

# World Journal of *Clinical Cases*

*World J Clin Cases* 2021 June 16; 9(17): 4116-4459



## Contents

Thrice Monthly Volume 9 Number 17 June 16, 2021

## EDITORIAL

- 4116 Is it time to put traditional cold therapy in rehabilitation of soft-tissue injuries out to pasture?  
*Wang ZR, Ni GX*

## MINIREVIEWS

- 4123 Health-related quality of life after gastric cancer treatment in Brazil: Narrative review and reflections  
*Pinheiro RN, Mucci S, Zanatto RM, Picanço Junior OM, Oliveira AF, Lopes Filho GJ*
- 4133 Nonalcoholic fatty liver disease and COVID-19: An epidemic that begets pandemic  
*Ahmed M, Ahmed MH*

## ORIGINAL ARTICLE

## Retrospective Study

- 4143 Why MUC16 mutations lead to a better prognosis: A study based on The Cancer Genome Atlas gastric cancer cohort  
*Huang YJ, Cao ZF, Wang J, Yang J, Wei YJ, Tang YC, Cheng YX, Zhou J, Zhang ZX*
- 4159 Design and development of a new type of phimosis dilatation retractor for children  
*Yue YW, Chen YW, Deng LP, Zhu HL, Feng JH*
- 4166 Primary needle-knife fistulotomy for preventing post-endoscopic retrograde cholangiopancreatography pancreatitis: Importance of the endoscopist's expertise level  
*Han SY, Baek DH, Kim DU, Park CJ, Park YJ, Lee MW, Song GA*

## Observational Study

- 4178 Patients with functional bowel disorder have disaccharidase deficiency: A single-center study from Russia  
*Dbar S, Akhmadullina O, Sabelnikova E, Belostotskiy N, Parfenov A, Bykova S, Bakharev S, Baulo E, Babanova A, Indeykina L, Kuzmina T, Kosacheva T, Spasenov A, Makarova A*
- 4188 Self-perceived burden and influencing factors in patients with cervical cancer administered with radiotherapy  
*Luo T, Xie RZ, Huang YX, Gong XH, Qin HY, Wu YX*

## SYSTEMATIC REVIEWS

- 4199 COVID-19 in gastroenterology and hepatology: Lessons learned and questions to be answered  
*Liu S, Tang MM, Du J, Gong ZC, Sun SS*

**META-ANALYSIS**

- 4210** Efficacy of topical *vs* intravenous tranexamic acid in reducing blood loss and promoting wound healing in bone surgery: A systematic review and meta-analysis

*Xu JW, Qiang H, Li TL, Wang Y, Wei XX, Li F*

**CASE REPORT**

- 4221** *Ex vivo* liver resection followed by autotransplantation in radical resection of gastric cancer liver metastases: A case report

*Wang H, Zhang CC, Ou YJ, Zhang LD*

- 4230** Bone marrow inhibition induced by azathioprine in a patient without mutation in the thiopurine S-methyltransferase pathogenic site: A case report

*Zhou XS, Lu YY, Gao YF, Shao W, Yao J*

- 4238** Eosinophilic gastroenteritis with abdominal pain and ascites: A case report

*Tian XQ, Chen X, Chen SL*

- 4244** Tunica vaginalis testis metastasis as the first clinical manifestation of pancreatic adenocarcinoma: A case report

*Zhang YR, Ma DK, Gao BS, An W, Guo KM*

- 4253** “AFGP” bundles for an extremely preterm infant who underwent difficult removal of a peripherally inserted central catheter: A case report

*Chen Q, Hu YL, Su SY, Huang X, Li YX*

- 4262** Dynamic magnetic resonance imaging features of cavernous hemangioma in the manubrium: A case report

*Lin TT, Hsu HH, Lee SC, Peng YJ, Ko KH*

- 4268** Diagnosis and treatment of pediatric anaplastic lymphoma kinase-positive large B-cell lymphoma: A case report

*Zhang M, Jin L, Duan YL, Yang J, Huang S, Jin M, Zhu GH, Gao C, Liu Y, Zhang N, Zhou CJ, Gao ZF, Zheng QL, Chen D, Zhang YH*

- 4279** Stevens-Johnson syndrome and concurrent hand foot syndrome during treatment with capecitabine: A case report

*Ahn HR, Lee SK, Youn HJ, Yun SK, Lee IJ*

- 4285** Rosai-Dorfman disease with lung involvement in a 10-year-old patient: A case report

*Wu GJ, Li BB, Zhu RL, Yang CJ, Chen WY*

- 4294** Acute myocardial infarction in twin pregnancy after assisted reproduction: A case report

*Dai NN, Zhou R, Zhuo YL, Sun L, Xiao MY, Wu SJ, Yu HX, Li QY*

- 4303** Complete recovery of herpes zoster radiculopathy based on electrodiagnostic study: A case report

*Kim HS, Jung JW, Jung YJ, Ro YS, Park SB, Lee KH*

- 4310** Acute liver failure with thrombotic microangiopathy due to sodium valproate toxicity: A case report  
*Mei X, Wu HC, Ruan M, Cai LR*
- 4318** Lateral epicondyle osteotomy approach for coronal shear fractures of the distal humerus: Report of three cases and review of the literature  
*Li J, Martin VT, Su ZW, Li DT, Zhai QY, Yu B*
- 4327** Pancreatic neuroendocrine carcinoma in a pregnant woman: A case report and review of the literature  
*Gao LP, Kong GX, Wang X, Ma HM, Ding FF, Li TD*
- 4336** Primary primitive neuroectodermal tumor in the pericardium—a focus on imaging findings: A case report  
*Xu SM, Bai J, Cai JH*
- 4342** Minimally invasive surgery for glycogen storage disease combined with inflammatory bowel disease: A case report  
*Wan J, Zhang ZC, Yang MQ, Sun XM, Yin L, Chen CQ*
- 4348** Coronary sinus endocarditis in a hemodialysis patient: A case report and review of literature  
*Hwang HJ, Kang SW*
- 4357** *Clostridium perfringens* bloodstream infection secondary to acute pancreatitis: A case report  
*Li M, Li N*
- 4365** Kidney re-transplantation after living donor graft nephrectomy due to *de novo* chromophobe renal cell carcinoma: A case report  
*Wang H, Song WL, Cai WJ, Feng G, Fu YX*
- 4373** Pelvic lipomatosis with cystitis glandularis managed with cyclooxygenase-2 inhibitor: A case report  
*Mo LC, Piao SZ, Zheng HH, Hong T, Feng Q, Ke M*
- 4381** Prone position combined with high-flow nasal oxygen could benefit spontaneously breathing, severe COVID-19 patients: A case report  
*Xu DW, Li GL, Zhang JH, He F*
- 4388** Primary intratracheal schwannoma misdiagnosed as severe asthma in an adolescent: A case report  
*Huang HR, Li PQ, Wan YX*
- 4395** Prenatal diagnosis of cor triatriatum sinister associated with early pericardial effusion: A case report  
*Cánovas E, Cazorla E, Alonzo MC, Jara R, Álvarez L, Beric D*
- 4400** Pulmonary alveolar proteinosis complicated with tuberculosis: A case report  
*Bai H, Meng ZR, Ying BW, Chen XR*
- 4408** Surgical treatment of four segment lumbar spondylolysis: A case report  
*Li DM, Peng BG*

- 4415** Efficacy of artificial liver support system in severe immune-associated hepatitis caused by camrelizumab: A case report and review of the literature  
*Tan YW, Chen L, Zhou XB*
- 4423** Anti-Yo antibody-positive paraneoplastic cerebellar degeneration in a patient with possible cholangiocarcinoma: A case report and review of the literature  
*Lou Y, Xu SH, Zhang SR, Shu QF, Liu XL*
- 4433** Intraneural ganglion cyst of the lumbosacral plexus mimicking L5 radiculopathy: A case report  
*Lee JG, Peo H, Cho JH, Kim DH*
- 4441** Effectiveness of patient education focusing on circadian pain rhythms: A case report and review of literature  
*Tanaka Y, Sato G, Imai R, Osumi M, Shigetoh H, Fujii R, Morioka S*
- 4453** Schwannoma mimicking pancreatic carcinoma: A case report  
*Kimura K, Adachi E, Toyohara A, Omori S, Ezaki K, Ihara R, Higashi T, Ohgaki K, Ito S, Maehara SI, Nakamura T, Fushimi F, Maehara Y*

**ABOUT COVER**

Editorial Board Member of *World Journal of Clinical Cases*, Pietro Scicchitano, MD, Professor, Research Scientist, Department of Emergency and Organ Transplantation, School of Medicine, University of Bari, Bari 70124, Italy. [piero.sc@hotmail.it](mailto:piero.sc@hotmail.it)

**AIMS AND SCOPE**

The primary aim of *World Journal of Clinical Cases* (WJCC, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

**INDEXING/ABSTRACTING**

The WJCC is now indexed in Science Citation Index Expanded (also known as SciSearch®), Journal Citation Reports/Science Edition, Scopus, PubMed, and PubMed Central. The 2020 Edition of Journal Citation Reports® cites the 2019 impact factor (IF) for WJCC as 1.013; IF without journal self cites: 0.991; Ranking: 120 among 165 journals in medicine, general and internal; and Quartile category: Q3. The WJCC's CiteScore for 2019 is 0.3 and Scopus CiteScore rank 2019: General Medicine is 394/529.

**RESPONSIBLE EDITORS FOR THIS ISSUE**

Production Editor: *Jia-Hui Li*; Production Department Director: *Yu-Jie Ma*; Editorial Office Director: *Jin-Lai Wang*.

**NAME OF JOURNAL**

*World Journal of Clinical Cases*

**ISSN**

ISSN 2307-8960 (online)

**LAUNCH DATE**

April 16, 2013

**FREQUENCY**

Thrice Monthly

**EDITORS-IN-CHIEF**

Dennis A Bloomfield, Sandro Vento, Bao-Gan Peng

**EDITORIAL BOARD MEMBERS**

<https://www.wjnet.com/2307-8960/editorialboard.htm>

**PUBLICATION DATE**

June 16, 2021

**COPYRIGHT**

© 2021 Baishideng Publishing Group Inc

**INSTRUCTIONS TO AUTHORS**

<https://www.wjnet.com/bpg/gerinfo/204>

**GUIDELINES FOR ETHICS DOCUMENTS**

<https://www.wjnet.com/bpg/GerInfo/287>

**GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH**

<https://www.wjnet.com/bpg/gerinfo/240>

**PUBLICATION ETHICS**

<https://www.wjnet.com/bpg/GerInfo/288>

**PUBLICATION MISCONDUCT**

<https://www.wjnet.com/bpg/gerinfo/208>

**ARTICLE PROCESSING CHARGE**

<https://www.wjnet.com/bpg/gerinfo/242>

**STEPS FOR SUBMITTING MANUSCRIPTS**

<https://www.wjnet.com/bpg/GerInfo/239>

**ONLINE SUBMISSION**

<https://www.f6publishing.com>



## Observational Study

## Self-perceived burden and influencing factors in patients with cervical cancer administered with radiotherapy

Ting Luo, Rong-Zhi Xie, Yan-Xia Huang, Xiao-Hua Gong, Hui-Ying Qin, Yi-Xiao Wu

**ORCID number:** Ting Luo 0000-0001-6426-058X; Rong-Zhi Xie 0000-0003-3578-0572; Yan-Xia Huang 0000-0002-8821-813X; Xiao-Hua Gong 0000-0002-3979-435X; Hui-Ying Qin 0000-0003-1680-7637; Yi-Xiao Wu 0000-0002-3551-7830.

**Author contributions:** Xie RZ and Gong XH contributed to the conception and design of this study; Luo T, Huang YX, and Wu YX performed the statistical analysis and drafted the manuscript; Qin HY critically reviewed the manuscript and supervised the whole study process; all authors read and approved the final manuscript.

**Institutional review board statement:** The study was approved by the Ethics Committee of Sun Yat-Sen University.

**Conflict-of-interest statement:** The authors declare that they have no conflict of interest to report.

**Data sharing statement:** The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

**STROBE statement:** The authors have read the STROBE Statement-checklist of items, and the manuscript was prepared and

**Ting Luo, Rong-Zhi Xie, Xiao-Hua Gong,** Cancer Center, The Fifth Affiliated Hospital of Sun Yat-Sen University, Zhuhai 519000, Guangdong Province, China

**Yan-Xia Huang,** Cardiovascular Disease Center, The Fifth Affiliated Hospital of Sun Yat-Sen University, Zhuhai 519000, Guangdong Province, China

**Hui-Ying Qin,** Nursing Department, Sun Yat-Sen University Cancer Center, Guangzhou 510060, Guangdong Province, China

**Yi-Xiao Wu,** Power Operation Department, The Fifth Affiliated Hospital of Sun Yat-Sen University, Zhuhai 519000, Guangdong Province, China

**Corresponding author:** Hui-Ying Qin, MS, Doctor, Nursing Department, Sun Yat-Sen University Cancer Center, No. 651 Dongfeng East Road, Guangzhou 510060, Guangdong Province, China. [qinhy@sysucc.org.cn](mailto:qinhy@sysucc.org.cn)

## Abstract

## BACKGROUND

Cervical cancer is the fourth commonest malignancy in women around the world. It represents the second most commonly diagnosed cancer in South East Asian women, and an important cancer death cause in women of developing nations. Data collected in 2018 revealed 5690000 cervical cancer cases worldwide, 85% of which occurred in developing countries.

## AIM

To assess self-perceived burden (SPB) and related influencing factors in cervical cancer patients undergoing radiotherapy.

## METHODS

Patients were prospectively included by convenient sampling at The Fifth Affiliated Hospital of Sun Yat-Sen University, China between March 2018 and March 2019. The survey was completed using a self-designed general information questionnaire, the SPB scale for cancer patients, and the self-care self-efficacy scale, Strategies Used by People to Promote Health, which were delivered to patients with cervical cancer undergoing radiotherapy. Measurement data are expressed as the mean  $\pm$  SD. Enumeration data are expressed as frequencies or percentages. Caregivers were the spouse, offspring, and other in 46.4, 40.9, and 12.7%, respectively, and the majority were male (59.1%). As for pathological type,

revised according to the STROBE Statement-checklist of items.

**Open-Access:** This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

**Manuscript source:** Unsolicited manuscript

**Specialty type:** Oncology

**Country/Territory of origin:** China

**Peer-review report's scientific quality classification**

Grade A (Excellent): 0  
Grade B (Very good): 0  
Grade C (Good): 0  
Grade D (Fair): 0  
Grade E (Poor): 0

**Received:** January 25, 2021

**Peer-review started:** January 25, 2021

**First decision:** February 25, 2021

**Revised:** March 10, 2021

**Accepted:** April 8, 2021

**Article in press:** April 8, 2021

**Published online:** June 16, 2021

**P-Reviewer:** Isohashi F

**S-Editor:** Zhang H

**L-Editor:** Wang TQ

**P-Editor:** Wang LL



90 and 20 cases had squamous and adenocarcinoma/adenosquamous carcinomas, respectively. Stage IV disease was found in 12 (10.9%) patients.

## RESULTS

A total of 115 questionnaires were released, and five patients were excluded for too long evaluation time ( $n = 2$ ) and the inability to confirm the questionnaire contents ( $n = 3$ ). Finally, a total of 110 questionnaires were collected. They were aged 31-79 years, with the 40-59 age group being most represented (65.4% of all cases). Most patients were married (91.8%) and an overwhelming number had no religion (92.7%). Total SPB score was  $43.13 \pm 16.65$ . SPB was associated with the place of residence, monthly family income, payment method, transfer status, the presence of radiotherapy complications, and the presence of pain ( $P < 0.05$ ). The SPB and self-care self-efficacy were negatively correlated ( $P < 0.01$ ). In multivariate analysis, self-care self-efficacy, place of residence, monthly family income, payment method, degree of radiation dermatitis, and radiation proctitis were influencing factors of SPB ( $P < 0.05$ ).

## CONCLUSION

Patients with cervical cancer undergoing radiotherapy often have SPB. Self-care self-efficacy scale, place of residence, monthly family income, payment method, and radiation dermatitis and proctitis are factors independently influencing SPB.

**Key Words:** Cervical cancer; Radiotherapy; Self-perceived burden; Influencing factors; Self-perceived burden; Prospective research

©The Author(s) 2021. Published by Baishideng Publishing Group Inc. All rights reserved.

**Core Tip:** Cervical cancer is the fourth commonest malignancy in women around the world. The present study aimed to assess self-perceived burden (SPB) and related influencing factors in cervical cancer patients undergoing radiotherapy. The survey was completed using a self-designed general information questionnaire, the SPB scale for cancer patients, and the self-care self-efficacy scale, Strategies Used by People to Promote Health. The results suggested that patients with cervical cancer undergoing radiotherapy often have SPB. Self-care self-efficacy scale, place of residence, monthly family income, payment method, and radiation dermatitis and proctitis are factors independently influencing SPB.

**Citation:** Luo T, Xie RZ, Huang YX, Gong XH, Qin HY, Wu YX. Self-perceived burden and influencing factors in patients with cervical cancer administered with radiotherapy. *World J Clin Cases* 2021; 9(17): 4188-4198

**URL:** <https://www.wjgnet.com/2307-8960/full/v9/i17/4188.htm>

**DOI:** <https://dx.doi.org/10.12998/wjcc.v9.i17.4188>

## INTRODUCTION

Cervical cancer is the fourth commonest malignancy in women around the world[1]. Individuals with cervical cancer tend to be younger than previously reported[2,3]. External beam radiation and brachytherapy are often applied for cervical cancer treatment[4]. After diagnosis with cervical cancer, the women have short-term and long-term psychophysical and sexual problems; for example, undergoing brachytherapy could be perceived as a negative, humiliating experience resulting in pain, fear, fatigue, financial issues, among others[5,6].

The psychological pressure of long-term treatment, care, and financial and emotional problems generally results in the negative experience of self-perceived burden (SPB), as demonstrated in other cancers, including breast cancer and hematologic malignancies[7,8]. Currently, studies assessing SPB in cervical cancer patients undergoing radiotherapy are scarce, and the effects of radiotherapy on mental and physical health in such individuals are not completely understood.



Therefore, the present study aimed to assess SPB and related influencing factors in cervical cancer patients undergoing radiotherapy. Our findings will provide a reference for reducing SPB in these patients.

## MATERIALS AND METHODS

### Patients

Patients were prospectively included by convenient sampling at The Fifth Affiliated Hospital of Sun Yat-Sen University, China between March 2018 and March 2019.

The inclusion criteria were: (1) Pathological diagnosis of cervical cancer[9]; (2) Consciousness; (3) Current radiotherapy; (4) Age  $\geq 18$  years; (5) Ability to read the questionnaire and answer the questions correctly; and (6) Agreement to voluntarily participate in the survey. The exclusion criteria were: (1) Cognitive impairment and mental disease history; (2) Other organ ailments, including respiratory and cardiovascular system diseases; and (3) No caregiver during radiotherapy. The study was approved by the ethics committee of Sun Yat-Sen University, and signed informed consent was provided by each participant.

### Questionnaires

The survey was completed by distributing questionnaire forms to eligible subjects, including a self-designed general information questionnaire, and the SPB and self-care self-efficacy scales.

The general information questionnaire mainly assesses parameters such as age, nationality, place of residence, marital status, religion, occupation, education level, monthly family income, payment method, situation of caregivers, and disease information, obtained from medical records.

The SPB scale for cancer patients (SPBS-CP) was proposed by Ren *et al*[10] referring to the global SPB assessment tool, which includes care burden (items 1-4), financial/family burden (items 5-11), emotional burden (items 12-17), and treatment burden (items 18-21). A 5-level Likert scale was used for scoring from "never" to "always" (1-5). After summing the scores obtained for various items, the SPB level of patients was measured as follows: SPB < 30, no obvious burden;  $30 \leq$  SPB < 50, mild burden;  $50 \leq$  SPB < 70, moderate burden; SPB  $\geq 70$  severe burden. Content validity was 0.81, for a Cronbach's coefficient of 0.938.

The strategies used by people to promote health scale was developed by Lev *et al*[11] in 1996, and further modified by Qian *et al*[12] from China in 2011. It includes the three dimensions of positive attitudes (15 items), self-decision-making (3 items), and self-decompression (10 items), with a total of 28 items. A 5-level Likert scale was used for scoring, from "no confidence" to "very confident" (1-5), and total scores were 28-140. The higher the score, the greater the confidence in self-care by patients. The Cronbach's  $\alpha$  for this scale was 0.970.

Radiation Therapy Oncology Group classification criteria for acute radiation injury were used for radiation complications[13], and the digital scoring method was used for pain assessment.

### Survey and quality control

Based on informed consent, unified guidance was applied by the investigators to perform the one-to-one questionnaire survey. The questionnaires were collected on the spot. Then, the filled questionnaires were assessed by two investigators, who immediately input the data into the system.

### Statistical analysis

SPSS 21.0 software (SPSS, United States) was used for data analyses. Measurement data are expressed as the mean  $\pm$  SD. Enumeration data are expressed as frequencies or percentages. Total SPB score was considered a continuous variable, and analyzed by the Kolmogorov-Smirnov test for normality of distribution. The *t*-test and analysis of variance were used to evaluate measurement data. Spearman correlation analysis was carried out to analyze the correlation between SPB and self-care self-efficacy scale score. Multivariate linear regression analysis of influencing factors of SPB in cervical cancer patients undergoing radiotherapy was performed. Using the SPB score as the dependent variable, parameters in general patient information with  $P < 0.05$  in univariate analysis and self-care self-efficacy scale score as independent variables were assessed by stepwise multivariate linear regression. Two-sided  $P < 0.05$  was

considered statistically significant.

## RESULTS

### *Patient general data*

A total of 115 questionnaires were released, and five patients were excluded for too long evaluation time ( $n = 2$ ) and the inability to confirm the questionnaire contents ( $n = 3$ ). Finally, a total of 110 questionnaires were collected. They were aged 31-79 years, with the 40-59 age group being most represented (65.4% of all cases). Most patients were married (91.8%) and an overwhelming number had no religion (92.7%). Caregivers were the spouse, offspring, and other in 46.4, 40.9 and 12.7%, respectively, and the majority were male (59.1%). As for pathological type, 90 and 20 cases had squamous and adenocarcinoma/adenosquamous carcinomas, respectively. Stage IV disease was found in 12 (10.9%) patients. **Table 1** shows the characteristics of cervical cancer patients undergoing radiotherapy.

### *SPB subscores and self-care self-efficacy scale scores and correlations with total SPB score in cervical cancer patients undergoing radiotherapy*

The SPB scale was used to evaluate SPB levels in cervical cancer patients undergoing radiotherapy. The total SPB score was  $43.13 \pm 16.65$ . The financial/family burden score was the highest ( $16.89 \pm 6.44$ ), while treatment burden had the lowest score ( $7.31 \pm 3.48$ ). Meanwhile, total self-care self-efficacy scale score was  $99.52 \pm 25.34$ . Correlation analysis indicated that SPB and self-care self-efficacy scale scores were negatively correlated, with statistical significance ( $r = -0.701$ ,  $P < 0.01$ ). Detailed data are provided in **Table 2**.

### *Univariate analysis of SPB scores based on general parameters of cervical cancer patients undergoing radiotherapy*

A univariate analysis was performed to assess the correlations of various patient parameters with SPB score. As shown in **Table 3**, place of residence, monthly family income per capita, payment method, metastasis, pain, and radiation-associated complications (dermatitis, proctitis, and cystitis) were correlated with SPB score ( $P < 0.05$ ).

### *Factors independently affecting SPB*

Multivariate regression analysis showed that self-care self-efficacy scale score, place of residence, monthly family income, payment method, and radiation and radiation proctitis in cervical cancer patients undergoing radiotherapy independently affected SPB, with statistical significance. The combined total variance was 75.1%, as shown in **Table 4**.

## DISCUSSION

Studies conducted in many countries revealed salient SPB among cancer patients. However, studies assessing SPB in cervical cancer patients undergoing radiotherapy are scarce.

This study demonstrated that mild to moderate SPB is common in patients with cervical cancer undergoing radiotherapy. In addition, self-management effectiveness, the place of residence, monthly family income, payment method, and some radiation complications independently affected SPB.

In this study, total SPB score in cervical cancer patients undergoing radiotherapy was  $43.13 \pm 16.65$ , reflecting a mild to moderate level overall, corroborating the finding of Zheng *et al* [14]. There were 44 (40%), 28 (25.5%), and 9 (8.2%) patients with mild, moderate, and severe SPB, respectively. The above results suggested that the assessed patients generally had SPB, with some even showing moderate and severe levels, which is worthy of attention from clinical staff. To help patients with mild SPB, the medical staff should provide timely psychological counseling, apply effective psychological nursing, and provide health education, to avoid progression to moderate and severe levels.

Financial/family burden showed the highest subscores ( $16.89 \pm 6.44$ ) among all dimensions, in agreement with previous studies assessing SPB in patients undergoing

**Table 1 General information of cervical cancer patients undergoing radiotherapy (n = 110)**

Item	Cases (n)	%	Variable	Cases (n)	%
Age (yr)			Times of current radiotherapy		
31-39	10	9.1	1-10	25	22.7
40-59	72	65.4	11-20	51	46.4
60-79	28	25.5	> 20	34	30.9
Residence			Pathological type		
Rural area	59	53.6	Squamous carcinoma	90	81.8
City	51	46.4	Adenocarcinoma or adenosquamous carcinoma	20	18.2
Marital status			Tumor stage		
Single or widowed	9	8.2	Stage I	27	24.6
Married	101	91.8	Stage II	34	30.9
Religion			Stage III	37	33.6
No	102	92.7	Stage IV	12	10.9
Yes	8	7.3	Radiation way		
Education level			<i>In vitro</i>	71	64.5
Primary school or below	54	49.1	<i>In vitro</i> + intracavity	39	35.5
Junior high school	36	32.7	Recurrence		
Senior high school	8	7.3	No	104	94.5
College degree or above	12	10.9	Yes	6	5.5
Monthly family income per capita			Metastasis		
< 3000	31	28.1	No	85	77.3
3000-5000	50	45.5	Yes	25	22.7
> 5000	29	26.4	Radiation dermatitis		
Payment method			0	36	32.7
Self-paying	26	23.6	1	68	61.8
Networking inside and outside province	17	15.5	> 2	6	5.5
Health care in the city	67	60.9	Radiation proctitis		
Caregiver			0	27	24.5
Spouse	51	46.4	1	53	48.2
Offspring	45	40.9	> 2	30	27.3
Other	14	12.7	Radiation cystitis		
Caregiver Age (yr)			0	87	79.1
18-39	48	43.6	1	15	13.6
40-59	37	33.7	> 2	8	7.3
60-	25	22.7	Pain		
Gender of caregiver			No	78	70.9
Female	45	40.9	Yes	32	29.1
Male	65	59.1			

radiotherapy[15,16]. The item with the highest subscore was "I feel that I am a burden to my family (or caregiver)", followed by "I am worried that the treatment will cost a lot of money". This indicates that financial/family burden is an important factor affecting SPB in these patients. A Japan study also found that nurses should not only support patients' efforts to tackle the situation by themselves, but also help the family

**Table 2 Self-perceived burden subscores and self-care self-efficacy scale scores and correlations with total self-perceived burden score in cervical cancer patients undergoing radiotherapy (*n* = 110)**

Item	(Score, mean $\pm$ SD)	Total score of SPB	
		<i>r</i>	<i>P</i>
Financial/family burden	16.89 $\pm$ 6.44	0.914	< 0.05
Care burden	8.90 $\pm$ 4.22	0.835	< 0.05
Treatment burden	7.31 $\pm$ 3.48	0.770	< 0.05
Emotional burden	10.10 $\pm$ 5.03	0.872	< 0.05
Total score of SPB	43.13 $\pm$ 16.65		
Total score of self-care self-efficacy scale	99.52 $\pm$ 25.34	-0.701	< 0.05

SPB: Self-perceived burden.

as a whole to tackle problems together. By facilitating meaningful dialogue between family members, patients' feelings of SPB can be alleviated[17]. Therefore, in clinics, patients with poor family finances and low income should be paid particular attention to, and their medical needs should be timely met and medical information and assistance should be provided to them to reduce the burden on their families.

This study showed that the lower the self-care self-efficacy scale score in cervical cancer patients undergoing radiotherapy, the higher the SPB. Patients with low self-care self-efficacy scale scores often have less positive attitudes, less enthusiasm to seek self-decompression methods, and lack of self-decision-making ability, leading to an increased psychological burden[18,19]. Therefore, the clinical staff could reduce the SPB by improving self-care self-efficacy in patients.

As shown above, place of residence was another factor independently affecting SPB in patients with cervical cancer undergoing radiotherapy. The patients living in rural areas accounted for 53.6%, and showed higher SPB scores compared with urban residents, in agreement with the findings by Gong *et al*[20]. The rural patients also had a lower education level and worried about medical costs. Besides, radiotherapy time was long, and the rural patients had reduced access to medical information, resulting in worries, anxiety, and increased psychological burden. Therefore, the medical staff should pay attention to patients from rural areas, providing proper psychological counseling, specific guidance, and help based on their actual situation, which might alleviate their psychological pressure.

Other parameters independently determining SPB included the monthly family income and payment method. The above results showed that the poorer the family, the higher the SPB, consistent with multiple studies[21-24]. The patients with relatively high family income and medical insurance had no overt worries during treatment and nursing, which provided some comfort. Therefore, the medical staff should focus on patients with poor family financial conditions and those paying all medical bills by themselves to subscribe for medical insurance, providing some medical information and assistance to reduce medical expenses, which could decrease the burden and relieve their worries regarding the medical treatment.

Finally, the severity of radiotherapy complications in this study independently affected SPB, which is consistent with multiple studies of cancer patients[16,25,26] in China. Studies from other countries also found that cancer patients' high SPB was precipitated by suffering from severe symptom distress and heavy functional[7,27]. The incidence of radiation dermatitis in radiotherapy of cervical cancer reaches 93.8%[28]. Patients with radiation dermatitis show symptoms such as pruritus, dehumidification, and skin damage in the radiation field, or even bleeding, exudation, and pain in serious cases. Meanwhile, radiation proctitis often occurs at 1-2 wk after radiotherapy, with an incidence of 53%-100%[29]. In this study, 75.5% of patients had radiation proctitis, with grade 1 showing a relatively high incidence and accounting for 48.2%. The most common symptoms of radiation enteritis include diarrhea and increased frequency of defecation, accompanied by anal pain and fall-swell feeling. The affected patients may experience dizziness, gastrointestinal dysfunction, electrolyte imbalance, and even intestinal fistula, and need to discontinue radiotherapy in severe cases. Such symptoms could prolong treatment time, and increase hospitalization duration and cost, pain, and anxiety, subsequently increasing SPB. While paying attention to treatment effects, the medical staff should also dynamically

**Table 3 Univariate analysis of self-perceived burden scores based on general data in cervical cancer patients undergoing radiotherapy (n = 110)**

Item	Case (n)	mean $\pm$ SD	t/F	P	Pairwise comparison
Age (yr)			0.620	0.540	
(1) 31-39	10	48.60 $\pm$ 24.075			
(2) 40-49	72	42.83 $\pm$ 15.959			
(3) 60-79	28	41.93 $\pm$ 15.604			
Residence			4.667	< 0.05	(1) > (2)
(1) Rural area	59	49.44 $\pm$ 16.406			
(2) City	51	35.82 $\pm$ 13.811			
Marital status			0.143	0.887	
(1) Single or widowed	9	43.89 $\pm$ 19.637			
(2) Married	101	43.06 $\pm$ 16.471			
Religion			1.015	0.312	
(1) No	102	43.58 $\pm$ 16.766			
(2) Yes	8	37.38 $\pm$ 14.851			
Education level			0.044	0.987	
Primary school or below	54	43.17 $\pm$ 15.779			
Junior high school	36	43.04 $\pm$ 17.064			
Senior high school	8	44.88 $\pm$ 27.205			
College degree or above	12	42.08 $\pm$ 12.117			
Family per capita monthly income			24.572	< 0.05	(1) > (2)
< 3000	31	56.77 $\pm$ 18.353			(2) > (3)
3000-5000	50	41.06 $\pm$ 12.904			(1) > (3)
> 5000	29	32.10 $\pm$ 9.344			
Payment method			13.051	< 0.05	(1) > (2)
Self-paying	26	56.27 $\pm$ 16.185			(1) > (3)
Networking inside and outside province	17	40.53 $\pm$ 13.172			
Health care in the city	67	38.69 $\pm$ 15.060			
Caregiver			1.418	0.247	
Spouse	51	40.31 $\pm$ 17.136			
Offspring	45	45.18 $\pm$ 13.890			
Other	14	46.79 $\pm$ 21.959			
Caregiver age (yr)			1.183	0.310	
(1) 18-39	48	45.85 $\pm$ 16.720			
(2) 40-59	37	41.49 $\pm$ 15.073			
(3) 60-	25	40.32 $\pm$ 18.538			
Gender of caregiver			1.538	0.127	
(1) Female	45	46.04 $\pm$ 16.628			
(2) Male	65	44.01 $\pm$ 16.605			
Times of current radiotherapy			0.096	0.909	
(1) 1-10	25	42.16 $\pm$ 16.570			
(2) 11-20	51	42.98 $\pm$ 16.861			



(3) > 20	34	44.06 ± 16.843			
Pathological type			-1.807	0.074	
(1) Squamous carcinoma	90	41.79 ± 15.489			
(2) Adenocarcinoma or adenosquamous carcinoma	20	49.15 ± 20.497			
Clinical tumor stage			1.272	0.288	
(1) Stage I	27	39.41 ± 14.550			
(2) Stage II	34	41.24 ± 16.672			
(3) Stage III	37	46.43 ± 17.868			
(4) Stage IV	12	46.67 ± 16.516			
Radiation way			0.035	0.972	
(1) <i>In vitro</i>	71	43.17 ± 16.902			
(2) <i>In vitro</i> + intracavity	39	43.05 ± 16.401			
Recurrence			-0.660	0.511	
(1) No	104	42.88 ± 15.826			
(2) Yes	6	47.50 ± 29.331			
Metastasis			-5.333	< 0.05	(2) > (1)
(1) No	85	39.02 ± 13.885			
(2) Yes	25	57.08 ± 17.944			
Radiation dermatitis			20.183	< 0.05	(2) > (1)
(1) 0	36	31.92 ± 07.951			(3) > (1)
(2) 1	68	47.22 ± 16.977			(3) > (2)
(3) > 2	6	64.00 ± 09.143			
Radiation proctitis			8.199	< 0.05	(2) > (1)
(1) 0	27	33.74 ± 11.772			(3) > (1)
(2) 1	53	43.75 ± 15.859			
(3) > 2	30	50.47 ± 18.122			
Radiation cystitis			3.926	< 0.05	(3) > (1)
(1) 0	87	41.03 ± 16.340			
(2) 1	15	48.67 ± 15.351			
(3) > 2	8	55.50 ± 16.440			
Pain			-3.132	< 0.05	(2) > (1)
(1) No	78	40.06 ± 14.848			
(2) Yes	32	50.59 ± 18.604			

evaluate psychological changes and needs, to reduce the psychological burden. In addition, effective symptom management and comfortable care are also important measures to reduce SPB.

The limitations of this study should be mentioned. First, this was a single-center study, with a relatively small sample size. In addition, there was no follow-up of the patients after the survey. Therefore, further large multi-center studies are required to confirm these findings and better assist cervical cancer patients undergoing radiotherapy.

## CONCLUSION

Studies by domestic and foreign scholars have shown that SPB is closely related to the quality of life, including a good death[30], dignity[31], *etc.* In addition, the burden of

**Table 4** Multivariate analysis of factors potentially affecting self-perceived burden in cervical cancer patients undergoing radiotherapy

Variable	Partial regression coefficient	Standard error	Standardized partial regression coefficient	t	P value
Self-management effectiveness	-0.303	0.036	-0.462	-8.431	0.000
Residence	-4.110	1.784	-0.124	-2.304	0.023
Family per capita monthly income	-5.231	1.242	-0.233	-4.211	0.000
Payment method	-3.515	1.027	-0.178	-3.424	0.001
Radiation dermatitis	6.540	1.672	0.219	3.912	0.000
Radiation proctitis	3.814	1.226	0.166	3.110	0.002

$R^2 = 0.751$ .

self-perception is also related to the patient's end-of-life decision on euthanasia and suicidal behavior[32]. Other studies have shown that cancer patients and patients with severe chronic diseases worry about being a burden on their families, which is a "community test", leading to negative emotional reactions such as guilt, depression, and sense of burden in patients, which seriously affects the mental health of cancer patients[32-34].

Overall, patients with cervical cancer undergoing radiotherapy often have moderate to severe SPB. Self-care self-efficacy scale score, place of residence, monthly family income, payment method, and radiation dermatitis and proctitis are factors independently influencing SPB. In clinics, the medical staff should pay attention to improving the patients' self-care self-efficacy, focus on rural and low-income patients, and provide effective symptom management to cervical cancer patients undergoing radiotherapy, which could reduce SPB and improve prognosis and the quality of life.

## ARTICLE HIGHLIGHTS

### Research background

Cervical cancer is the fourth commonest malignancy in women around the world. Individuals with cervical cancer tend to be younger than previously reported. The psychological pressure of long-term treatment, care, and financial and emotional problems generally results in the negative experience of self-perceived burden (SPB). Studies by domestic and foreign scholars have shown that SPB is closely related to the quality of life, including a good death, dignity, *etc.*

### Research motivation

Studies conducted in many countries revealed salient SPB among cancer patients. However, studies assessing SPB in cervical cancer patients undergoing radiotherapy are scarce.

### Research objectives

This study aimed to assess SPB and related influencing factors in cervical cancer patients undergoing radiotherapy.

### Research methods

One-hundred and ten patients with cervical cancer undergoing radiotherapy were selected for questionnaire survey. Research data of these patients were summarized and analyzed.

### Research results

Total SPB score was  $43.13 \pm 16.65$ . SPB was associated with the place of residence, monthly family income, payment method, transfer status, the presence of radiotherapy complications, and the presence of pain ( $P < 0.05$ ). The SPB and self-care self-efficacy were negatively correlated ( $P < 0.01$ ). In multivariate analysis, self-care self-efficacy, place of residence, monthly family income, payment method, and degree of radiation

dermatitis and radiation proctitis were influencing factors of SPB ( $P < 0.05$ ).

### Research conclusions

Patients with cervical cancer undergoing radiotherapy often have SPB. Self-care self-efficacy scale score, place of residence, monthly family income, payment method, and radiation dermatitis and proctitis are factors independently influencing SPB.

### Research perspectives

In clinics, the medical staff should pay attention to improving the patients' self-care self-efficacy, focus on rural and low-income patients, and provide effective symptom management to cervical cancer patients undergoing radiotherapy, which could reduce SPB and improve prognosis and the quality of life.

## REFERENCES

- 1 Arbyn M, Weiderpass E, Bruni L, de Sanjosé S, Saraiya M, Ferlay J, Bray F. Estimates of incidence and mortality of cervical cancer in 2018: a worldwide analysis. *Lancet Glob Health* 2020; **8**: e191-e203 [PMID: 31812369 DOI: 10.1016/S2214-109X(19)30482-6]
- 2 Takeuchi S. Biology and treatment of cervical adenocarcinoma. *Chin J Cancer Res* 2016; **28**: 254-262 [PMID: 27198186 DOI: 10.21147/j.issn.1000-9604.2016.02.11]
- 3 Gien LT, Beauchemin MC, Thomas G. Adenocarcinoma: a unique cervical cancer. *Gynecol Oncol* 2010; **116**: 140-146 [PMID: 19880165 DOI: 10.1016/j.ygyno.2009.09.040]
- 4 Yang J, Cai H, Xiao ZX, Wang H, Yang P. Effect of radiotherapy on the survival of cervical cancer patients: An analysis based on SEER database. *Medicine (Baltimore)* 2019; **98**: e16421 [PMID: 31348242 DOI: 10.1097/MD.00000000000016421]
- 5 Dzaka A, Maree J. Experiences of women receiving high dose rate brachytherapy for cervical cancer at an academic hospital. *Southern African Journal of Gynaecological Oncology* 2016; **8**: 42-45 [DOI: 10.1080/20742835.2016.1257174]
- 6 Sabulei C, Maree JE. An exploration into the quality of life of women treated for cervical cancer. *Curationis* 2019; **42**: e1-e9 [PMID: 31170799 DOI: 10.4102/curationis.v42i1.1982]
- 7 Libert Y, Borghgraef C, Beguin Y, Delvaux N, Devos M, Doyen C, Dubrulle S, Etienne AM, Liénard A, Merckaert I, Reynaert C, Slachmuylder JL, Straetmans N, Van Den Neste E, Bron D, Razavi D. Factors associated with self-perceived burden to the primary caregiver in older patients with hematologic malignancies: an exploratory study. *Psychooncology* 2017; **26**: 118-124 [PMID: 26940829 DOI: 10.1002/pon.4108]
- 8 Yeung NCY, Lu Q, Mak WWS. Self-perceived burden mediates the relationship between self-stigma and quality of life among Chinese American breast cancer survivors. *Support Care Cancer* 2019; **27**: 3337-3345 [PMID: 30617433 DOI: 10.1007/s00520-018-4630-2]
- 9 Bermudez A, Bhatla N, Leung E. Cancer of the cervix uteri. *Int J Gynaecol Obstet* 2015; **131** Suppl 2: S88-S95 [PMID: 26433680 DOI: 10.1016/j.ijgo.2015.06.004]
- 10 Ren Y, Liu H, Tian X. Screening of item pool of the Self-Perceived Burden Scale (SPBS) for patients with cancer: formation of a test version. *Journal of Nursing Science* 2013; **28**: 25-27
- 11 Lev EL, Owen SV. A measure of self-care self-efficacy. *Res Nurs Health* 1996; **19**: 421-429 [PMID: 8848626 DOI: 10.1002/(SICI)1098-240X(199610)19:5<421::AID-NUR6>3.0.CO;2-S]
- 12 Qian H, Yuan C. The reliability and validity of Chinese version of Strategies Used by People to Promote Health. *Zhonghua Huli Zazhi* 2011; **87**: 87-89
- 13 Yin W, Yu Z, Xu G. Radiation oncology. 5th ed. Beijing: Beijing Union Medical University Press, 2018
- 14 Zheng G, Sun X. Related factors of self perceived burden in patients with cervical cancer. *Jianyan Yixue Yu Lin Chuang* 2017; **14**: 339-341
- 15 Dong B, Feng LN, Wang ZJ. Correlation between self-care self-efficacy scale, self-perceived burden and mental resilience in elderly patients with laryngeal cancer radiotherapy. *J Chronic Med* 2019; **20**: 371-373
- 16 Jiang HL, Yang C, Weng FN. Analysis of self-perceived burden of patients with head and neck tumor radiotherapy and its influencing factors. *Zhongguo Quanke Yixue Zazhi* 2019; **17**: 144-146
- 17 Oeki M, Takase M. Coping Strategies for Self-perceived Burden Among Advanced Cancer Patients. *Cancer Nurs* 2020; **43**: E349-E355 [PMID: 31274640 DOI: 10.1097/NCC.0000000000000723]
- 18 Magharei M, Jaafari S, Mansouri P, Safarpour A, Taghavi SA. Effects of Self-Management Education on Self-Efficacy and Quality of Life in Patients with Ulcerative Colitis: A Randomized Controlled Clinical Trial. *Int J Community Based Nurs Midwifery* 2019; **7**: 32-42 [PMID: 30643831 DOI: 10.30476/IJCBNM.2019.40844]
- 19 Tharek Z, Ramli AS, Whitford DL, Ismail Z, Mohd Zulkifli M, Ahmad Sharoni SK, Shafie AA, Jayaraman T. Relationship between self-efficacy, self-care behaviour and glycaemic control among patients with type 2 diabetes mellitus in the Malaysian primary care setting. *BMC Fam Pract* 2018; **19**: 39 [PMID: 29523075 DOI: 10.1186/s12875-018-0725-6]
- 20 Gong HP, Wei QF, Xie ZF, Zhang SH, Dong AN. The level and influencing factors of self-perceived

- burden among cervical cancer patients in rural. *Huli Guanli Zazhi* 2017; **17**: 153-155
- 21 **An C.** Study on the relationship between dignity, self-perceived burden and mental toughness in patients with bladder cancer. M.Sc. Thesis, Yanbian University. 2017
- 22 **Zhang C.** Study on the correlation between self-perceived burden and post-traumatic growth in colorectal cancer patients. M.Sc. Thesis, Jilin University. 2017
- 23 **Huang Y,** Feng Q, Yang L. Correlation between managerial self-efficacy and social support in patients with cervical cancer. *Zhongguo Zhongliu Linchuang Yu Kangfu* 2016; **23**: 1400-1402
- 24 **Ting CY,** Teh GC, Yu KL, Alias H, Tan HM, Wong LP. Self-perceived burden and its associations with health-related quality of life among urologic cancer patients. *Eur J Cancer Care (Engl)* 2020; **29**: e13248 [PMID: [32495472](#) DOI: [10.1111/ecc.13248](#)]
- 25 **Hao JY,** Liu S. Analysis of self-perceived burden and influencing factors of lung cancer patients. *Dangdai Hushi* 2018; **25**: 88-91
- 26 **Li Y,** Liang HX, Chen SM, Peng SS, Wei H, Huang XY, Gao HY. The level and influencing factors of self-perceived burden in patients with nasopharyngeal carcinoma undergoing radiotherapy. *Zhonghua Huli Zazhi* 2016; 792-797
- 27 **Tang ST,** Hsieh CH, Chiang MC, Chen JS, Chang WC, Chou WC, Hou MM. Impact of high self-perceived burden to others with preferences for end-of-life care and its determinants for terminally ill cancer patients: a prospective cohort study. *Psychooncology* 2017; **26**: 102-108 [PMID: [26950036](#) DOI: [10.1002/pon.4107](#)]
- 28 **Cao X,** Ge Y, Fu J, Lv Y. Effect of cold underwear on acute radioactive dermatitis in cervical cancer patients undergoing radiotherapy. *Xiandai Linchuang Huli* 2016; 33-36
- 29 **Cui Y.** Effect factors of acute radiation proctitis caused by intensity modulated radiotherapy for cervical cancer. *J Electron Imaging* 2017; **40**: 44-47
- 30 **Wilson KG,** Chochinov HM, McPherson CJ, Skirko MG, Allard P, Chary S, Gagnon PR, Macmillan K, De Luca M, O'Shea F, Kuhl D, Fainsinger RL, Karam AM, Clinch JJ. Desire for euthanasia or physician-assisted suicide in palliative cancer care. *Health Psychol* 2007; **26**: 314-323 [PMID: [17500618](#) DOI: [10.1037/0278-6133.26.3.314](#)]
- 31 **Zabora J,** BrintzenhofeSzoc K, Curbow B, Hooker C, Piantadosi S. The prevalence of psychological distress by cancer site. *Psychooncology* 2001; **10**: 19-28 [PMID: [11180574](#) DOI: [10.1002/1099-1611\(200101/02\)10:1<19::aid-pon501>3.0.co;2-6](#)]
- 32 **McPherson CJ,** Wilson KG, Murray MA. Feeling like a burden to others: a systematic review focusing on the end of life. *Palliat Med* 2007; **21**: 115-128 [PMID: [17344260](#) DOI: [10.1177/0269216307076345](#)]
- 33 **Simmons LA.** Self-perceived burden in cancer patients: validation of the Self-perceived Burden Scale. *Cancer Nurs* 2007; **30**: 405-411 [PMID: [17876187](#) DOI: [10.1097/01.NCC.0000290816.37442.af](#)]
- 34 **Chiò A,** Gauthier A, Calvo A, Ghiglione P, Mutani R. Caregiver burden and patients' perception of being a burden in ALS. *Neurology* 2005; **64**: 1780-1782 [PMID: [15911811](#) DOI: [10.1212/01.WNL.0000162034.06268.37](#)]



Published by **Baishideng Publishing Group Inc**  
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA

**Telephone:** +1-925-3991568

**E-mail:** [bpgoffice@wjgnet.com](mailto:bpgoffice@wjgnet.com)

**Help Desk:** <https://www.f6publishing.com/helpdesk>

<https://www.wjgnet.com>

