

Effects of continuous nursing based on the WeChat platform in neonates after enterostomy—a single centre retrospective cohort study

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Abstract

Background: Nursing after neonatal enterostomy is difficult for many families. A reasonable and efficient mode of continuous nursing management after neonatal enterostomy is a major and difficult issue that urgently need be addressed clinically. The purpose of this research was to analysis the effects of continuous nursing based on the WeChat platform in neonates after enterostomy.

Methods: Neonates who underwent enterostomy from January 2014 to December 2020 in our hospital were retrospective analysed. According to the nursing mode, the patients were divided into the traditional nursing group and the continuous nursing group. Peri-stomal skin was evaluated with DET scale. Mental status of families was evaluated with SAS and SDS.

Results: There were 143 patients in the traditional nursing group and 165 in the continuous nursing group. No statistically significant differences were found in demographic information between the two groups. The continuous nursing group has an obviously lower DET score for peri-stomal skin than the traditional nursing group ($P=0.003$). Three months after discharge from the hospital, the continuous nursing group replaces 7.2 ± 1.8 ostomy bags every week, much fewer than the traditional nursing group ($P=0.002$). For SAS score and SDS score three months after discharge, the continuous nursing group considerably outperforms the traditional nursing group.

Conclusions: The continuous nursing based on the WeChat can effectively improve nursing quality for neonatal stoma after discharge. The patients' families also receives proper psychological counseling to relieve their anxiety and depression and improve the patients' life quality.

Background

Neonatal enterostomy refers to a surgical formation of an opening through the abdominal wall into the intestine as temporary artificial anus and is used to rescue anorectal congenital malformation, intestinal necrosis complicated with shock, extensive abdominal infection and other critical and acute abdomen [1, 2]. Neonatal intestinal stoma is usually temporary stoma and patients will undergo closure of ostomy three to six months later. In general, patients will be discharged after they recover intestinal functions and their milk volume meets physiological requirements and therefore, family is the main venue of nursing after neonatal enterostomy and parents are the major caregivers after the patients are discharged [3]. Due to lack of related expertise, the patients' families often find it difficult to thoroughly get the nursing methods after enterostomy during the short inpatient stay. Also because the patients are newborns that are too little to cooperate and have tender skin and low immunity, they may easily suffer peristomal skin related complications, which undermines the life quality of the patients and their families [4, 5]. To explore a reasonable and efficient mode of continuous nursing management after neonatal enterostomy is a major and difficult issue that urgently need be addressed clinically. WeChat, as the currently most popular instant messaging platform in China, is featured by low cost, high speed and support for face-to-face communication and enjoys tremendous application value in continuous nursing service [6–8]. A

single centre retrospective cohort study was performed to analysis the effect of continuous nursing based on the WeChat platform for patients after neonatal enterostomy to explore better nursing methods.

Methods

Study design, setting and patients

Neonates who underwent enterostomy from January 2014 to Decembe 2020 in our hospital were retrospective analysed. The hospital starts to accumulate the experience in continuous nursing based on the WeChat platform since January 2017. Patients admitted from January 2017 to December 2020 (continuous nursing group) and from January 2014 to December 2016 (traditional nursing group) were compared. All the patients' families fill out the Self-Rating Anxiety Scale (SAS) the first day after operation and during re-examination three months after discharge. This study was approved by the ethics committee of our hospital and strictly adhered to the tenets of the Declaration of Helsinki.

Inclusion and exclusion criteria

The inclusion criteria were as follows: Patients undergo enterostomy during the neonatal period. The exclusion criteria were as follows: (1) Patients are complicated with serious congenital heart disease or severe hepatorenal insufficiency; (2) Patients die after the operation; (3) Parents are in capable of reading independently; (4) No communication device is available and information communication is blocked; (5). Patients/families are unwilling to receive continuous nursing service or participate in the study.

Nursing methods

Traditional nursing

During the inpatient stay, the hospital offers regular medical service and attending doctors explain to the patients and their families the disease-related knowledge and surgical procedures as well as matters requiring attention after the operation. Nursing personnel offer the families regular nursing guidance, instruct them how to nurse intestinal stoma and replace ostomy bags and tell them matters needing attention for nursing intestinal stoma after discharge and ways to handle emergencies. A patient file and a follow-up record are created for each patient, who shall re-visit the hospital for follow-up one week, one month, two months and three months after discharge.

Continuous nursing

On the basis of traditional nursing, after the operation, nurses-in-charge instruct the patients' families to join the group during discharge notice and guide them to correctly and skillfully use WeChat. The continuous nursing group consist of five members, including one attending doctor and four nurses with at least five years of working experience. Two nurses are responsible for guiding the families to nurse the intestinal stoma during the inpatient stay until they are fully capable and instructing them to join the WeChat group (Ostomy Angel). Two nurses are responsible for collecting information on the patients'

intestinal stoma, including patients' name, sex, age, contact, time of enterostomy, location and type of intestinal stoma, families, post-operation complications, ways of treatment and prognosis and outcome. The attending doctor acts as adviser. One medical personnel is on duty daily, staying online in the WeChat group during 12:00–15:00 and 18:00–21:00 to answer questions from the patients' families regarding enterostomy. The group regularly pushes information on health education such as nursing after enterostomy, feeding of infants and children and ways to handle common issues. The group members are encouraged to actively communicate via the group in daily life and share their experience in enterostomy nursing. The patients' parents are required to upload videos of nursing stoma and stoma pictures weekly, so that the medical personnel can closely follow the status of the patient's stoma and correct the families for any nursing problem. Patients' families that fail to update status for a long period of time are separately followed via phone call, when the medical personnel inquire about stoma nursing status and peristomal skin conditions and offer guidance.

Measures

Peristomal skin DET scale

Three symptoms, namely discoloration (D), erosion/ulceration (E) and tissue overgrowth (T), are assessed in the two dimensions of affected peristomal skin area and peristomal skin damage severity respectively[9, 10]. Score of each symptom equals score in affected area plus score in damage severity and ranges from 0 to 5 points. Score of affected area ranges from 0 to 3 points and score of damage severity ranges from 0 to 2 points. DET total score equals D score plus E score plus T score, with 15 points being the ceiling and 0 point being the floor. Higher score means severer skin damage and the damage is divided to four levels: none (DET = 0 point), mild (DET = 1–3 points), moderate (DET = 4–6 points) and severe (DET = 7–15 points).

Self-rating anxiety scale (SAS)

Zung's self-rating anxiety scale (SAS) [11] is adopted, which is widely applied clinically because of its high reliability and validity. 15 items are described in negators and the rating method (1–4) is used to give a score based on the occurrence frequency of the symptoms. Five items are described in affirmatives and the reverse rating method (4–1) is used to give a score based on the occurrence frequency of the symptoms. Scores of all the items are added to get total score. The total score is multiplied by 1.25 and then rounded off to get standard score and the average value of standard score is 50. A score that is < 50 means normal, 50–59 mild anxiety, 60–69 moderate anxiety and ≥ 70 severe anxiety.

Self-rating depression scale (SDS)

Zung's self-rating depression scale (SDS)[12] is adopted, which is widely applied clinically because of its high reliability and validity. The scale consists of 20 items, including 10 negative symptoms and 10 positive symptoms, with each question representing characteristics of depression. All the items together can reflect feelings, symptoms of physical discomfort, mental activities and behavioral and

psychological symptoms of depression patients and the score is divided into four levels. The rating method (1–4) is used according to the occurrence frequency of positive symptoms, while the reverse rating method (4–1) is used to give a rough score based on the occurrence frequency of negative symptoms. The score is multiplied by 1.25 and then rounded off to get standard score, with 41 being the ceiling score and 53 standard score. Higher score indicates a greater tendency to depression.

Statistical analysis

The statistical software SPSS 17.0 is used for analysis. Quantitative data is expressed as mean value \pm standard deviation and subject to independent-sample t test for statistical analysis; qualitative data uses chi-square test for comparison between the groups. $P < 0.05$ means that the difference is statistically significant.

Results

165 patients were enrolled in the continuous nursing group and 143 in the traditional nursing Group. Refer to Table 1 for general information of all the patients and the two groups have no statistically significant difference. During the 3-month follow-up of all the patients after discharge from the hospital, the traditional nursing group replaces 18.5 ± 3.5 ostomy bags every week, while the continuous nursing group replaces 7.2 ± 1.8 ostomy bags every week. Difference between the two groups is statistically significant ($P = 0.002$).

Table 1
Demographic characteristics of patients of the two groups

Item	Continuous nursing group	Traditional nursing group	P value
Number of cases	165	143	
Male/Female	101/64	96/47	0.280
Weight (Kg)	2.7 ± 0.6	2.8 ± 0.5	0.384
Age (day)	4.9 ± 7.3	4.8 ± 7.5	0.712
Location of stoma			
Ileum	122	105	0.919
Transverse colon	43	38	
Location of family			
Countryside	108	95	0.857
Urban area	57	48	
Education background of parents			
Undergraduate and higher	65	57	0.458
High school-undergraduate	85	67	
High school and lower	15	19	

The continuous nursing group has an apparently lower score than the traditional nursing group in peristomal skin DET and the difference is statistically significant ($P < 0.05$). Peristomal skin of patients in the continuous nursing group is mostly healthy, while that in the traditional nursing group is mostly affected moderately or severely, with the difference being statistically significant. It means that the continuous nursing group obviously outperforms the traditional nursing group in health status of peristomal skin (Table 2).

Table 2
Peristomal skin DET score three months after discharge

Item	Continuous nursing group	Traditional nursing group	P value
DET score	2.3 ± 1.4	6.8 ± 4.5	0.003
Number of patients in each score range			
0 point	132	33	0.000
1–3 points	20	35	
4–6 points	13	40	
7–15 points	0	35	

The two groups have no statistical difference in SAS score or SDS score the first day after operation. Compared with the first day after operation, the continuous nursing group has a much lower SAS score and SDS score three months after discharge and the difference is statistically significant, while the traditional nursing group has a difference that is not statistically significant, but rising. For SAS score and SDS score three months after discharge, the continuous nursing group considerably outperforms the traditional nursing group and the difference is statistically significant ($P < 0.05$) (Table 3).

Table 3
Mental status of families of patients in the two groups the first day after operation and three months after discharge

Item	Continuous nursing group	Traditional nursing group	P value
SAS score			
1st day after operation	63.8 ± 12.5	60.3 ± 13.5	0.813
3 months after discharge	48.1 ± 11.3*	65.8 ± 14.7	0.017
SDS score			
1st day after operation	55.6 ± 12.3	54.3 ± 11.4	0.876
3 months after discharge	40.1 ± 9.6*	56.5 ± 14.6	0.012
* refers to $P < 0.05$ in comparison with the first day after operation.			

Discussion

As newborns have undeveloped systems and low immunity, any mildly improper nursing may probably cause peristomal skin complications and therefore, admirable stoma nursing techniques are critical for

reducing incidence of complications [13-15]. Neonatal enterostomy is temporary ostomy and patients will usually undergo the secondary intestinal anastomosis operation three to six months later depending on their recovery status. In general, the patients will be discharged after they recover intestinal functions and their milk volume meets physiological requirements and therefore, family is the main venue of nursing after neonatal enterostomy and parents are the major caregivers after the patients are discharged from hospital. However, currently in China, medical services are concentrated in hospitals. As patients leave hospital, the medical service relationship between hospitals and patients ends accordingly [16]. The majority of Chinese households are in the countryside, where medical level is low and most grass-roots medical centers are unable to provide professional stoma nursing service [17, 18]. Besides, most families that have limited educational background cannot fully master knowledge and skills in stoma nursing during the short inpatient stay and will go to local township or community hospitals for consultation when encountering nursing problems after discharge, only to find no professional nursing support or no answer to their questions. Consequently, the patients tend to visit the hospital only in the case of severe complications, which seriously undermines their health and quality of the secondary closure of ostomy. As found in this study, three months after discharge, most patients in the traditional nursing group have unhealthy peristomal skin and only 33 patients (23.1%) are in healthy status. Therefore, continuous follow-up and nursing guidance after discharge from hospital for patients after neonatal enterostomy are critical.

Continuous nursing extends the high-level and high-quality nursing service and psychological support at hospital to patients' families to ensure that high-quality treatment and nursing proceed at home without being interrupted, which can effectively address the issue of insufficient support for patients' families after discharge and improve the quality of home nursing [19, 20]. Previously, continuous nursing mainly takes the form of telephone follow-up, outpatient follow-up and family visit, but each one of the forms has its limitations [21]. Telephone follow-up, though easy to conduct, is limited to verbal communications and cannot specifically identify perception of the families easily, be conducted anytime or whenever it's needed or offer guidance under direct visual image, thus making it difficult to transmit information accurately. Outpatient follow-up and family visit, though supporting direct face-to-face guidance, are hard to conduct due to time cost, economic cost and labor cost. Therefore, to explore a more reasonable and efficient mode of continuous nursing management after neonatal enterostomy is an important issue clinically. WeChat, as the currently most popular instant messaging platform in China, is featured by low cost, convenience and support for face-to-face communication. Health education depending on the WeChat platform offers new approaches for continuous nursing [22] and it enjoys the following advantages. 1. With continuous nursing based on the WeChat platform, medical personnel can answer questions of the patients' families in a timely manner, which improves timeliness and effectiveness of neonatal enterostomy nursing after discharge and saves tremendous time and economic cost for the families. 2. WeChat transmits information in various forms such as texts, voice, animations and videos, which is helpful for vivid information communication in both ways, ensures accurate and professional nursing intervention and makes it easier for the families to understand and accept knowledge on nursing and feeding. 3. With the WeChat group, the patients' families can communicate and share their feelings,

experience and achievements in nursing and feeding, with a team atmosphere of mutual support being shaped. Besides, when the medical personnel do not reply in time, the families with similar experience can offer help and share their own experience. 4. With WeChat, we can clearly see the photos and videos uploaded by the parents, be updated on the patients' stoma conditions and their parents' nursing status, correct nursing errors in time and offer real-time guidance, which can effectively improve the families' nursing techniques and better nursing quality. 5. Communications via WeChat make the nursing work more relevant to reality, easier and compact and application of the WeChat platform in continuous nursing can effectively decrease missing rate and refusal rate of patients. In implementing continuous nursing based on the WeChat platform among patients after neonatal enterostomy, we have achieved admirable clinical effect. The study shows that in terms of peristomal skin DET score, the continuous nursing group dramatically outperforms the traditional nursing group in health status of peristomal skin. After discharge, the continuous nursing group replaces ostomy bags much less frequently than the traditional nursing group ($P < 0.05$), saving the household expenses. This indicates that with continuous nursing and guidance based on the WeChat platform, medical personnel can help the patients' families tackle nursing problems at home in time, the families can better understand knowledge on nursing and feeding, and the patients get access to better enterostomy nursing.

During the inpatient stay of patients after neonatal enterostomy, most mothers of the newborns are not in company at hospital because they are sitting the month after childbirth, but mothers are generally the main caregiver for home nursing. Therefore, the majority of the patients' mothers know less about enterostomy nursing. For most families, especially mothers, this will incur a heavy psychological burden, and some may even lose confidence and have strong negative feelings [23]. Also given that the grassroots medical level in China is low and most grassroots medical centers are unable to provide professional stoma nursing or address problems in time, the families are even further inclined to anxiety and negative feelings. Taking this into consideration, after the patients are discharged from the hospital, we will guide their mothers via WeChat to help them master nursing knowledge and skills as soon as possible. Also because WeChat supports timely and visual communication, in the case of emergencies with home nursing, we can offer guidance immediately. With the WeChat platform, our medical personnel regularly push information on health education and child nurturing to enable the families to study by making full use of home time, which boosts their confidence in nursing, improves their understanding and skills in enterostomy nursing and elevates their nursing abilities. Thanks to photo and video communications, we are rapidly updated on the patients' rehabilitation effect after discharge and can correct mistakes in home nursing. In the meantime, we encourage the families in the WeChat group to communicate and share successful cases and experience, with the purpose of enabling the families to feel the strength of group efforts and enhancing their confidence and the sense of hope. By chatting via WeChat, we can also understand the patients' psychological status in time, listen to them, offer care, guidance and support and ease their negative feelings and anxiety. As revealed by the study, compared with the first day after operation, the continuous nursing group has a much lower SAS score and SDS score three months after discharge ($P < 0.05$), while the traditional nursing group has a difference that is not statistically significant, but rising. For SAS score and SDS score three months after discharge, the

continuous nursing group considerably outperforms the traditional nursing group ($P < 0.05$). This signals that continuous nursing from the patients' families can noticeably alleviate the patients' depression and anxiety.

The paper still has its limitations. Patients that are incapable of independently reading, have no communication device and are blocked in information communication are excluded from the study, which incurs selection bias.

Conclusions

The continuous nursing group extends the high-level and high-quality nursing service and psychological support at hospital to the patients' families, which can effectively improve nursing quality for neonatal enterostomy after discharge, offer the patients' families proper psychological counseling to ease their anxiety and depression and better the patients' life quality. Application of the WeChat platform makes continuous nursing more convenient and economic and facilitates face-to-face communications.

Abbreviations

DET scale

discoloration, erosion/ulceration and tissue overgrowth scale

SAS

self-rating anxiety scale

SDS

Self-rating depression scale.

Declarations

Ethics approval and consent to participate

This study was approved by the ethics committee of Fujian Maternity and Child Health Hospital and strictly adhered to the tenets of the Declaration of Helsinki. Informed consent have been obtained from legal guardian(s) of all participates.

Consent for publication

Not applicable.

Availability of data and materials

The datasets generated and/or analysed during the current study are not publicly available due to privacy of respondents. Please contact the corresponding author for more information.

Competing interests

The authors declare that they have no competing interests.

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Not applicable.

Authors' contributions

Lijuan Wu and Jianxi Bai designed the study. Ying Lin, Ruiyun Xue, and Bin Guo analyzed and interpreted the patient data. All authors read and approved the final manuscript.

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