

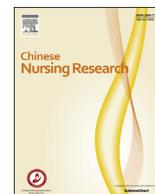
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Original article

The application of multimedia messaging services via mobile phones to support outpatients: Home nursing guidance for pediatric intestinal colostomy complications

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ABSTRACT

Objective: To present a model of extended home nursing support provided through WeChat for pediatric colostomy patients between the first and second surgery to support parents and to assist them in nursing possible complications at home, to reduce colostomy complications caused by improper care, to improve the quality of life of patients at home and to ensure the success of the recovery and second surgery.

Methods: A combination of relevant clinical information, health care guidelines, and training as well as the establishment of a specific monitoring protocol was provided to the parents during the patient's first hospitalization. A support system for nursing the colostomy was established with regular follow-up via WeChat after the patient's first discharge from the hospital using a predetermined protocol. During the 3–6 months of home care in-between the colostomy operations, the charge nurse initiated the phone follow-up and provided specific, individual guidance and feedback. If necessary, extended service at predetermined intervals was provided in the 1st week, the 1st month, the 2nd month and the 3rd month. **Results:** Extended assistance for the home care of patients with pediatric colostomy complications improved the quality of life of the patients and caregivers and was accepted by all parties involved upon introduction. The assistance provided support for the parents at all hours, efficiently reduced the level of complications for this type of patient and facilitated fast referrals to hospital care in cases of emergencies. Furthermore it paved the way to successful second stage surgeries, provided direct feedback to the charge nurse and improved the work satisfaction and sense of achievement of the nurses involved.

Conclusions: All 80 cases supported by WeChat successfully underwent two-stage pediatric colostomy operations. The response of the parents and the medical staff involved was very positive. This method is easy to use, economical to operate and could be applied generally to support home care.

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1. Introduction

In recent years, WeChat has become one of the most prominent chat or communication tools in daily life in China. Because WeChat is easy to use and has many functions, it has applications in various fields of health care, e.g., in community clinics and home nursing. Recently, our Department of Pediatric Surgery started to discuss modern, smartphone-based communication technologies

and developed the idea of assisted health care management via WeChat to guide parents and support the in-home care of pediatric colostomy complications. Prior to home care support, we also provided the patients and their families with systematic information and extensive training in colostomy nursing and health education¹ to reduce colostomy complications and expedite recovery.

2. Material and methods

2.1. Clinical data

The surveyed group included 80 patients (52 male and 28 female) aged 3 h to 11 years. These 80 cases included 21 cases of

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anorectal malformation, 15 cases of congenital megacolon, 13 cases of neonatal necrotizing enterocolitis, 12 cases of meconium peritonitis, 10 cases of intestinal atresia, and 9 cases of intussusception with perforation. Of these patients, 24 were treated with small intestinal colostomy and 56 were treated with colostomy. The observed complications included manure water dermatitis in 35 cases, allergic dermatitis in 12, electrolyte turbulences in 9, colostomy bleeding in 7, colostomy retraction in 7, fallen off colostomy in 5, and tracheostomal stenosis in 5. Nineteen patients suffered from two or more of the above complications at the same time.

2.2. Operational approach

During the children's hospitalization, the patients, parents and nurses underwent colostomy nursing² training under the guidance of the nurse-in-charge. Charge nurses educated the children and their parents about how to nurse a colostomy, to change colostomy bags, and how to plan the colostomy nursing routines according to the specific situation of the patients and their families. Moreover, through multimedia training software, parents gained a better understanding of the various types of clinical manifestations of colostomy complications to handle them more intuitively.

Immediately before the children were discharged from the hospital, the charge nurses again gave instructions to the parents about routine care procedures, such as how to change colostomy bags autonomously, and also evaluated and recorded their ability to master the required tasks. The charge nurse then established a written follow-up record and a checklist for each child. She obtained the parents' phone details and ensured that the WeChat application was installed and properly working. She then initiated and recorded the first telephone follow-up during the first week after discharge from the hospital; this was subsequently followed by regular calls during the first, second and third month.

After the children were discharged from the hospital, the parents were able to routinely transmit verbal or written information or pictures of the colostomy care situation to the nurse-in-charge using the WeChat application. The charge nurse or specialized, professional medical workers responded and provided general feed-back or specific care instructions. For minor issues or complications, they provided the necessary instruction for home care directly. In more serious cases, they advised parents to take their children to the hospital to prevent further deterioration of the condition.

2.3. Guidelines

2.3.1. Routine change of the colostomy bag

(1) Uncover the original colostomy bag and wash the skin surrounding the colostomy wound with a normal saline solution. (2) Wait until the skin is dry, and apply some colostomy skin protection powder. After 3–5 min, wipe the powder off. (3) Cover the colostomy skin with a protective film. (4) Measure the diameter of the colostomy. Cut the bottom ring of the colostomy bag according to the diameter. (5) Wait until the protective film dries, and then, paste the colostomy bag.

2.4. Care instructions in cases with complications

2.4.1. Fecal dermatitis

This is the most common, early complication that is seen in approximately 3.8% - 26.9% of cases. It normally occurs as a cutaneous inflammation, congestions, edema, erosion or even ulcer formation and causes significant local pain. Charge nurses should help the parents to choose the most suitable colostomy supplies and instruct the parents on the proper procedure for changing the

particular bag type. For example, when leakage occurs, the colostomy bag should be changed right away. If there is no ulceration of the skin, the skin protective film should be applied. If ulceration of the skin is visible, then both the skin protection powder and the skin protecting film should be applied. For patients with severe dermatitis, un-bonded colostomy bags or dressings should be used instead of bonded colostomy bags. When using un-bonded colostomy bags or dressings, they should be replaced frequently to protect the skin.

2.4.2. Allergic dermatitis

When the bonding parts or the entire area around the colostomy bag has red spots and blisters, the colostomy aid supplies should be replaced more frequently. In less severe cases, Fuqingsong ointment can be applied to the areas displaying an allergic reaction. Alcohol-based colostomy aid supplies are not to be used for newborns. Severe cases of allergic dermatitis have to be treated in a hospital.

2.4.3. Electrolyte imbalances

This condition is mainly caused by diarrhea and dehydration due to enteritis. High intestinal colostomy can easily cause a large loss of intestinal and digestive juices and creates electrolyte imbalances, metabolic acidosis, and nutrient malabsorption. Parents should care for the children's dietetic hygiene and nutrition. If the child vomits or suffers from diarrhea persistently, they need to be taken to the hospital.

2.4.4. Colostomy bleeding

The clinical manifestation of this condition occurs when the mucous membrane of the colostomy has a small amount or sometimes even more pronounced bleeding. The charge nurse should ask the parents to closely observe the condition and the development of the bleeding. Depending on the amount of bleeding, it can be stopped by applying a cotton ball in less severe cases. Severely bleeding patients should be taken to the hospital for hemostatic treatment.

2.4.5. Colostomy stenosis

The clinical manifestation is an opening of the skin incision that is too small to see the colostomy mucosa. The charge nurse should ask the parents to observe the colostomy defecation exhaust and abdominal distension. The nurse should also advise the parents that intestinal lavage or anal dilatation is required if the defecation is not smooth. Moreover, the nurse should teach the parents to use the anus dilator to dilate the colostomy: anal dilatation should be performed once or twice a day for 10–15 min each time that it is indicated in such cases.

2.4.6. Colostomy retraction

The manifestation of this condition is that the colostomy invaginates (sinks) under the skin surface. Parents can use colostomy powder with zinc oxide oil to protect the skin surrounding the colostomy. The parents should wash the surrounding skin and change the dressing contaminated with feces. Washing the damaged skin too frequently is not recommended. Severe cases have to be treated in the hospital.

2.4.7. Colostomy prolapse

Normally, the colostomy mucosa is elevated approximately 2.0–2.5 cm above the surrounding skin. If the opening of the abdominal colostomy is too large or loose, the child might cry, scream, crouch or, if the abdominal pressure increases, the intestinal tube might even become detached. Intestinal detachment occurs when the colostomy turns inside out for about several

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