

## Original Article

# Efficacy of novel phased health education in the management of anorectal care

Xinhua Zhang, Yan Yu, Ouxia Jin, Liping Zhang

*Department of Anorectal, Shaoxing Second Hospital, Shaoxing 312000, Zhejiang, China*

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**Abstract:** Objective: To evaluate the efficacy of novel phased health education in the management of anorectal care. Methods: This study prospectively enrolled 204 patients undergoing suprahemorrhoidal mucosal circumcision/hemorrhoid ligation + external hemorrhoidectomy in the anorectal department of Shaoxing Second Hospital from January 2020 to January 2021. All subjects were randomized to receive either routine phased health education (control group) or modified phased health education (study group), with 102 patients in each group. We assessed the efficacy of modified phased health education in the aspects of disease and treatment awareness, self-care ability, treatment compliance, postoperative pain, postoperative adverse events, and patient satisfaction. Results: Patients in the study group exhibited better disease and treatment awareness, self-care ability, and treatment compliance than those in the control group ( $P<0.05$ ). Modified phased health education provided patients with more pain mitigation and a lower incidence of adverse events as compared with routine phased health education ( $P<0.05$ ). Patients in the study group reported a higher satisfaction rate ( $P<0.05$ ). Conclusion: Modified phased health education provided higher efficacy in postoperative care than routine phased health education by enhancing the disease awareness and satisfaction of patients and mitigating postoperative pain.

**Keywords:** Modified phased health education, anorectal care, nursing questionnaires, satisfaction

## Introduction

Anorectal diseases include internal hemorrhoids, external hemorrhoids, mixed hemorrhoids, anal fissures, proctitis, and rectal prolapse [1]. Patients may develop anemia, rectal carcinoma, and cystitis without timely treatment, significantly compromising their physical and mental health [2, 3]. Most anal diseases are caused by a combination of endogenous and exogenous factors, resulting in neurological dysfunction and perianal skin diseases, with a prevalence of 5% across all age groups and a higher prevalence in men than in women. Anorectal diseases are mostly managed by surgical intervention, but the surgical outcomes are poor due to the invasiveness of surgery and the patient's insufficient disease knowledge [4]. Thus, reinforced health education is of great significance to improve the knowledge of patients and improve surgical results [5, 6].

In most cases, patients prefer conservative treatment prior to surgical interventions. The

pathogenesis of anal pruritus is elusive, and conservation treatment is mainly performed to mitigate local inflammation, allergic effects, and immune reactions. However, disease relapse and adverse events have been frequently reported following conservative therapies. In traditional Chinese medicine, the management of anal pruritus includes oral herbal decoction, external fumigation in sitz baths, acupuncture, and external applications of herbal preparations.

Traditional nursing mostly carries out the same interventions for all patients, despite of the different stages of patients, resulting in poor intervention effect. Traditional nursing in clinical care only includes simple health education. Moreover, the differences in patients' age, literacy, and learning ability limit the effectiveness of traditional nursing [7]. With the advancement of the nursing model, a novel care approach has emerged that encompasses various aspects, such as improving disease efficacy, providing health education, and offering life

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coaching. This comprehensive approach can enhance both the physiological and psychological well-being of patients. Phased health education refers to a targeted approach in providing health education according to patients' needs. It involves organizing the education in stages along the horizontal axis of time, while considering the specific nursing measures required by each patient along the vertical axis [8]. Phased health education is the scientific and systematic care which pays attention to both patients' psychology and physiology to enhance their disease awareness, medication matters, and self-care ability. To this end, a modified phased health education approach was introduced in the present study to evaluate its efficacy in the management of anorectal care.

### Materials and methods

#### *Participants*

This prospective study enrolled 204 patients undergoing suprahemorrhoidal mucosal circumcission/hemorrhoid ligation + external hemorrhoidectomy in the anorectal department of Shaoxing Second Hospital from January 2020 to January 2021. All subjects were randomized to receive either routine phased health education (control group) or modified phased health education (study group), with 102 patients in each group. The study was expected to have over 99% power to detect a between-group difference in the observation indicators. All patients were informed of this study and signed the informed consent form.

*Random grouping:* The randomization was carried out using an online web-based randomization tool (freely available at <http://www.randomizer.org/>). For concealment of allocation, the randomization procedure and assignment were managed by an independent research assistant who was not involved in the screening or evaluation of the participants.

*Ethical considerations:* The study protocol and all amendments were approved by the ethics committee of Shaoxing Second Hospital. The study was performed in accordance with the protocol, its amendments, and standards of Clinical Practice. All participants provided written informed consent before enrolment.

#### *Inclusion and exclusion criteria*

*Inclusion criteria:* Patients were eligible if they had clinically diagnosed hemorrhoids, showed indications for surgery, good cooperation, and no serious organ diseases in the heart, liver or kidney, they were informed about the study, and signed the informed consent form.

*Exclusion criteria:* Patients were excluded if they had contraindications to surgery and anesthesia, suffered from cognitive impairment and communication problems, exhibited abnormal anal function and morphology, or revoked their consent.

#### *Treatment methods*

Patients in the control group received conventional phased health education. (1) At admission, the patients were given health education and were introduced to the precautions for electrocardiogram, chest radiograph, anoscopy, and magnetic resonance if necessary. (2) Prior to surgery, the nurses assisted patients during preoperative preparations, and educated patients about fistula surgery, including the possible reactions after fistula surgery. Psychological counseling was also provided to relieve the patient's fear of impending surgery. (3) After surgery, the nurses assisted patients in life care. During dressing changing, it is common for patients to experience pain and reflexive contractions. In such situations, the intervention staff should give timely comfort to the patient and guide the patient to actively cooperate with the treatment. (4) Before discharge, patients were given instructions on diet and management of bowel movement.

Patients in the study group received modified phased health education at admission, 1 d before surgery, on the day of surgery, one week after surgery, and before discharge. (1) At admission, patients were provided with assistance in completing examinations and were instructed to fill in the admission assessment form. (2) One day before surgery, doctors and nurses communicated with the patients and explained about the disease and treatment. This included discussions about anesthesia and the necessity of surgical treatment, with the aim of enhancing the disease awareness of patients. Patients with negative emotions were encouraged to strengthen their treatment

**Table 1.** Patient characteristics

	Control group (n=102)	Study group (n=102)	t/ $\chi^2$	P
Sex (n)			1.998	0.158
Male	49	39		
Female	53	63		
Age ( $\bar{x} \pm$ sd, year)	47.1 $\pm$ 14.7	49.9 $\pm$ 13.3	1.427	0.155
Duration ( $\bar{x} \pm$ sd, year)	2.41 $\pm$ 0.48	2.29 $\pm$ 0.59	1.593	0.113
Hemorrhoid grade			1.003	0.317
Grade II	44	37		
Grade III	58	65		
Hypertension (n)			0.713	0.399
Yes	48	59		
No	64	63		
Diabetes (n)			0.410	0.522
Yes	14	11		
No	88	91		
Smoking habit (n)			2.076	0.150
Yes	34	44		
No	68	58		

Note: t for two independent samples t-test,  $\chi^2$  for Chi-square test.

confidence. The nurses offered daily health education feedback to patients, followed by re-education as needed. (3) On the day of surgery, the vital signs of the patient were closely monitored. The patients were informed about the possible postoperative symptoms of painful urination and urinary retention. They were instructed on various techniques to promote urination, such as drinking more water, applying abdominal hot compresses, and performing gentle massage. (4) The patients were advised to remain in bedrest, and their defecation was managed reasonably. (5) The patients were instructed to follow a light diet and a regular daily schedule. The surgical incision was kept dry and clean to avoid infection. (6) Before discharge, the patients were given instructions on nursing knowledge, medication administration and regular follow-up.

#### Outcome measures

All outcome measures were examined by the same group of caregivers. A self-developed health education evaluation form (Cronbach  $\alpha=0.77$ , KMO=0.86) was used to assess the patients' knowledge of disease and treatment, self-care ability and patient compliance on admission and before discharge in both groups, with a score of 100 for each index. The higher

the score, the better the health education outcomes.

The patients' surgical pain, post-operative adverse reactions, and overall patient satisfaction were evaluated using a self-developed nursing questionnaire (Cronbach  $\alpha=0.82$ , KMO=0.91).

The pain was categorized into mild pain, moderate pain, and severe pain. Adverse events included traumatic edema, increased pain, incisional infection, and difficulty in defecation.

Patient satisfaction was categorized into highly satisfied, satisfied, and dissatisfied.

#### Statistical analysis

We used the R language pwr package to determine the sample size with a power of 0.6 and a significance level of 0.05. Treatment satisfaction was selected as the primary outcome measure, and a literature search indicated an expected satisfaction rate of 80% in the control group and 95% in the study group. Based on our calculations, a minimum of 95 participants were required in each group. SPSS 20.0 statistical software was used for data analyses. If the parameter beta is either a difference of means, a log odds ratio, or a log hazard ratio, then it is reasonable to assume that b is unbiased and normally distributed. Measurement data conforming to normal distribution were expressed as mean  $\pm$  standard deviation ( $\bar{x} \pm$  sd) and analyzed using the t-test. Count data were expressed as cases (%) and examined using the chi-square test. The difference was statistically significant at  $P<0.05$ .

## Results

### Patient characteristics

The control group included 49 males and 53 females, aged 16-77 (47.1 $\pm$ 14.7) years. The study group included 39 males and 63 females, aged 17-79 (49.9 $\pm$ 13.3) years. All eligible patients had mixed hemorrhoids. The two groups were well-balanced in terms of patient characteristics ( $P>0.05$ , **Table 1**).

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**Table 2.** Health education scores ( $\bar{x} \pm sd$ , points)

Group	Control group (n=102)	Study group (n=102)	t	P
Knowledge of disease and treatment methods				
On admission	59.24±8.75	58.61±8.36	0.526	0.600
Before discharge	74.35±9.80	85.54±9.73	8.183	0.001
Self-care ability				
On admission	61.36±6.25	61.41±7.53	0.052	0.959
Before discharge	78.18±10.24	86.53±9.66	5.99	0.001
Patient compliance				
On admission	62.62±10.02	61.85±9.73	0.557	0.578
Before discharge	75.88±7.45	86.16±7.64	9.73	0.001

Note: t for two independent samples t-test.

**Table 3.** Postoperative pain (n (%))

Group	Mild pain	Moderate pain	Severe pain
Control group (n=102)	46 (0.45)	42 (0.41)	14 (0.14)
Study group (n=102)	54 (0.53)	44 (0.43)	4 (0.04)
$\chi^2$		6.093	
P		0.013	

Note:  $\chi^2$  for Chi-square test.

## Health education scores

Patients in the study group exhibited better disease and treatment awareness, self-care ability, and treatment compliance than those in the control group ( $P < 0.05$ , **Table 2**). The modified version of phased health education can better promote physical recovery and provide health education to enhance the self-care skills of the patients.

## Postoperative pain

Modified phased health education provided patients with more pain mitigation versus routine phased health education ( $P < 0.05$ , **Table 3**). Phased care differs from conventional care in its emphasis on psychological management and postoperative concerns of patients. Therefore, on the basis of conventional care, communication and education were performed to alleviate patients' worries and reduce postoperative pain caused by psychological factors.

## Postoperative adverse events

A significantly lower incidence of adverse events was observed in the study group than in the control group ( $P < 0.05$ , **Table 4**).

## Satisfaction

A significantly higher satisfaction rate was observed in the study group than in the control group ( $P < 0.05$ , **Table 5**).

## Prognosis

At 3 months after surgery, all patients made a full recovery with no reported dysfunction.

## Discussion

Hemorrhoids are common and frequent diseases that occur in the anorectal department, usually caused by congestion of the canal and the perianal venous plexus in the lower rectum. Surgical removal is the most effective way to cure hemorrhoids. The perianal nerves are complex and have abundant blood vessels, resulting in a high sensitivity to pain in the area, so surgeries can easily cause complications such as wound bleeding, pain, urinary retention and difficulty in defecation, which affects the quality of life and recovery of patients. The effectiveness of surgical treatment of anorectal diseases varies depending on the conditions of the patients [9]. Since surgery can induce trauma, it may damage the anorectal

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**Table 4.** Postoperative adverse events (n (%))

Groups	Traumatic edema	Increased pain	Incisional infection	Difficulty in defecation	Total incidence
Control group (n=102)	9 (0.09)	5 (0.05)	2 (0.02)	6 (0.06)	22 (0.22)
Study group (n=102)	5 (0.05)	3 (0.03)	0 (0.00)	3 (0.03)	11 (0.11)
$\chi^2$	-	-	-	-	4.374
P	-	-	-	-	0.036

Note:  $\chi^2$  for Chi-square test.

**Table 5.** Satisfaction (n (%))

Groups	Highly satisfied	Satisfied	Dissatisfied	Total satisfaction
Control group (n=102)	57 (0.56)	32 (0.31)	13 (0.13)	89 (0.87)
Study group (n=102)	62 (0.61)	39 (0.38)	1 (0.01)	101 (0.99)
$\chi^2$	-	-	-	11.04
P	-	-	-	0.001

Note:  $\chi^2$  for Chi-square test.

mucosa. In addition, some patients have poor treatment adherence. Improper postoperative diet and lifestyle may also increase the risk of anorectal diseases [10]. Therefore, surgical treatment requires proper postoperative care to promote the recovery [11]. Research has shown that a positive health education approach can improve patients' disease awareness, reduce postoperative pain, and enhance their comfort [12].

The root cause of hemorrhoids lies in three deranged defecation habits, namely increased straining, prolonged bowel movements, and frequent bowel movements. Changing bowel habits can effectively reduce the rate of surgery and postoperative recurrence [13]. The results of the present study showed that patients who received modified phased health education exhibited better knowledge of disease and treatment, self-care ability and compliance, as well as milder postoperative pain, lower incidence of adverse events, and higher patient satisfaction than those who received routine phased health education. These results suggest that modified phased health education can be effective in improving patient awareness of diseases, reducing postoperative pain, and enhancing patient satisfaction. Surgery can disrupt the natural balance of bacteria around the anus. Surgical incisions often result in open wounds, and the passage of stool through the wound can cause discomfort and irritation due to the wrinkled perianal skin [14].

Patients with mixed hemorrhoids usually have painful wounds after surgery, which can lead to a fear of defecation due to anticipated pain. This fear can result in prolonged retention of fecal matter in the rectum and the formation of hardened feces, resulting in constipation [15]. Forceful defecation with dry and hardened stool can cause friction against the wound, causing bleeding [16]. The lower incidence of complications in the study group may be attributable to the health education on anal diseases, medication guidance, and rehabilitation training. The better health education awareness of the patients in the study group may be attributed to the instructions of the key points of preoperative, intraoperative and postoperative care, resulting in better patient compliance and better cognitive awareness. The reason for the higher satisfaction in the study group may be attributed to the phased psychological counseling, which was able to relieve patients' tension before surgery, protect patients' privacy after surgery, and increase patient compliance.

Studies have shown that surgical treatment can improve the quality of life in patients with hemorrhoids, and literacy is strongly associated with postoperative health-related quality of life [17]. Modified phased health education attaches importance to the continuity of health education for patients throughout their hospitalization and helps patients understand the next stage of treatment in advance. Pre-

operative education was conducted at admission to provide patients with an overview of their disease and surgical modality [18]. One day before surgery, detailed instructions on surgery, anesthesia, precautions, and other related intraoperative conditions were provided, and patients were given guidance to strengthen their treatment confidence [19, 20]. Post-operative education on diet, activity, defecation, and post-operative sitz bath was provided to enhance the recovery of the patients [21]. Pre-discharge education on discharge rehabilitation was carried out to enable patients and their families to handle the various care tasks after discharge.

Patients in the study group had improved health knowledge after receiving phased health education, which increased patients' trust in nurses and enhanced treatment compliance, resulting in better nursing effects. The scores of physical function, psychological function, social function and material life of patients in the study group were higher than those in the control group after care, indicating that phased health education enhanced the disease awareness and the quality of life of the patients. However, this study has the following limitations. 1. The small sample size of the present study prevented a more comprehensive and objective assessment of the phased care modality. 2. This study employed several subjective efficacy assessment criteria, which can lead to result bias due to differences in subjective perceptions between individuals, varying levels of literacy, and differences in understanding of the questions in the scale. 3. This trial had a short postoperative follow-up period and failed to observe the long-term treatment effect.

## Conclusion

Modified phased health education enhances the disease awareness and satisfaction of patients, mitigates postoperative pain, and potentiates the efficacy of surgical treatment. This study adopts modified phased health education, which emphasizes the psychological well-being of patients in addition to improving their physical functions. By addressing the psychological concerns of the patients, this approach is able to enhance the psychological functions, social functions, and overall living conditions.

## Disclosure of conflict of interest

None.

**Address correspondence to:** Xinhua Zhang, Department of Anorectal, Shaoxing Second Hospital, No. 147, Yan'an Road, Shaoxing 312000, Zhejiang, China. Tel: +86-18368528292; E-mail: Z1836852-8292@163.com

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