ISSN 2618-1584 Vol. 4, Issue 11: 19-24, DOI: 10.25236/FMSR.2022.041104

Application of health behavior change integration theory in pelvic floor muscle exercise in patients with early cervical cancer surgery

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Abstract: *Objective: To explore the effect of nursing intervention based on the integration theory of health behavior change on pelvic floor muscle exercise in patients with pelvic floor dysfunction after early cervical cancer surgery.Methods: Select 40 patients with pelvic floor dysfunction after surgery for early cervical cancer, and divide them into experimental group (20 cases) and control group (20 cases) by random number table method. Based on the pelvic floor muscle exercise based on the integration theory of healthy behavior change, the control group received routine pelvic floor rehabilitation nursing, and Oxford pelvic floor muscle strength was used before the intervention (T0), after 1 month of intervention (T1) and at the end of the intervention (T2). Scoring systems, Short Form of Pelvic Floor Dysfunction (PFDI-20), Pelvic Floor Impact Questionnaire (PFIQ-7), General Self-Efficacy Scale (GSES), and Social Support Rating Scale (SSRS) were assessed.Results: (1) In terms of pelvic floor muscle strength, the muscle strength ratings of TO, T1 and T2 in the control group were (1.10±0.70), (1.46+0.64 (1.90+0.70), respectively, and (1.12±0.73) in the experimental group. , (1.96±0.73), (3.04+0.81) levels, the difference between the two groups at each time point after intervention was statistically significant (F group=25.730, F time=329.809, F interaction=56.688, all P<0.001); (2) On the PFDL20 score, the total scores of TO, T1 and T2 in the control group were respectively (80.19+18.75)>(78.67+17.99 (77.47+15.91) points, the test group was (77.77+19.97) >(69.11±15.97), (66.54+14.04) points, the difference between the two groups at each time point after the intervention was statistically significant (F group=6.876, F time=62.536, F interaction=29.196, all P<0.05); (3) On the PFIQ-7 score, the total scores of T0, T1 and T2 in the control group were (82.80+12.04)> (80.88+11.62)> (78.39+8.51) points, and the experimental group were (82.66±11.24), (82.66±11.24), (80.88+11.62) 76.69±10.12) and (73.20+7.41) points, the difference was statistically significant between the two groups at each time point after the intervention (F group=3.551, P=0.062; postmortem time=69.943, F interaction=13.213, all P<0.001); (4) In general self-efficacy, the total scores of TO, T1 and T2 in the control group were (2.44±0.53), (2.49+0.49) respectively (2.51+0.34) points, the experimental group was respectively (2.47+0.53)> (2.67+0.38 (2.86+0.30) points, the difference between the two groups at each time point after the intervention was statistically significant 3 group = 6.788, F time = 50.994, F interaction=25.664, all <0.05); (5) In terms of social support, the total scores of T0, T1 and T2 in the control group were (45.16±3.28), (45.84±3.02),(46.42+2.82) points, and the experimental group were respectively (45.48+3.43(48.25+2.83)> (5037+2.45) points, the difference was statistically significant between the two groups at each time point after the intervention (F group=20.12, F time = 199.34, F interaction = 70.24, both P<0.001).Conclusion: Nursing intervention scheme based on the integration theory of health behavior change can significantly improve the pelvic floor muscle strength, self-efficacy, social support level and quality of life of patients with pelvic floor dysfunction after early cervical cancer surgery, and improve the short-term and long-term pelvic floor rehabilitation.*

Keywords: *healthy behavior; integration theory; cervical cancer; pelvic floor exercise*

1. Introduction

Cervical cancer (cervical cancer CC) is one of the diseases that seriously endanger the health of

ISSN 2618-1584 Vol. 4, Issue 11: 19-24, DOI: 10.25236/FMSR.2022.041104

contemporary women, and its morbidity and mortality ranks fourth among female malignant tumors in the world. In 2020, the number of new cases of cervical cancer in the world will be about 604,000, and the number of deaths will be about 342,000. Among them, the incidence and mortality of cervical cancer in women in developing countries are higher than those in developed countries. The number of new cervical cancer cases in my country is about 132,000 each year, and the number of deaths is about 530,000, accounting for about 18.4% of the annual female malignant tumor deaths. Data from the National Cancer Center shows that the incidence of cervical cancer in the central and western regions of my country is higher than that in the eastern region, and the mortality rate in the western region is the highest. With the development of domestic cervical cancer screening programs, the incidence of early cervical cancer has increased significantly in recent years, and the age of onset is gradually showing a younger trend. Domestic scholars investigated and analyzed 10,012 new cases of cervical cancer in the country from 2000 to 2009, and found that stage I patients accounted for 57.3%, and stage I patients accounted for 33.9%, of which 83.9% received surgical treatment. National Comprehensive Cancer Network Comprehensive Cancer Network (NCCN) guidelines propose that the standard treatment for patients with early cervical cancer (stage IA, IB, and IIA) is radical hysterectomy (RadicalHysterectomyRH) combined with bilateral pelvic lymphadenectomy. Supplemental chemoradiotherapy. In recent years, with the improvement of clinicians' surgical skills and the maturity of medical technology, the survival rate of patients with early cervical cancer is relatively high. It has been reported in the literature that the 5-year survival rate of early cervical cancer after treatment can reach 90%.[1]

2. Contents and Methods

2.1 Research Design

The research protocol can be implemented in an inductive way, which is usually used in qualitative research, or deductive way, which is usually used in quantitative research. This study adopts the methodological design of quantitative research to explore the intervention effect of nursing intervention plan based on ITHBC theory on pelvic floor muscle exercise in patients with PFD after early cervical cancer surgery.[2]

2.2 Research objects

2.2.1 Screening Criteria

Patients with early-stage cervical cancer combined with PFD who were treated in the gynecological outpatient department of our hospital and underwent surgery in our hospital from January 2019 to December 2021 were selected as the research subjects. Inclusion criteria:

(1) The patient is cervical cancer stage IA1~IIA2 after surgery, and the preoperative pathological diagnosis is cervical cancer;

(2) All patients have received gynecological physical examination, blood routine, urine routine, B-ultrasound and other related examinations. (Draft)" lists the diagnostic criteria of the "Guidelines for the Diagnosis and Treatment of Chronic Constipation in China (2013, Wuhan)" and other guidelines, and the diagnosis is mild to moderate PFD;

(3) 35～60 years old;

(4) Have normal reading and writing and cognitive ability, volunteer to participate in this study and cooperate with follow-up;

(5) Have a smartphone and use WeChat.

2.2.2 Determination of sample size and grouping

The sample size of this study is calculated by using the method of comparing two independent samples, through the PASS11.0 software, consult the literature of similar studies, a=0.05, P=0.1, the calculated sample size is 40, and the sample sizes of the two groups are determined to be respectively 20 cases. SPSS software was used to generate a random number table, with 1 representing the experimental group and 2 representing the control group, which were sorted according to the order of patients' visits and kept consistent with the sequence number of the random number table. Finally, the enrolled patients were randomly divided into experimental group and control group.

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2.3 Ethical principles

2.3.1 Respect the principle of voluntary

This study was approved by the hospital ethics committee. The research subjects were informed of the purpose, meaning, content, etc. of this research before participating in the research. During the research process, the research subjects have the right to give up and automatically withdraw from this research, but it will not affect the normal treatment and care of the patients.

2.3.2 Comply with the principle of confidentiality

The informed consent and the scale clearly indicate that the relevant information of the patient is only used for clinical research, and at the same time, the patient information is managed with coding, and the relevant information is strictly kept confidential and properly preserved the rules.

2.3.3 Comply with the principle of fairness and benefit

This study provides patients with a brochure on pelvic floor rehabilitation, instructs them to exercise pelvic floor muscles, and answers related questions. If necessary, patients in the control group will be provided with a more comprehensive nursing intervention for pelvic floor rehabilitation according to their specific conditions after the study. In addition, this study did not cause any harm to all study subjects.

2.4 Research content

2.4.1 Control group

(1) Evaluation: In the control group, routine nursing intervention was used. When outpatient follow-up visits or routine chemotherapy were used in hospital, the general condition and pelvic floor function of the patients were routinely assessed through gynecological physical examination, blood routine, urine routine, B-ultrasound and other related examinations, and the The patient's own risk factors associated with the disease.[3]

(2) Health education: The responsible nurses will conduct health education during hospitalization, distribute health education manuals, and introduce the basic knowledge of PFD (including PFD definition, common causes, pathogenesis, and hazards) to patients, as well as precautions and guidance for pelvic floor rehabilitation. Patients perform Kegel training, contract the anus and vagina to correctly feel the pelvic floor muscles, tighten for no less than 3 seconds each time, relax for 2 to 6 seconds, and do not use the abdominal muscles to exert force for 20 to 30 minutes (continuous contractions). 200 to 300 times), repeat 2 to 3 times a day, gradually increase the intensity, and add scenes of increased abdominal pressure such as brisk walking, stair climbing, coughing, beating, etc., for 3 months. Inform the patient to change bad living habits (Avoid heavy physical labor and heavy physical labor that rapidly increases abdominal pressure; increase dietary fiber intake to maintain smooth stool).

(3) Routine follow-up: The nurses conduct telephone follow-up once a week, urge the patients to carry out home rehabilitation training, and answer the problems encountered by the patients during the exercise of the pelvic floor muscles. The patients were followed up in the gynecological outpatient clinic every two weeks, and were given professional guidance by a pelvic floor rehabilitation therapist. Questionnaire surveys were conducted 1 month after the intervention and after the intervention.[4]

2.4.2 Test group

The experimental group adopted the nursing intervention program based on the ITHBC theory for 3 consecutive months. The details are as follows:

(1) Establish a pelvic floor rehabilitation team. The team includes 3 highly qualified obstetricians and gynecologists, 1 pelvic floor rehabilitation therapist, 6 gynecological nurses (including 2 backbone nurses) and 4 nursing graduate students. The group members are trained uniformly by the obstetrics and gynecology nursing experts, so that the members can master the content of ITHBC theory and pelvic floor rehabilitation treatment and nursing. After passing the theoretical knowledge and case simulation assessment, they can participate in this research.

(2) Individualized assessment. The process of human behavior change is divided into five consecutive stages: pre-intention, intention, preparation, action and maintenance, reflecting a continuous process of individual behavior change (iv). The pre-intention stage refers to the stage in which the patient has not yet realized the problem of his own behavior, and has no intention to adopt

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the behavior in the future, usually after 6 months; the intention stage: refers to the patient within 6 months Willingness to change behavior; Preparatory phase: The phase in which the patient has a behavior change within the next 30 days, usually after some effort has been made to prepare for tangible change; Action phase: The phase in which the patient behaves within 6 months There have been significant changes, but there is still instability, there is the possibility of reappearance of the problem behavior, and the patient needs to increase vigilance to prevent the behavior from returning to the previous stage; maintenance stage: refers to the patient's behavior change maintained for no less than 6 Months, has become a fixed habit of the patient, a lower probability of returning to the pre-intentional stage, less environmental influence, and increased confidence in behavioral changes. The stage of the patient's behavioral change is judged by the responsible nurse by assessing the patient's disease-related risk factors and disease-perceived mental state. For example, "What factors do you think caused you to have problems such as involuntary overflow of urine, incontinence or constipation after surgery?", "Do you know anything about pelvic floor rehabilitation?", "Do you currently exercise pelvic floor muscles?" Are you prepared for this?" or "Are you thinking of sticking to pelvic floor muscle training to change the status quo?" and other questions to guide patients to recognize the dangers of PFD, and supplement and explain the relevant content of pelvic floor muscle training according to the patient's cognition. It fully understands the benefits of pelvic floor rehabilitation and generates motivation for behavioral change.

(3) Promote the acquisition of knowledge and strengthen health beliefs. During the outpatient follow-up after cervical cancer surgery or the follow-up hospitalization for further treatment, the research team mainly explained the disease-related knowledge and the precautions of pelvic floor muscle exercise to the patients one-on-one through health education manuals, video demonstrations, and on-site teaching. For elderly patients with poor comprehension and acceptance ability, health education can be carried out by raising the volume, slowing down the speed of speech, and using pictures and videos during the explanation process. For young patients with higher education level or strong acceptance ability, it is recommended to consult relevant materials, and they can use the WeChat applet on pelvic floor muscle exercise for home auxiliary training. By correcting patients' cognitive misunderstandings and reducing knowledge blind spots, patients can quickly grasp the essentials of exercise knowledge and skills, and exercise pelvic floor muscles in the correct way. At the same time, we correctly publicize the therapeutic advantages and effects of pelvic floor muscle training, and invite patients with better self-management to share on-site experience, so as to strengthen the motivation and belief of patients in pelvic floor rehabilitation.

(4) Develop self-regulation skills and abilities. The pelvic floor exercise regimen was divided into increasing intensity Kegel training (3 weeks) and vaginal dumbbell training (9 weeks). The vaginal dumbbell training method is to start with the lightest No. 1 vaginal dumbbell, wash it and put it into the vagina. At the beginning, lie down (gradually convert to a semi-recumbent position, a standing position, etc.), and the legs are naturally separated, and the pelvic floor muscles are contracted. Clamp the dumbbells with strength, hold for 3 to 5 seconds (can be gradually extended to 8 to 10 seconds), relax for 8 to 10 seconds, cycle 20 to 30 times as a set, and train 3 sets a day. Make sure that the vaginal dumbbells do not come out when switching to a standing position. Even walking and jumping can ensure that the dumbbells are in the vagina. Change to the vaginal dumbbells of No. 2, and train step by step until the No. 5. The members of the group will give the patients one-on-one pelvic floor muscle exercise instruction and explain and demonstrate the use of vaginal dumbbells until the patient truly masters the skills. In addition, the research team also provides patients with teaching videos of pelvic floor muscle exercises, which are convenient for patients to practice at home. Obstetricians and Gynecologists, pelvic floor rehabilitation therapists, key nurses and patients jointly set short-term goals (1 month) and long-term goals (3 months). The short-term goal is that the patient can master the skills of pelvic floor muscle exercise within 1 month, and the symptoms related to PFD have a certain improvement; Symptoms are effectively improved. The research team instructed patients to record the "Pelvic Floor Rehabilitation Goal Sheet", record the frequency and time of pelvic floor muscle exercise once a week, and summarize the gains or share their experience of persistent exercise. At the same time, the responsible nurses and nursing graduate students regularly urge patients to actively complete tasks related to their goals through WeChat, telephone follow-up and outpatient follow-up, and conduct surveys twice a week to answer patients' questions in a timely manner. The team conducts a series of pelvic floor function examinations on the patients once a month, evaluates the relevant results, and formulates a reasonable and quantitative exercise program according to the actual situation of the patients. The patients have a high degree of completion through hard work. When a patient has a bad emotional state, members of the group with experience in psychological counseling will teach the patient to relieve their emotions and release their inner pressure through meditation, music therapy or

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emotional release therapy. In this study, the above measures were taken to improve the self-regulation ability of the patients, further enhance the health beliefs of the patients in pelvic floor rehabilitation, and promote the patients to adhere to the pelvic floor muscle exercise, thereby improving the quality of life of the patients.

(5) Social promotion. The team members have a comprehensive understanding of the patient's marital status, economic level, work status, education level, and the family's care and support for the patient. This study educates patients and primary caregivers through online videos, lectures, etc., and at the same time teaches caregivers emotional support skills, creates a supportive family environment, and supervises patients' implementation plans by caregivers to help patients achieve short-term and long-term goals. For patients with poor learning ability, family members or friends of the patients can be combined to encourage and support them, so as to enhance the confidence of patients in pelvic floor rehabilitation. Rewards are given to patients who persist in exercising and achieve significant results to strengthen their motivation to maintain healthy behaviors and improve compliance.

3. Discussion

The results showed that the pelvic floor muscle strength grading of the experimental group and the control group before the intervention were (1.12±0.73) and (1.10±0.70), respectively, and there was no significant difference in the pelvic floor muscle strength between the two groups. (t-0.121, P>0.05); After 1 month of intervention, the pelvic floor muscle strength classification of the experimental group and the control group were (1.96±0.73) and (1.46±0.64), respectively. There was a statistically significant difference in the level of strength (t=4.176, P<0.001); at the end of the intervention, the pelvic floor muscle strength classification of the experimental group and the control group were (3.04±0.81), (1.90±0.70)), there was a statistically significant difference in the level of pelvic floor muscle strength between the two groups (t=8.817, P<0.001).

Pelvic floor muscle exercises are the preferred method of conservative treatment for PFD and aim to improve pelvic floor muscle function and strength through repeated voluntary contractions of varying intensities and durations. [5]Strength training can promote the neurotransmission of motor neurons projecting to the muscles, improve the contraction force of the pelvic floor muscle fibers, enhance the pelvic floor support tension in gynecological cancer patients, promote the local blood circulation of the pelvic floor and the metabolism of the pelvic floor muscles, thereby improving the Patient pelvic floor function network. There is primary evidence that pelvic floor muscle exercises are effective in treating bladder dysfunction (incontinence, overactive bladder), bowel dysfunction (constipation, fecal incontinence), and pelvic organ prolapse. Conscious and effective pelvic floor muscle contraction can clamp the urethra, increase urethral pressure, and prevent urine leakage. Results of a study showed that stress urinary incontinence patients in the pelvic floor muscle training group were 6 times more likely to report cure or improvement than the no treatment group (74% us 11%, RR=6.33, 95%C/=3.88~ 10. 33); Compared with the no-treatment group, the symptoms of stress urinary incontinence patients in the pelvic floor muscle exercise group were significantly improved, and the quality of life was significantly improved, but long-term adherence to exercise was the key to maintaining the therapeutic effect.

The results of this study found that before the intervention, there was no significant difference in the pelvic floor muscle strength grade and PFDL20 score between the experimental group and the control group (p>0.05). The PFDL20 score was 66.54±14.04, which was significantly lower than the control group's 77.47±15.91 (P<0.05). 001); the results of repeated measures ANOVA of the pelvic floor muscle strength grades of the two groups of patients at 1 month and 3 months of intervention showed: time effect (f 329. 809, P < 0. 001), between-group effect (f 5. 730, P < 0. 001), interaction (f 56. 688, P < 0. 001); the results of repeated measures analysis of variance of the PFDL20 scores of the two groups of patients at 1 month and 3 months of intervention showed: Time effect (f 62. 536, P < 0. 001), between-group effect (f 876, P < 0. 05), interaction (f 9. 196, P < 0. 001) Nursing intervention can improve the level of pelvic floor muscle strength, reduce PFD-related symptoms, and reduce the impact on patients' life more than conventional nursing intervention. Over time, the effect of nursing intervention based on the ITHBC theory became more

Acknowledgments

The study was supported by the grant Qiqihar Science and Technology Bureau Research Project

ISSN 2618-1584 Vol. 4, Issue 11: 19-24, DOI: 10.25236/FMSR.2022.041104

(LHYD-2021094).

References

[1] Damghanian Maryam. Sexual function and related factors in the women with urinary incontinence treated by pelvic floor exercise [J]. Preventive Care In Nursing and Midwifery Journal, 2018,8(2).
[2] M. Ø. Nyhus, S. Mathew,K. Å. Salvesen,I. Volloyhaug. OC27.01: A randomised controlled trial of the effect of pelvic floor exercise on contraction, anatomy and symptoms in women scheduled for prolapse surgery[J]. Ultrasound in Obstetrics & Gynecology, 2019,54(S1).
[3] Goodridge Sophia Delpe,Chisholm Leah P,Heft Jessica, Hartigan Siobhan,Kaufman Melissa, Dmochowski Roger R,Stewart Thomas, Reynolds William Stuart. Association of Knowledge and Presence of Pelvic Floor Disorders and Participation in Pelvic Floor Exercises: A Cross-sectional Study.[J]. Female pelvic medicine & reconstructive surgery,2020.
[4] Ozge Celiker Tosun, Ulas Solmaz, Atalay Ekin, Gokhan Tosun, Cenk Gezer, Ahmet Mete Ergenoglu, Ahmet Ozgur Yeniel, Emre Mat, Mehtap Malkoc, Niyazi Askar. Assessment of the effect of pelvic floor exercises on pelvic floor musclestrength using ultrasonography in patients with urinary incontinence: a prospectiverandomized controlled trial[J]. Journal of Physical Therapy Science,2016,28(2).
[5] Bengu Altunan, Asli Aksoy Gundogdu, Tugba Ilkem Kurtoglu Ozcaglayan, Aysun Unal, Nilda Turgut. The effect of pelvic floor exercise program on incontinence and sexual dysfunction in multiple sclerosis patients[J]. International Urology and Nephrology,2021,53(6).