾病认知问卷（BIPQ）

对于下列问题, 请在与您的观点最相符的数字上划圈：

1. 您的疾病对您生活的影响有多大?

0 1 2 3 4 5 6 7 8 9 10

毫无影响 严重影响**我的生活**

2.**您**认为您的疾病将持续多长时间？

0 1 2 3 4 5 6 7 8 9 10

很短 **永**远时间

3……

4……

5……

6……

7.**您**觉得自己对自己的疾病了解多少？

0 1 2 3 4 5 6 7 8 9 10

毫不了解 **很清楚地了解**

8.**您的疾病**对您的情绪影响有多大？(**例如**，**是否**让你感到愤怒、害怕、不安或沮丧？)

0 1 2 3 4 5 6 7 8 9 10

毫无情绪**上的影响** **情**绪上非**常受影响**

第六部分：感知社会支持多维量表（MSPSS）

说明：我们想知道您对以下陈述的看法，请仔细阅读每项陈述，指出您对每项陈述的感受。

如果非常强烈不同意, 请圈选 "1"
如果强烈不同意, 请圈选"2"
如果您不同意, 请圈选"3"
如果您持中立态度, 请圈选 "4"
如果您稍微同意, 请圈选 "5"
如果您强烈同意, 请圈选 "6"
如果您非常强烈同意, 请圈选 "7"

	非常强烈不同意	强烈不同意	不同意	中立态度	稍微同意	强烈同意	非常强烈同意
1. 每当我有需要时, 我生命中有个 特别的人会出现帮我	1	2	3	4	5	6	7
2. 有个特别的人能让我分享快乐与悲伤	1	2	3	4	5	6	7
3. 我的家人真的很努力帮助我	1	2	3	4	5	6	7
4……	…	…	…	…	…	…	…
5……	…	…	…	…	…	…	…
6……	…	…	…	…	…	…	…
7……	…	…	…	…	…	…	…
8……	…	…	…	…	…	…	…
9……	…	…	…	…	…	…	…
10. 我生命中有个特别的人会关心我的 感受	1	2	3	4	5	6	7
11. 我的家人乐意帮我下决定	1	2	3	4	5	6	7
12. 我可以告诉我的朋友我的烦恼	1	2	3	4	5	6	7

APPENDIX B

Responses to Participant information sheet and consent form

Consent Form

Research Code: ……..

(Given by the Research Ethics Committee at Research and Innovation Administration Division, Burapha University)

Research Title: Factors related to stigma among patients with cervical cancer having chemotherapy after surgery

Date …….....….. Month …….....…… Year …….

Before signing the consent form for this research participation, I was provided the information about the purposes and the processes of the research in the participant information sheet, which the researcher, Miss Fanglin Wang has given to me. I have fully understood the preceding explanation and the researcher has undertaken to answer my questions willingly and without concealment to my satisfaction.

I voluntarily agree to participate in this research project. I understand that I can withdraw from this research project at any time without giving a reason, without its affecting any benefits that I am entitled to.

I have been given the explicit guarantees that my information will be kept confidential and will be shared only in the summary of research results. Disclosure of my information to the relevant authorities requires my permission.

I have read and fully understood the above statements in all respects and have signed this consent document willingly.

In the case that I cannot read or write, the researcher Miss Fanglin Wang has read the statement in the consent form to me until I fully understand it well. Therefore, I willingly signed or stamped my thumb on this consent form.

Participant's signature： ……

(……)

Researcher's signature： ……

(……)

Note: If the participant gave thumbprint as their consent, witness signature will be needed.

知情同意书

研究代码:

（由泰国东方大学人类伦理委员会办公室发布）

研究题目：宫颈癌术后化疗患者病耻感的相关因素

签署同意：日…….月…….年…….

在签署本次研究参与同意书之前，我在研究员王芳琳女士给我的参与者信息表中了解了本次研究的目的和过程。我已经完全理解了前面的解释，研究人员已经承诺愿意毫不隐瞒地回答我的问题，令我满意。

我自愿同意参加这个研究项目。我明白我可以在任何时候退出研究项目，而不需要给出任何理由，也不会影响我应得的任何利益。

我已经得到明确的保证，我的信息和身份将被保密，只会在研究结果总结中被分享。向有关部门披露我的个人信息需要得到我的许可。

本人已阅读并完全理解上述各项声明，并自愿签署本同意书。

在我无法阅读或书写的情况下，研究者王芳琳女士已经为我朗读了同意书中的声明，直到我完全理解为止。因此，我自愿在这份同意书上签字或盖章。

参与者签名:

研究人员签名:

注:如参加者按手印表示同意，则需证人签名。

APPENDIX D

Ethical approval letter and data collection letter

สำเนา

ที่ IRB3-114/2566

เอกสารรับรองผลการพิจารณาจริยธรรมการวิจัยในมนุษย์
มหาวิทยาลัยบูรพา

คณะกรรมการพิจารณาจริยธรรมการวิจัยในมนุษย์ มหาวิทยาลัยบูรพา ได้พิจารณาโครงการวิจัย

รหัสโครงการวิจัย : G-HS084/2566

โครงการวิจัยเรื่อง : Factors related to stigma among patients with cervical cancer having chemotherapy after surgery

หัวหน้าโครงการวิจัย : Ms.FANGLIN WANG

หน่วยงานที่สังกัด : คณะพยาบาลศาสตร์

อาจารย์ที่ปรึกษาโครงการหลัก (สารนิพนธ์/ งานนิพนธ์/ วิทยานิพนธ์/ ดุษฎีนิพนธ์) : รองศาสตราจารย์ ดร.ภรภัทร เฮงอุดมทรัพย์

หน่วยงานที่สังกัด : คณะพยาบาลศาสตร์

อาจารย์ที่ปรึกษาโครงการร่วม (สารนิพนธ์/ งานนิพนธ์/ วิทยานิพนธ์/ ดุษฎีนิพนธ์) : ผู้ช่วยศาสตราจารย์ ดร.ชุติมา ฉันทมิตรโอภาส

หน่วยงานที่สังกัด : คณะพยาบาลศาสตร์

วิธีพิจารณา : ☐ Exemption Determination ☐ Expedited Reviews ☑ Full Board

BUU Ethics Committee for Human Research has considered the following research protocol according to the ethical principles of human research in which the researchers respect human's right and honor, do not violate right and safety, and do no harms to the research participants.

Therefore, the research protocol is approved (See attached)

1. Form of Human Research Protocol Submission Version 3: 6 November 2023
2. Research Protocol Version 1: 22 August 2023
3. Participant Information Sheet Version 2: 18 October 2023
4. Informed Consent Form Version 1: 15 August 2023
5. Research Instruments Version 2: 18 October 2023
6. Others (if any) Version -: -

วันที่รับรอง : วันที่ 13 เดือน พฤศจิกายน พ.ศ. 2566

วันที่หมดอายุ : วันที่ 13 เดือน พฤศจิกายน พ.ศ. 2567

温州医科大学附属第一医院临床研究伦理委员会审查批件

（Review of Ethics Committee in Clinical Research (ECCR) of the First Affiliated Hospital of Wenzhou Medical University）

受理编号 Acceptance Number：KY2023-230　　批件号：临床研究伦审 Issuing Number（2023）第（230）号

项目名称 Project	宫颈癌术后化疗患者的病耻感的相关因素 Factors related to stigma among patients with cervical cancer having chemotherapy after surgery		
申办者 Applicant	温州医科大学附属第一医院	试验目的 Objective	临床科研 Clinical research
试验科室 Department	妇科		
试验项目负责人 Principal Investigator	胡燕、王芳琳		
审查方式和时间 Form and Date	☐ 会议审查 Review Conference，时间：_____ ☑ 快速审查 Fast track，时间：2023 年 9 月 28 日		
审查地点 Review Site	新院 1-4A22 会议室		
审查材料 Documents for Review	1、医学临床科研项目及伦理审查申请表，v1.0 版； 2、临床研究方案，v1.0 版，2023.9.3； 3、受试者知情同意书，v1.0 版，2023.9.17； 4、研究者团队成员目录（职责）； 5、主要研究者、团队成员简历及 GCP 证书，v1.0 版； 6、研究者责任声明； 7、CRF/临床观察表，v1.0 版。		
审查意见 Comments	根据国家卫健委《涉及人的生物医学研究伦理审查办法》(2016)、WMA《赫尔辛基宣言》和 CIOMS《人体生物医学研究国际道德指南》的伦理原则，经本伦理委员会审查，同意该项目开展。 According to the Regulations and Rules of "Ethical Reviews for Biomedical Research Involving Human Subjects" (2016)the National Health Commission of PRC , "Declaration of Helsinki" of WMA, and "International Ethical Guidelines for Human Biomedical Research" of CIOMS , the project was**approved**by **ECCR**.		
主任委员/副主任委员签字 Signature of the **ECCR** Chair	陈步华	签发日期 Date	2023.9.30
温州医科大学附属第一医院临床研究伦理委员会（盖章） Ethics Committee in Clinical Research of the First Affiliated Hospital of Wenzhou Medical University (Seal)			

附注（Note）：

1. 临床研究应在批准之日起1年内实施，逾期未实施，本批件自行废止。临床研究过程中将接受伦理委员会的跟踪审查，审查频度为自批准之日起每12个月一次。（伦理委员会有权根据临床试验实际开展情况改变跟踪审查频度）
   The clinical study shall be implemented within 1 year from the date of approval. If overdue, the approval for this project shall berevoked. During the implementation of clinical research, tracking review will be conducted by **ECCR**every 12 months fromthe effective date of the initial approval (the ethics committee has the right to change the frequency of trackingreview according to the actual implementation of clinical trials)
2. 请严格遵从已批准的研究方案，如果方案修改需以书面形式报告伦理委员会，经伦理委员会批准后方可执行。
   Please strictly follow the approved research protocol. Any revisions of the protocol must be reported to **ECCR** in written form. It can be conducted only after the modification was approved by **ECCR**.
3. 发生严重不良事件以及影响研究风险受益比的非预期不良事件，须在24小时内报告本伦理委员会。
   Serious adverse events and unanticipated adverse events that affect the risk-to-benefit ratio of the project must be reported to **ECCR** within 24 hours.
4. 暂停、方案违背或提前终止临床研究，请及时上报本伦理委员会。
   Anysuspension, project violation or early termination of the clinical research, should be reported to **ECCR** promptly.
5. 完成临床研究，须提交研究完成报告给本伦理委员会。
   Please submit a completion research report to **ECCR** after completion of the project.

版本日期：2021年06月21日

温州医科大学附属第一医院临床研究伦理委员会委员签到表

会议时间：2023 年 9 月 28 日

会议地点：新院 1-4A22 会议室

审查内容：宫颈癌术后化疗患者的病耻感的相关因素 Factors related to stigma among patients with cervical cancer having chemotherapy after surgery

	性别	工作单位	专 业	职 称	伦理委员会职务	签到
陈咨苗	男	温州医科大学附属第一医院	内分泌科	主任医师	主 任	
黄晓颖	女	温州医科大学附属第一医院	呼吸内科	教授/主任医师	副主任	
蔡雪黎	女	温州医科大学附属第一医院	心内科	主任医师	委 员	
徐 卫	男	温州医科大学附属第一医院	预防医学	副主任医师	委 员	
孙彩霞	女	温州医科大学附属第一医院	护 理	主任护师	委 员	
卢明芹	男	温州医科大学附属第一医院	感染科	主任医师	委 员	
陈 雷	男	温州医科大学附属第一医院	骨 科	教授/主任医师	委 员	
郑祥武	男	温州医科大学附属第一医院	放射影像	教授/主任医师	委 员	
林观样	男	温州医科大学附属第一医院	药 学	主任药师	委 员	
俞 康	男	温州医科大学附属第一医院	血液内科	教授/主任医师	委 员	
陈永平	男	温州医科大学附属第一医院	感染科	教授/主任医师	委 员	
张秀华	女	温州医科大学附属第一医院	临床研究中心	主任药师	委 员	
苏小芳	女	浙江震瓯律师事务所	法 律	律 师	委 员	
胡建芬	女	退 休	统计学	高级统计师	委 员	
方 耀	男	温州理工学院	伦理学	讲 师	委 员	

伦理委员会声明：

★ 温州医科大学附属第一医院临床研究伦理委员会组成及工作程序遵循中国 GCP、ICH-GCP 及相关法律法规，其审查过程不受伦理委员会以外任何组织及个人影响。

★ 本伦理委员会各委员已签署保密协议，所有标准操作规程文件、机密信息、会议记录等及其副本的所有权均归伦理委员会。

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BIOGRAPHY

NAME Ms.FANGLIN WANG