



The effect of different patient education methods on quality of bowel cleanliness in outpatients receiving colonoscopy examination



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ABSTRACT

Aims: To investigate the effectiveness of an educational film intervention on the quality of bowel cleanliness of outpatients receiving colonoscopy examinations and also to understand the related factors affecting bowel cleanliness.

Method: This is a quasi-experimental design. One hundred four patients in the experimental group and 114 patients in the control group are the participants in this study. An 8-minute “Preparation for Bowel Cleanliness” educational film was made based on clinical experience and references to related literature. We adopted a valid Aronchick scale evaluate bowel cleanliness.

Results: The patients in the experimental group had significantly better bowel cleanliness compared to the control group (80.8% vs. 48.2%, $p < .001$). Logistic regression showed that the experimental group, gender, and experience with colonoscopy were potentially important factors that may affect bowel cleanliness.

Conclusions: The “Preparation for Bowel Cleanliness” educational film provides simple and easy-to-follow methods for the preparation of cleaning the colon and related information.

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1. Introduction

Colonoscopy is the most important screening tool for colon cancer, in which the whole mucous surface of the colon and rectum can be viewed directly and in detail for an immediate diagnosis. Immediate treatments (e.g., polyp resection or biopsy) can be implemented if abnormalities are found. Bowel cleanliness quality is especially important in making an accurate diagnosis in colonoscopy. Insufficient cleanliness with residual stools in the colon will affect the doctors' judgment during the examination and make a diagnosis difficult, and also prolong the examination time (Modi et al., 2009; Nguyen & Wieland, 2010) leading to increased pain and discomfort for the patient (Chan, Saravanan, Manikam, Goh, & Mahadeva, 2011), a decreased polyp detection rate (Hong et al., 2012) and affecting cecal intubation failure (Park et al., 2013).

Good bowel cleanliness is therefore a requirement for successful colonoscopy. However, studies have shown that 15% ~ 54% of the patients receiving colonoscopies do not have good bowel cleanliness before the examination (Chan et al., 2011; Modi et al., 2009; Nguyen & Wieland, 2010; Wu et al., 2011). The underlying reason for this is related to the patients not following bowel cleaning instructions (Chan et al., 2011; Modi et al., 2009; Nguyen & Wieland, 2010). Therefore, patient education plays an important role in understanding the importance of bowel cleanliness and in assisting patients to perform bowel cleaning properly.

In clinical practice, interventions using patient education can increase patient compliance when receiving examinations (Wu et al., 2011). Oral explanations combined with educational flyers for a specific test are the most common clinical method of patient education (Folley et al., 2008). However, an oral explanation can be easily affected by the work environment and time constraints, leading to inconsistent delivery of information content. With regards to educational flyers, patients may have varying degrees of comprehension due to educational level and language differences (Calderwood, Lai, Fix, & Jacobson, 2011). Information delivery can be made easier by using multi-media with vivid and clear images to explain the preparation methods and techniques for bowel cleanliness. Multi-

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media patient educational materials not only help patients understand complex and abstract ideas, but also increase patient compliance such as with a bowel cleanliness diet and taking medications. Patient satisfaction with care is thus also increased. Studies using patient educational film interventions for patients receiving colonoscopies often focus on reducing patient anxiety (Bytzer & Lindeberg, 2007; Jjala, French, Foxall, Hardman, & Bedforth, 2010), however few studies have focused on bowel cleanliness. Therefore, the aim of this study was to use an educational film as the intervention method to teach patients the methods and importance of bowel cleanliness, and expected that the patients would be willing to comply with the instructions of diet and medication with a subsequent increase in the effectiveness of bowel cleaning.

2. Methods

2.1. Design and sample

This study used a quasi-experimental design. The research subjects were outpatients who received colonoscopy examinations at a local hospital in southern Taiwan. Data were collected from January to April 2011. After colonoscopy examinations had been arranged by their doctor, the patients were invited to participate in this study, and the details of the study were explained. The participants were grouped into experimental and control groups after agreeing to participate. Patients receiving examinations during the odd weeks of the month were assigned to the experimental group, and those receiving examinations during the even weeks of the month were assigned to the control group. The control group received routine hospital care while the experimental group received both routine care and also watched the "Preparation for Bowel Cleanliness" educational film in a separate room. The researchers provided explanations and clarifications to questions that the participants raised. To avoid the influence of a long duration (more than 2 weeks) between the outpatient appointment and colonoscopy examination, some pictures (an A4 paper) from the film were given to the participants to remind them of the precautions they needed to take when cleaning their bowel at home.

The fiberscope used in this study was standard equipment (Olympus CF-Q260AL). The three doctors participating in this study were all board certified gastroenterologists, all certified to perform endoscopy examinations, and all had performed more than 1000 examinations. The nurses providing routine patient education, doctors and technicians performing the colonoscopy examinations in this study were all blinded to the subjects' group. The participants were asked not to discuss whether or not they had watched the educational film during their colonoscopy examination. To avoid results being confounded by different medications, we used sodium phosphate as the medication for bowel cleaning in this study.

The inclusion criteria were outpatients receiving colonoscopy who were aged 20 years and older and had clear consciousness and no vision or hearing impairments. The exclusion criteria were receiving a painless colonoscopy, inpatients, patients not using sodium phosphate as the bowel cleaning medication, and patients who could not comply.

A total of 297 patients were scheduled for colonoscopy examinations during the research period. Three patients could not participate, 23 received painless colonoscopies (sedation and anesthesia), 18 were inpatients, 5 did not use sodium phosphate as the laxative, 28 canceled their appointment on the day of examination (10 were in the control group), and 4 patients could not participate due to mental or vision problems. In total, 218 subjects were included with 104 patients assigned to the experimental group and 114 to the control group.

2.2. Instruments

An 8-minute "Preparation for Bowel Cleanliness" educational film was made based on clinical experience and references to related

literature, in addition to suggestions from gastrointestinal and clinical nursing specialists. The primary aim was to make abstract and difficult-to-understand bowel cleaning concepts clear through the use of imagery so that the patients could truly understand the importance of a low-residue diet and taking laxatives, and, therefore, to comply with the bowel cleaning instructions willingly. The contents of the film included information on the following: the digestive process from food intake in the oral cavity to stool formation and discharge from the anus; accurate intake methods and types of low-residue and clear liquid diets; explanations for the purpose and importance of water supplementation; and principles and timing for taking laxatives. Images of clean and dirty bowels were presented, and the effects of different degrees of cleanliness on the examination results were explained so that the patients would voluntarily comply with the diet and medication suggestions. Chinese captions and Mandarin/Taiwanese language dubbing were used for the film in post-production. After completion of the film, it was carefully examined by clinical nursing specialists. The content was then modified according to expert opinions until it was deemed suitable for the requirements of the study. After completing the modifications, 10 patients receiving their first colonoscopy were recruited to test the clarity of the contents of the film. Nine patients indicated that the content was easier to understand than traditional patient education flyers. They also indicated that they were more willing to follow the instructions to ensure bowel cleanliness after they understood the effect of bowel cleanliness on examination results.

Bowel cleanliness is mainly evaluated in terms of residual stools in the bowel and the influence on the clarity provided by the video light source of the fiberscope. In this study, we adopted a valid Aronchick scale (Aronchick, Lipshutz, Wright, Dufwayne, & Bergman, 2000) to evaluate bowel cleanliness, which is used widely clinically (Aronchick et al., 2000; Hong et al., 2012; Tajika et al., 2013). In this scale, four scores are used to indicate the degree of bowel cleanliness. A score of 1 indicates excellent quality: no stools or only watery stools that can be suctioned to clearly show the bowel mucous. A score of 2 indicates good quality: some solid stools or watery stools but most can be suctioned to clean the bowel for a reliable examination. A score of 3 indicates fair quality: the examination can be completed, but the reliability of the results is questionable due to stools remaining after suctioning. A score of 4 indicates poor quality: excess remaining stools leading to an incomplete examination. In short, higher scores indicate a lower degree of bowel cleanliness. The final assessment of bowel preparation was divided into two categories, clean and not clean (Calderwood et al., 2011; Park et al., 2013; Tajika et al., 2013).

2.3. Ethical consideration

This study was approved by the institutional review board of our hospital (approval number 99-IRB-004). Data collection started after approval had been given. All participants in the study were given a manual explaining the purposes of the study. The participants were informed that their participation in this study was voluntary, and that their information would not be given to any other party to protect their privacy. They were also informed of their right to withdraw during the study period. All of the participants signed informed consent.

2.4. Data collection

After the participants checked in on the day of the examination, they completed a questionnaire to provide information about their age, marital status, educational level, reason for taking the examination, history of abdominal surgeries, and prior examination experience. Examination results were recorded using the doctor's report on bowel cleanliness.

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