Original Article
The effects of nursing intervention on the postoperative quality of life and early compliance of patients with cervical cancer

Juan Li[*], Chunxiao He[*], Zhenzhen Wu, Lixia Long, Hua Luan, Qing Liu, Yilin Li

Department of Critical Care Medicine, Gansu Provincial Maternity and Child-care Hospital, Lanzhou, Gansu, China. [*]Equal contributors and co-first authors.

Abstract: Objective: This study aimed to analyze the effects of nursing intervention on the postoperative quality of life and early compliance of patients with cervical cancer. Methods: A total of 96 patients undergoing cervical cancer surgery in our hospital from February 2017 to November 2018 were recruited for the study, in which 48 randomly-selected patients were nursed comprehensively as an observation group, and the other 48 patients were nursed routinely as a control group. The patient compliance in the two groups after the nursing was evaluated according to the eight-item Morisky Medication Adherence Scale (MMAS-8), and their quality of life was evaluated based on the MOS 36-Item Short-Form Health Survey (SF-36). The two groups were compared in terms of nursing satisfaction. A multivariate logistic regression analysis was adopted to analyze the risk factors for postoperative bladder dysfunction, and a receiver operating characteristic (ROC) curve was used to analyze the diagnostic values of age, surgical approach, and nursing pattern for postoperative bladder dysfunction. Results: The observation group got significantly higher MMAS-8 and SF-36 scores than the control group and showed significantly higher total nursing satisfaction than the control group (all P<0.05). A multivariate logistic regression analysis revealed that age, surgical approach, and nursing pattern were independent risk factors for postoperative bladder dysfunction. The ROC curves showed that the areas under the curve (AUC) for age, surgical approach, and nursing pattern were 0.669 (95% CI: 0.552-0.786), 0.635 (95% CI: 0.513-0.756), and 0.612 (95% CI: 0.513-0.756), respectively. Conclusion: A comprehensive nursing pattern can effectively improve the postoperative quality of life and compliance of patients with cervical cancer. Age, surgical approach, and nursing pattern are independent risk factors for postoperative bladder dysfunction, and we can predict the postoperative bladder dysfunction of patients based on those factors.

Keywords: Nursing intervention, cervical cancer, life quality, compliance

Introduction

Cervical cancer is mainly caused by human papillomavirus infection. With a consistently increasing incidence in recent years, it is the seventh most common cancer in China and the second most common gynecological cancer [1, 2]. In 2012, there were about 527,600 new patients with cervical cancer and about 265,700 patients worldwide who died from the disease [3]. Most patients with early cervical cancer can be treated by surgery, and its cure rate is relatively high. For example, radical hysterectomy provides a cure rate of over 80% and contributes to a 5-year survival rate of over 90% in patients, but it also leads to sequelae

such as urinary retention, anorectal dysfunction, or sexual dysfunction [4, 5]. During surgery, patients may have the complication of blood loss. In addition, patients after surgery may suffer deep venous thrombosis, pulmonary embolism, wound dehiscence, postoperative bladder dysfunction and fistula, and many surgeries cannot completely preserve the patients' reproductive ability. These conditions often lead to patient depression and a decrease in their quality of life [6-8].

Some studies have reported that, generally, cervical cancer patients with a survival period of more than 5 years lead relatively good and healthy life [9]. At present, quality of life is eval-

uated in multiple dimensions, generally including physical function, mental health, social function and others, and these factors are related to patient survival [10]. The survival of patients with early cervical cancer has been improved by surgery, so it is crucial to improve their life quality now.

The low compliance of patients will seriously affect their treatment efficacy and recovery, so addressing this is a key step to maintaining and improving the compliance of patients in treatment [11]. Nursing services can improve the confidence of patients and their families, thus improving the patients' compliance and postoperative quality of life, so effective postoperative nursing is essential to improving the postoperative outcome of cancer surgery and ensuring that neither complications nor any delay in subsequent radiotherapy, chemotherapy, or recovery will occur [12, 13].

Therefore, this study hopes to analyze quality of life and the early compliance of patients with cervical cancer after nursing intervention, so as to provide a direction and basis for clinical practice.

Materials and methods

Clinical data of the patients

A total of 96 patients (with an average age of 48.4±7.4 years) undergoing cervical cancer surgery in our hospital from February 2017 to November 2018 were enrolled, and 48 of them were randomly selected to be nursed comprehensively in the observation group, and the other 48 patients (with an average age of 48.6±6.8 years) were nursed routinely in the control group. This study was approved by the Gansu Provincial Maternity and Child-care Hospital ethics committee, and all patients signed an informed consent form after gaining an understanding the study.

Inclusion and exclusion criteria

Patients meeting the following criteria were included: Patients diagnosed with cervical cancer based on pathology according to the cervical cancer diagnostic guideline jointly issued by the American Cancer Society (ACC), the American Society for Colposcopy and Cervical Pathology (ASCCP), and the American Society

for Clinical Pathology (ASCP) in 2012 [14]; patients who had not been treated with radiotherapy and chemotherapy before or after their surgery; patients with detailed clinical data, and patients willing to cooperate with the treatment and follow-up.

Patients with a congenital immunodeficiency, severe infectious or inflammatory diseases, other comorbid cardio-cerebrovascular diseases, other malignant tumors, other comorbid gynecologic diseases, comorbid mental disease or bladder dysfunction were excluded.

Nursing pattern

Patients in the control group were nursed routinely after surgery as follows: They were given information and guidance about relevant drugs, they were recommended to eat a balanced diet to maintain nutrition and educated about cervical cancer and health. They were also informed of the hospital telephone number.

In contrast, patients in the observation group were nursed comprehensively as follows: 1. Rehabilitation training: They were guided to have pelvic diaphragm muscle training at least 3 times a day, and the training was adjusted according to their status. 2. Psychological nursing: The nurses paid close attention to the patients' psychological changes, so as to enlighten them in a timely manner when they showed anxiety, fear, tension, or other adverse emotions. Successful rehabilitation cases were described to the patients to help improve their confidence, and their families were communicated with, so as to enlighten the patients and their families together. 3. Information about their disease: The causes, treatment methods, efficacy, and prognosis about the disease were explained to the patients, so as to help them understand the disease, and treatment information and guidance were also provided for them. 4. Diet intervention: It was ensured that the patients had a scientific, balanced and nutritious diet, mainly including light and digestible food designed to satisfy their energy demands.

Observation indexes

Main observation indexes: The compliance of the patients in the two groups after nursing was

Table 1. Patient clinical data [n (%)]

Factors	Observation group (n = 48)	Control group (n = 48)	$t/x^2/Z$ value	P
Age (Y)	48.4±7.4	48.6±6.8	0.138	0.891
BMI (kg/m^2)	20.75±2.62	21.04±2.97	0.507	0.613
Smoking history			0.711	0.399
Yes	6 (12.50)	9 (18.75)		
No	42 (87.50)	39 (81.25)		
History of alcoholism			0.549	0.459
Yes	9 (18.75)	12 (25.00)		
No	39 (81.25)	36 (75.00)		
Place of residence			0.711	0.399
Urban area	39 (81.25)	42 (87.50)		
Rural area	9 (18.75)	6 (12.50)		
Tumor size			0.182	0.670
<2 cm	30 (62.50)	32 (66.67)		
≥2 cm	18 (37.50)	16 (33.33)		
Menopause or not			0.697	0.404
Yes	31 (64.58)	27 (56.25)		
No	17 (35.42)	21 (43.75)		
Operative method			0.717	0.869
Cervical conization	10 (20.83)	12 (25.00)		
Extrafascial abdominal hysterectomies	15 (31.25)	12 (25.00)		
Radical hysterectomy and pelvic lymph node dissection	12 (25.00)	14 (29.17)		
Subradical hysterectomy and pelvic lymph node dissection	11 (22.92)	10 (20.83)		
FIGO stage			0.204	0.838
IA2	10 (20.83)	12 (25.00)		
IB1	21 (43.75)	16 (33.33)		
IB2	17 (35.42)	20 (41.67)		
Histopathology type			0.325	0.850
Squamous cell carcinoma	32 (66.67)	33 (68.75)		
Adenocarcinoma	13 (27.08)	11 (22.92)		
Adenosquamous carcinoma	3 (6.25)	4 (8.33)		
Surgical approach			1.064	0.302
Laparotomy	25 (52.08)	30 (62.50)		
Laparoscopy	23 (47.92)	18 (37.50)		
SCCA (ng/ml)	5.56±1.67	5.64±1.76	0.228	0.820
CEA (ng/ml)	5.83±0.85	6.06±0.86	1.318	0.191
CA125 (U/mL)	37.27±6.47	35.16±6.52	1.592	0.115

Note: BMI: standard body weight; SCCA: squamous cell carcinoma antigen; CEA: Carcinoembryonic antigen; CA125: carbohydrate antigen 125.

evaluated according to the eight-item Morisky Medication Adherence Scale (MMAS-8), and their quality life was evaluated based on the MOS 36-Item Short-Form Health Survey (SF-36). SF-36 is a 36-item, patient-reported survey of patient health. It is a set of generic, coherent, and easily administered quality-of-life measures. These measures rely upon patient self-reporting and are now widely utilized for routine monitoring and the assessment of care outcomes in adult patients.

Multivariate logistic regression analysis was adopted to analyze the risk factors for postoperative bladder dysfunction.

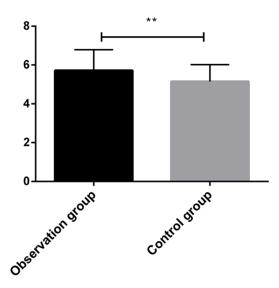Secondary observation indexes: The clinical data of the two groups were collected. The

Figure 1. Compliance of the two groups. The observation group got significantly higher MMAS-8 sores than the control group (t = 2.864, P = 0.005). ** indicates P<0.01.

nursing satisfaction of the patients in the two groups was evaluated according to a nursing satisfaction questionnaire developed by our hospital (The total satisfaction = very satisfied + satisfied). The two groups were compared in nursing satisfaction. Receiver operating characteristic (ROC) curves were adopted to analyze the diagnostic values and best cut-off values for age, surgical approach, and nursing pattern for postoperative bladder dysfunction.

Statistical analysis

In this study, SPSS 20.0, medical statistical analysis software, (Chicago SPSS Co., Ltd., USA) was adopted to statistically analyze the collected data, and GraphPad Prism 7 (GraphPad Software, San Diego, USA) was used to draw figures of the collected data. The enumeration data usage (%) was analyzed using chi-square test and expressed by X^2, and the measurement data were expressed by mean ± standard deviation (Mean ± SD). All enumeration data were in a normal distribution. The comparison between groups about the enumeration data was checked using independent-samples *T* tests. The ranked data were checked using rank sum tests, and expressed by Z. Multivariate logistics regression was adopted for the multivariate analysis of the factors related to postoperative bladder dysfunction, and ROC curves were adopted to evaluate the diag-

nostic values of age, surgical approach, and nursing patterns for postoperative bladder dysfunction. P<0.05 indicated a significant difference.

Results

No differences in baseline data between two groups

The two groups were compared in terms of their clinical data, and it was found that there was no significant difference between them in age, body mass index (BMI), smoking history, history of alcoholism, place of residence, tumor size, menopause, operation method, Fédération Internationale de Gynécologie et d'Obstétrique (FIGO) stage, histopathology type, surgical approach, squamous cell carcinoma antigen (SCCA), carcinoembryonic antigen (CEA), and carbohydrate antigen 125 (CA125) (all P>0.05) (**Table 1**).

The observation group showed higher MMAS-8 scores

The two groups were compared in terms of compliance based on the eight-item Morisky Medication Adherence Scale (MMAS-8), and it was found that the observation group got significantly higher MMAS-8 scores than the control group (5.72±1.07 vs. 5.15±0.87, P<0.05), indicating the observation group had better medication adherence (**Figure 1**).

The observation group showed higher SF-36 scores

The life quality of the two groups was evaluated according to their SF-36 scores, and it turned out that the observation group got significantly higher scores in the 8 dimensions than the control group (all P<0.05), indicating that the observation group improved wholly in every aspect of the quality of life (**Table 2**).

The observation group showed higher nursing satisfaction

The nursing satisfaction of the two groups was evaluated, and it was turned out that there was no difference between them in the number of patients very satisfied with nursing and the number of patients satisfied with nursing (both P>0.05), but the total nursing satisfaction of

Table 2. SF-36 scores of the two groups after treatment

	Observation group (n = 48)	Control group (n = 48)	t	P
Physiological function	73.37±16.93	65.46±17.25	2.267	0.026
Physiological role	61.76±16.64	51.37±22.15	2.598	0.011
Body pain	74.84±12.75	64.64±15.36	3.540	<0.001
Health status	65.40±9.28	54.33±12.85	4.839	<0.001
Energy	67.74±16.26	57.49±13.86	3.324	0.001
Social function	58.77±12.94	52.46±13.65	2.324	0.022
Emotional function	71.46±15.24	63.45±14.85	2.608	0.011
Mental health	67.94±17.15	51.27±15.92	4.936	<0.001

Table 3. Comparison between the two groups in terms of nursing satisfaction

	Observation group (n = 48)	Control group (n = 48)	X^2	P
Very satisfied	15 (31.25)	9 (18.75)	2.000	0.157
Satisfied	27 (56.25)	25 (52.08)	0.168	0.682
Unsatisfied	6 (12.50)	14 (29.17)	4.042	0.044
Total satisfaction	42 (87.50)	34 (70.83)		

the observation group was significantly higher than the total nursing satisfaction of the control group (P<0.05) (**Table 3**).

Univariate analysis of postoperative bladder dysfunction

A total of 26 patients in the two groups suffered bladder dysfunction after surgery. They were divided into a bladder dysfunction group and a normal group according to the occurrence of bladder dysfunction, and their clinical data were collected and analyzed. It was found that there was no significant difference between the two groups in BMI, smoking history, history of alcoholism, place of residence, tumor size, surgical approach, FIGO stage, histological type, SCCA, CEA, and CA125 (all P>0.05), but there were differences between them in age, menopause, surgical approach, and nursing pattern (all P<0.05) (**Table 4**).

Multivariate analysis of bladder dysfunction

Indexes with differences in the univariate analysis were assigned (See **Table 5** for assignment). Forward LR was selected for the multivariate logistic regression analysis, and it was found that menopause was not a risk factor for the patients' bladder dysfunction, but age (OR: 2.721, 95% CI: 1.342-13.861), surgical

approach (OR: 3.435, 95% CI: 1.322-5.603), and nursing pattern (OR: 2.549, 95% CI: 1.149-3.429) were independent risk factors for bladder dysfunction (**Table 6**).

Diagnostic values of independent risk factors for postoperative concurrent bladder dysfunction

Receiver operating characteristic (ROC) curves were drawn to analyze the diagnostic values of the independent risk factors for postoperative concurrent complication bladder dysfunction. It was found that the area under the curve (AUC) of age, surgical approach, and nursing pattern was 0.669 (95% CI: 0.552-0.786), 0.635 (95% CI: 0.513-0.756), and 0.612 (95% CI: 0.513-0.756), respectively (**Figure 2** and **Table 7**).

Discussion

With the implementation of some cervical cancer screening programs, the mortality of cervical cancer in some countries and regions has been significantly reduced, because patients with cervical cancer can be confirmed to have the disease earlier and can be treated with methods that have a high cure rate [15, 16]. In addition, with the development of medical technology, the surgical treatment for patients with early cervical cancer shows a greatly improved cure rate and contributes to a greatly improved patient survival rate [17]. However, after the surgical treatment, some patients still suffer some postoperative complications.

In this study, we compared the two groups in terms of compliance after the nursing intervention based on the MMAS-8, and found that MMAS-8 score of the observation group was significantly higher than the score of the control group, which indicated that patients nursed comprehensively showed significantly higher compliance than those nursed routinely. Some patients with cervical cancer need additional relevant treatment after surgery [18, 19], which often makes patients who have just undergone

Table 4. Univariate analysis

Factors	Bladder dysfunction group (n = 26)	Normal group (n = 70)	$t/X^2/Z$ value	P
Age (Y)	51.4±6.2	47.2±7.7	2.494	0.014
BMI (kg/m^2)	21.23±2.03	20.35±3.02	1.373	0.173
Smoking history			0.452	0.502
Yes	3 (11.54)	12 (17.14)		
No	23 (88.46)	58 (82.86)		
History of alcoholism			0.879	0.349
Yes	4 (15.38)	17 (24.29)		
No	22 (84.62)	53 (75.71)		
Place of residence			1.702	0.192
Urban area	24 (92.31)	57 (81.43)		
Rural area	2 (7.69)	13 (18.57)		
Tumor size			2.374	0.123
<2 cm	20 (76.92)	42 (60.00)		
≥2 cm	6 (23.08)	28 (40.00)		
Menopause or not			6.176	0.013
Yes	21 (80.77)	37 (52.86)		
No	5 (19.23)	33 (47.14)		
Operative method			1.672	0.643
Cervical conization	4 (15.38)	18 (25.71)		
Extrafascial abdominal hysterectomies	7 (26.92)	20 (28.57)		
Radical hysterectomy and pelvic lymph node dissection	9 (34.62)	17 (24.29)		
Subradical hysterectomy and pelvic lymph node dissection	6 (23.08)	15 (21.43)		
FIGO stage			0.604	0.546
IA2	7 (26.92)	15 (21.43)		
IB1	10 (38.46)	27 (38.57)		
IB2	9 (34.62)	28 (40.00)		
Histopathology type			0.089	0.957
Squamous cell carcinoma	17 (65.39)	48 (68.57)		
Adenocarcinoma	7 (26.92)	17 (24.29)		
Adenosquamous carcinoma	2 (7.69)	5 (7.14)		
Surgical approach			5.616	0.018
Laparotomy	20 (76.92)	35 (50.00)		
Laparoscopy	6 (23.08)	35 (50.00)		
SCCA (ng/ml)	5.63±1.52	5.58±1.77	0.128	0.899
CEA (ng/ml)	5.91±0.79	5.98±0.89	0.353	0.725
CA125 (U/mL)	36.93±6.25	35.52±6.63	0.940	0.350
Nursing pattern			7.596	0.006
Comprehensive nursing	7 (26.92)	41 (58.57)		
Routine nursing	19 (73.08)	29 (41.43)		

Note: BMI: standard body weight; SCCA: squamous cell carcinoma antigen; CEA: Carcinoembryonic antigen; CA125: carbohydrate antigen 125.

surgery more prone to adverse emotions, psychological pressure, fear of treatment failure, and other adverse consequences, thus reducing the compliance and quality of life of the patients [20], and also delaying their treatment process. Therefore, we fully communicated with the patients and their families and told them about successful treatment cases,

Table 5. Assignment

Factors	Assignment
Age	The raw data of those belonging to continuous variables were used for the analysis
Menopause or not	Yes = 1, No = 0
Surgical approach	Laparotomy = 1, Laparoscopy = 0
Nursing pattern	Routine nursing 1, comprehensive nursing = 0
Urinary retention or not	Yes = 1, No = 0

Table 6. Multivariate analysis

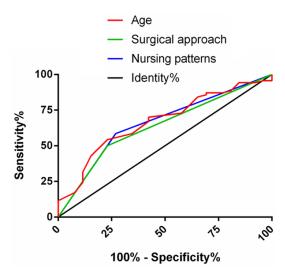| Factors	B	S.E.	Wals	Sig.	Exp (B)	95% CI of EXP (B)	
						Lower limit	Upper limit
Age	1.253	0.606	5.418	0.028	2.721	1.342	13.861
Surgical approach	1.001	0.368	6.204	0.007	3.435	1.322	5.603
Nursing pattern	0.382	1.379	4.573	0.003	2.549	1.149	3.429

Figure 2. ROC curves of independent risk factors for predicting postoperative concurrent bladder dysfunction. The AUC, specificity, sensitivity, optical cut-off, and Youden index of age were 0.669, 65.38%, 58.57%, 47.500, and 23.95%, respectively; those of the surgical approach were 0.635, 76.92%, 50.00%, 0.500, and 26.92%, and those of the nursing pattern were 0.612, 73.08%, 58.57%, 0.500, and 31.65%, respectively.

so as to dispel their psychological worries and to enlighten and take care of them together with their families. In addition, we also reminded and supervised the treatment process of the patients to a certain extent, so as to improve their compliance and life quality. Then we evaluated the life quality of patients in the two groups based on their SF-36 scores in 8 dimensions including physiological function, physiological role, physical pain, health status, energy, social function, emotional function and mental health, and found that the scores of the observation group in the 8 dimensions were all higher than those of the control group, which indicated that the quality of life of the patients nursed comprehensively was higher than it was in the patients nursed routinely. In addition, we also compared the two groups in nursing satisfaction and found that the nursing satisfaction of the observation group was significantly higher than the nursing satisfaction of the control group. It indicated that high-quality nursing patterns were particularly important for the postoperative recovery of patients. Measures can be taken for patients in physiology, psychology, daily diet, postoperative recovery exercise and other aspects, so as to strengthen their compliance and body recovery function after surgery, effectively relieving their postoperative psychological pressure and improving their quality of life and their and their families' nursing satisfaction. The results of this study also showed that comprehensive nursing was superior to routing nursing [21, 22].

A hysterectomy may damage the sympathetic nerve or parasympathetic nervous system that dominates the lower urinary tract, resulting in postoperative bladder dysfunction and serious effects on one's quality of life [23, 24]. Therefore, we performed a logistic regression analysis for the risk factors for postoperative bladder dysfunction, and found that age, surgical approach, and nursing pattern were independent risk factors for bladder dysfunction, which also further suggested that we should

Table 7. ROC parameters

Index	AUC	95% CI	Specificity	Sensitivity	Youden index	Cut-off
Age	0.669	0.552-0.786	65.38%	58.57%	23.95%	<47.500
Surgical approach	0.635	0.513-0.756	76.92%	50.00%	26.92%	<0.500
Nursing pattern	0.612	0.515-0.710	73.08%	58.57%	31.65%	<0.500

pay more attention to these risk factors during nursing, and we should strengthen nursing measures accordingly for elder patients undergoing laparotomy, so as to prevent postoperative bladder dysfunction [25]. Finally, we analyzed these risk factors with an ROC curve, and we found that the AUC of age, surgical approach, and nursing pattern were 0.669, 0.635, and 0.612, respectively, which indicated that age, surgical approach, and nursing pattern had predictive value for patients' postoperative bladder dysfunction.

However, this study also has some shortcomings. First, this study did not include normal subjects. We are still unclear about the differences between the patients and normal people after nursing. The surgical methods of the patients included in the study were not exactly the same. The difference in the outcomes of the different surgical methods was not further studied. Finally, the adverse reaction this study focused on was bladder dysfunction. Therefore, it is hoped that other adverse reactions after surgery in cervical cancer patients can be further explored in subsequent studies.

To sum up, a comprehensive nursing pattern can effectively improve postoperative life quality and the compliance of patients with cervical cancer. Age, the surgical approach, and the nursing pattern are independent risk factors for postoperative bladder dysfunction, and we can predict patients' postoperative bladder dysfunction based on those factors.

Disclosure of conflict of interest

None.

Address correspondence to: Yilin Li, Department of Critical Care Medicine, Gansu Provincial Maternity and Child-care Hospital, No. 143 Qilihe North Street, Lanzhou 730000, Gansu, China. Tel: +86-0931-8100120; E-mail: yilinli0907@163.com

References

[1] Cohen PA, Jhingran A, Oaknin A and Denny L. Cervical cancer. Lancet 2019; 393: 169-182.

[2] Jiang X, Tang H and Chen T. Epidemiology of gynecologic cancers in China. J Gynecol Oncol 2017; 29.

[3] Torre LA, Bray F, Siegel RL, Ferlay J, Lortet-Tieulent J and Jemal A. Global cancer statistics, 2012. CA Cancer J Clin 2015; 65: 87-108.

[4] Kim HS, Kim K, Ryoo SB, Seo JH, Kim SY, Park JW, Kim MA, Hong KS, Jeong CW and Song YS; FUSION Study Group. Conventional versus nerve-sparing radical surgery for cervical cancer: a meta-analysis. J Gynecol Oncol 2015; 26: 100-110.

[5] Melamed A, Margul DJ, Chen L, Keating NL, Del Carmen MG, Yang J, Seagle BL, Alexander A, Barber EL, Rice LW, Wright JD, Kocherginsky M, Shahabi S and Rauh-Hain JA. Survival after minimally invasive radical hysterectomy for early-stage cervical cancer. N Engl J Med 2018; 379: 1905-1914.

[6] Frumovitz M, Sun CC, Schover LR, Munsell MF, Jhingran A, Wharton JT, Eifel P, Bevers TB, Levenback CF and Gershenson DM. Quality of life and sexual functioning in cervical cancer survivors. J Clin Oncol 2005; 23: 7428-7436.

[7] Bae H and Park H. Sexual function, depression, and quality of life in patients with cervical cancer. Support Care Cancer 2016; 24: 1277-1283.

[8] Shepherd JH, Mould T and Oram DH. Radical trachelectomy in early stage carcinoma of the cervix: outcome as judged by recurrence and fertility rates. BJOG 2001; 108: 882-885.

[9] Bloom JR, Petersen DM and Kang SH. Multidimensional quality of life among long-term (5+ years) adult cancer survivors. Psychooncology 2007; 16: 691-706.

[10] Ashing-Giwa KT, Lim JW and Tang J. Surviving cervical cancer: does health-related quality of life influence survival? Gynecol Oncol 2010; 118: 35-42.

[11] Nieuwlaat R, Wilczynski N, Navarro T, Hobson N, Jeffery R, Keepanasseril A, Agoritsas T, Mistry N, Iorio A, Jack S, Sivaramalingam B, Iserman E, Mustafa RA, Jedraszewski D, Cotoi C and Haynes RB. Interventions for enhancing medication adherence. Cochrane Database Syst Rev 2014; CD000011.

[12] Li X, Zhang Y, Gao H, Sun X, Lv W and Xu G. The value of extended nursing services on patients with bladder cancer after endoscopic bladder resection. Iran J Public Health 2016; 45: 48.

[13] Seibæk L, Jakobsen DH and Høgdall C. The danish gynecological cancer nursing data-

base: creating evidence for quality improvements in preoperative and postoperative cancer care. Int J Gynecol Cancer 2018; 28: 802-807.

[14] Saslow D, Solomon D, Lawson HW, Killackey M, Kulasingam SL, Cain J, Garcia FA, Moriarty AT, Waxman AG, Wilbur DC, Wentzensen N, Downs LS Jr, Spitzer M, Moscicki AB, Franco EL, Stoler MH, Schiffman M, Castle PE and Myers ER; American Cancer Society; American Society for Colposcopy and Cervical Pathology; American Society for Clinical Pathology. American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology screening guidelines for the prevention and early detection of cervical cancer. Am J Clin Pathol 2012; 62: 147-172.

[15] Lantz PM and Mullen J. The national breast and cervical cancer early detection program: 25 years of public health service to low-income women. Cancer Causes Control 2015; 26: 653-656.

[16] Basu P, Meheus F, Chami Y, Hariprasad R, Zhao F and Sankaranarayanan R. Management algorithms for cervical cancer screening and precancer treatment for resource-limited settings. Int J Gynaecol Obstet 2017; 138: 26-32.

[17] Li X, Li J, Wen H, Ju X, Chen X, Xia L, Ke G, Tang J and Wu X. The survival rate and surgical morbidity of abdominal radical trachelectomy versus abdominal radical hysterectomy for stage IB1 cervical cancer. Ann Surg Oncol 2016; 23: 2953-2958.

[18] Landoni F, Colombo A, Milani R, Placa F, Zanagnolo V and Mangioni C. Randomized study between radical surgery and radiotherapy for the treatment of stage IB-IIA cervical cancer: 20-year update. J Gynecol Oncol 2017; 28: e34.

[19] Ujihira T, Ota T, Kusunoki S, Sugimori Y, Kimura M, Kaneda H, Terao Y, Ogishima D and Takeda S. Outcome of neoadjuvant intra-arterial chemotherapy and radical hysterectomy for treatment of bulky stage IB to stage IIB uterine cervical cancer: can postoperative irradiation be avoided? Int J Gynecol Cancer 2016; 26: 1258-1263.

[20] Mohanty SK, Chopra S, Mudaliar A, Kannan S, Mahantshetty U, Engineer R, Ghosh J, Bajpai J, Gupta S and Shrivastava S. A comparative analysis of quality of life after postoperative intensity-modulated radiotherapy or three-dimensional conformal radiotherapy for cervical cancer. Indian J Cancer 2018; 55: 327-335.

[21] Dunberger G and Bergmark K. Nurse-led care for the management of side effects of pelvic radiotherapy: what does it achieve? Curr Opin Support Palliat Care 2012; 6: 60-68.

[22] Li J, Huang J, Zhang J and Li Y. A home-based, nurse-led health program for postoperative patients with early-stage cervical cancer: a randomized controlled trial. Eur J Oncol Nurs 2016; 21: 174-180.

[23] Laterza RM, Sievert KD, de Ridder D, Vierhout ME, Haab F, Cardozo L, van Kerrebroeck P, Cruz F, Kelleher C, Chapple C, Espuña-Pons M and Koelbl H. Bladder function after radical hysterectomy for cervical cancer. Neurourol Urodyn 2015; 34: 309-315.

[24] Kruppa J, Kavvadias T, Amann S, Baessler K and Schuessler B. Short and long-term urodynamic and quality of life assessment after nerve sparing radical hysterectomy: a prospective pilot study. Eur J Obstet Gynecol Reprod Biol 2016; 201: 131-134.

[25] Wu XF, Qi LT and Lu YL. Several therapeutic methods to decrease postoperative complication of cervical carcinoma. Journal of New Medicine 1998; 4.