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Effects of Continuous Care on Children with Enterostomy and Their Families in China

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Abstract: *Background:* Continuous care for children with enterostomy and their families has been gaining popularity in China. *Objective*: To evaluate the feasibility of continuous care for children with enterostomy and their families in China. *Methods*: The PubMed, Web of Science, Embase, Cochrane Library, EBSCO, CNKI, CBM, VIP, and WanFang were searched for clinical trials until December 30, 2025. Two reviewers independently searched articles, evaluated quality and extracted data. This review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). *Results:* 33 studies involving 2774 participants were included. The meta-analysis showed that continuous care strategy can significantly reduce the incidence of complications in children with enterostomy (OR = 0.20, 95% CI = 0.16–0.26, $p < 0.001$, I2 = 0%), effectively improve the family caregiver ability for enterostomy (MD = -10.34, 95% CI= -13.82 to -6.85, $p < 0.001$, I2 = 99%), shorten the time for family members to replace stoma bags (MD= -13.57, 95% CI=-19.66 to -7.49, $p < 0.001$, I2 = 100%), and alleviate negative emotions such as anxiety (SMD= -1.80, 95% CI = -2.36 to -1.23, $p < 0.001$, I2 = 92%) and depression (SMD= -1.54, 95% CI= -2.04 to -1.04, $p < 0.001$, I2 = 89%) in the families of the affected children. *Conclusions*: Continuous care can reduce complications of enterostomy in children, improve the family caregiver ability for enterostomy and alleviate negative emotions of family members such as anxiety and depression.

Keywords: Continuous care; Pediatric enterostomy; Family members; Enterostomy nursing; Meta-analysis

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1. Introduction

Pediatric enterostomy is a surgical method that lifts the intestine to the abdominal wall as a temporary excretory outlet. It is mainly adopted to rescue critically ill children with acute abdominal diseases such as intestinal obstruction, intestinal necrosis, and congenital anorectal malformation [1,2]. Because of the pathological

characteristics of affected children, the primary disease is complex, and their resistance is poor. After enterostomy, they are susceptible to pathogen invasion and various complications, which not only increase the pain of children but also endanger their lives [3,4]. Children's stomas are usually temporary, and they will be closed after 3 to 6 months [5,6]. After the children with enterostomy are discharged from the hospital, the family will be the main place for care, and parents will be the primary caregivers. However, since a lack of medical knowledge and professional training, it is usually difficult for parents to fully grasp the nursing methods after enterostomy surgery during short-term hospitalization. They will encounter various challenges in the process of home care, such as enterostomy care, complications of infant diseases, and life stress [7,8].

Continuous care interventions can enable pediatric patients to continue receiving professional nursing in different healthcare settings, such as from hospitals to homes. It is widely considered to be a key element in high-quality medical services and is crucial for children with enterostomy and their families [9,10]. Currently, continuous care interventions are mostly supplied by enterostomal therapists (ETs) or professional nursing staff trained in enterostomy treatment, including all elements of enterostomy care, which help affected children and their families obtain extended and professional nursing services from medical staff after enterostomy [11–13]. For example, reading enterostomy care manuals and video nursing guidance, using online platforms, and telephone-assisted outpatient follow-up or home visits [14–16].

In China, continuous care strategy has been widely applied in children with enterostomy and their families and has achieved many potential benefits. Wu et al. reported that continuous care can not only markedly promote the postoperative quality of life for children with enterostomy but also alleviate their anxiety and depression by providing appropriate psychological counseling to family members [17]. Geng et al. found that continuous care after discharge can effectively decrease the complications of children with enterostomy, increase their care satisfaction, and promote their postoperative quality of life [18]. Gao et. al reported that WeChat-based continuous care can significantly improve the nursing ability and quality of life of parents, and decrease the incidence of complications in children with enterostomy [3].

Although individual trials on continuous care have achieved numerous potential benefits, there is a lack of a systematic review and meta-analysis on its promising outcomes in children with enterostomy and their families. Thus, the study intended to analyze the optimum existing proofs, summarize the feasibility of the reported survey results, and evaluate the effectiveness of continuous care on children with enterostomy and their families in China, to afford an evidence-based approach for medical nursing staff and provide a continuous care strategy for children with enterostomy and their families.

2. Methods

This review was carried out by the PRISMA declaration guidelines [19]. The protocol has been registered on PROSPERO with registration number CRD42023479320. Moreover, primary searches of the major data libraries did not discover any ongoing or published systematic reviews and meta-analyses with this objective.

2.1. Search strategy

Clinical trials of continued care strategy adopted for children with enterostomy and their families were searched by computer in Embase, EBSCO, Web of Science, PubMed, China Biology Medicine (CBM), Cochrane Library, Wanfang Data (Wanfang), China National Knowledge Infrastructure (CNKI) and VIP Chinese Science and

Technology Journal Database (VIP). Each database was retrieved up to December 30, 2025, without any language restrictions.

2.2. Inclusion and exclusion criteria

2.2.1. Inclusion criteria

(1) Study design
Randomized controlled trials, quasi-randomized controlled trials, or cohort studies;

(2) Participants
Children with enterostomy in China (≤ 18 years);

(3) Interventions
Continuous care provided by ETs or professional nursing staff who have received training in enterostomy care;

(4) Outcomes
Health variables of affected children and their families, including complications of children with enterostomy, enterostomy care ability of family members and negative emotions of family members.

2.2.2. Exclusion criteria

(1) Studies did not use a control group;
(2) Studies that only included adult patients (> 18 years);
(3) Studies from case reports, conference abstracts, reviews, letters, or duplicate publications;
(4) Literature that the full text was unavailable, outcomes were unclear, or interventions were different.

2.3. Data synthesis

Review Manager software (version 5.4) was adopted for the meta-analysis. For binary variables such as complications of children with enterostomy, odds ratio (OR) with 95% confidence interval (CI) was calculated as an effect indicator. For continuous variables such as family caregiver ability for enterostomy, length of time for family members to replace stoma bags, and anxiety and depression of family members; if the scales used were the same, mean difference (MD) with 95% CI was select for effect measures; if the scales adopted were different, standardized mean difference (SMD) with 95% CI was calculated as effect indicators [20]. The heterogeneity test of the included literature was carried out with χ^2 test and I^2 statistics [21]. The fixed-effects model was adopted if $p > 0.1$ or $I^2 < 50\%$; the random-effects model was employed if $p < 0.1$ or $I^2 > 50\%$. Funnel plots, Egger's test and Begg's test were adopted to evaluate the publication bias when the number of included literatures was greater than or equal to 10 [22]. $p < 0.05$ was recognized statistically significant. The sensitivity analysis was performed by successively deleting the individual literature to assess the robustness and reliability of the results [23].

3. Results

3.1. Complications of children with enterostomy

27 studies including 2030 pediatric patients (1030 in continuous care group and 1000 in routine care group) reported complications in children with enterostomy [3,14–16,18,24–45]. The fixed effects model was adopted to carry out the meta-analysis due to no statistical heterogeneity was observed (I2 = 0%, $p = 0.94$). The results revealed

that the incidence of complications of children with enterostomy in the continuous care group was remarkably less than that in the conventional care group, with statistical significance (OR = 0.20, 95% CI = 0.16–0.26, $p < 0.001$), illustrating that the continuous care intervention could decrease the complications of children with enterostomy, as shown in Figure 1.

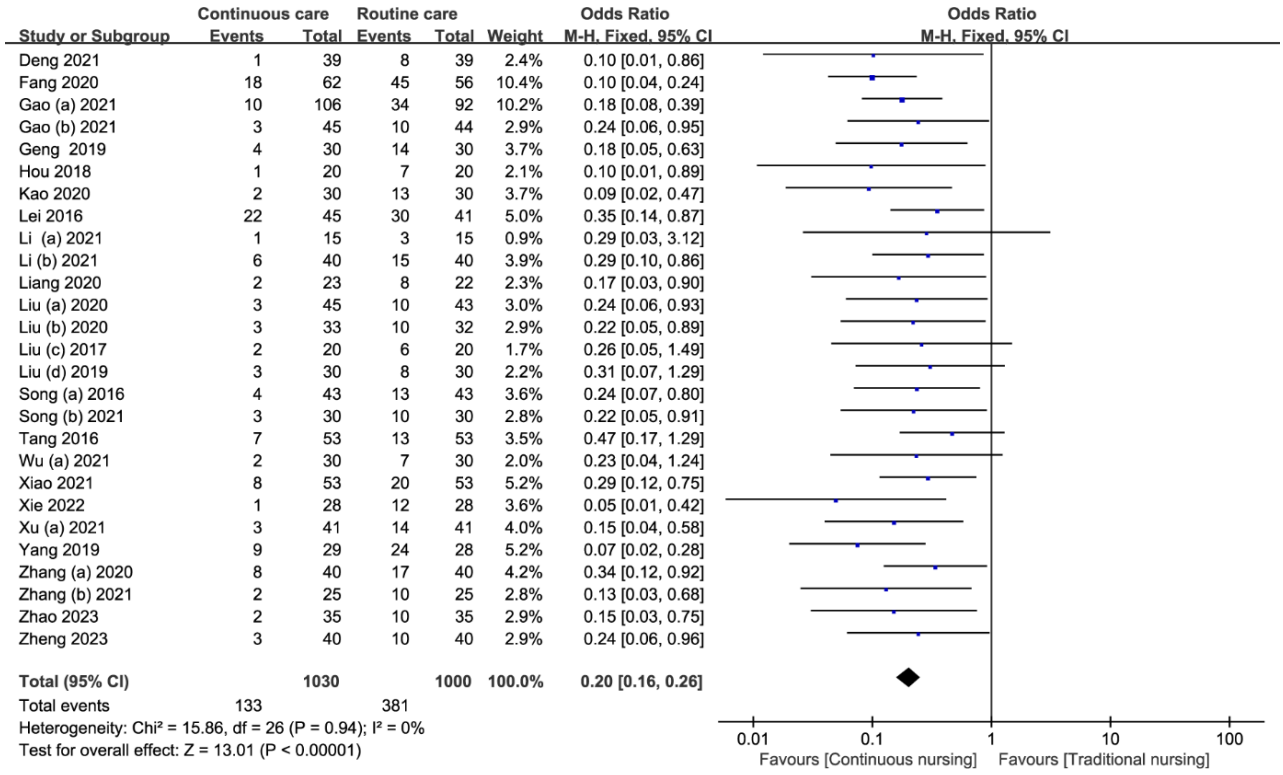

Figure 1. Forest plot of complications in children with enterostomy.

3.2. Family caregiver ability for enterostomy

Five studies involving 474 participants (244 in continuous care group and 230 in routine care group) reported the family caregiver ability for enterostomy, all evaluated using the family caregiver task inventory (FCTI) [3,31,41,46,47]. The random effects model was employed to conduct the meta-analysis because the statistical heterogeneity was significant ($I^2 = 99\%$, $p < 0.001$). The results showed that the family caregiver ability for enterostomy in the continuous care group was remarkably higher than that in the routine care group, and the diversity between the two groups was statistically remarkable (MD = -10.34, 95% CI = -13.82 to -6.85, $p < 0.001$). Thus, the continuous care strategy could promote the family caregiver ability for enterostomy, as illustrated in **Figure 2**.

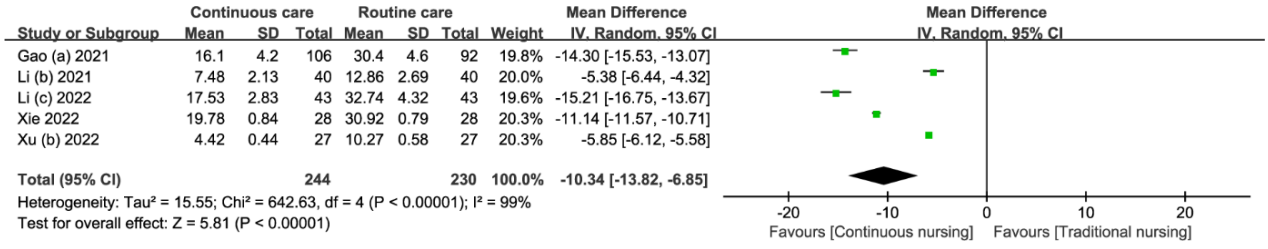

Figure 2. Forest plot of family caregiver ability for enterostomy.

3.3. Length of time for family members to replace stoma bags

Seven studies including 431 participants (216 in continuous care group and 215 in routine care group) reported the duration of family member replacement of stoma bags [14,15,27,34–36,45]. The random effects model was adopted to perform the meta-analysis due to the statistical heterogeneity was significant (I^2 = 100%, p < 0.001). The results revealed that the duration of family members replacing stoma bags in the continuous care group was significantly shorter than that in the conventional care group, and the diversity between the two groups was statistically remarkable (MD = -13.57, 95% CI = -19.66 to -7.49, p < 0.001). Thereby, the continuous care strategy could shorten the length of time for family members to replace stoma bags, as displayed in **Figure 3**.

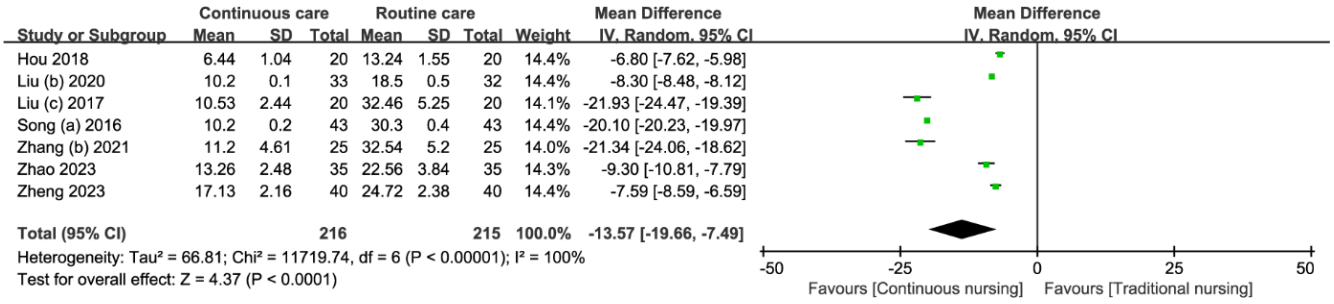

Figure 3. Forest plot of length of time for family members to replace stoma bags.

3.4. Anxiety of family members

Nine studies involving 941 participants (481 in continuous care group and 460 in routine care group) reported the anxiety of family members, of which eight studies used the self-rating anxiety scale (SAS) as the evaluation tool and one study adopted the generalized anxiety disorder (GAD) as the evaluation tool [17,18,37,40,43,47–50]. The random effects model was employed to conduct the meta-analysis due to the statistical heterogeneity was significant (I^2 = 92%, p < 0.001). The results revealed that the anxiety of family members in the continuous care group was remarkably lower than that in the conventional care group, and the diversity between the two groups was statistically remarkable (SMD = -1.80, 95% CI = -2.36 to -1.23, p < 0.001), indicating that the continuous care intervention could alleviate the anxiety of family members, as shown in **Figure 4**.

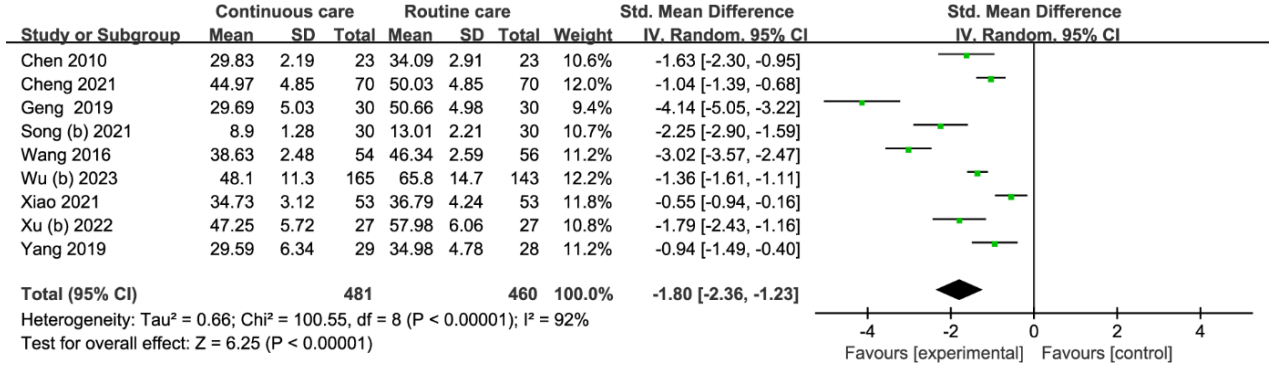

Figure 4. Forest plot of anxiety of family members.

3.5. Depression of family members

Eight studies including 863 participants (443 in continuous care group and 420 in routine care group) reported the depression of family members, of which seven studies adopted the self-rating depression scale (SDS) as the evaluation tool and one study used the Edinburgh postnatal depression scale (EPDS) as the evaluation

tool [17,18,33,43,47–50]. The random effects model was employed to conduct the meta-analysis due to the statistical heterogeneity was significant (I^2 = 89%, p < 0.001). The results illustrated that the depression of family members in the continuous care group was significantly lower than that in the routine care group, and the diversity between the two groups was statistically remarkable (SMD = -1.54, 95% CI = -2.04 to -1.04, p < 0.001), indicating that the application of continuous care strategy could alleviate the depression of family members, as displayed in **Figure 5**.

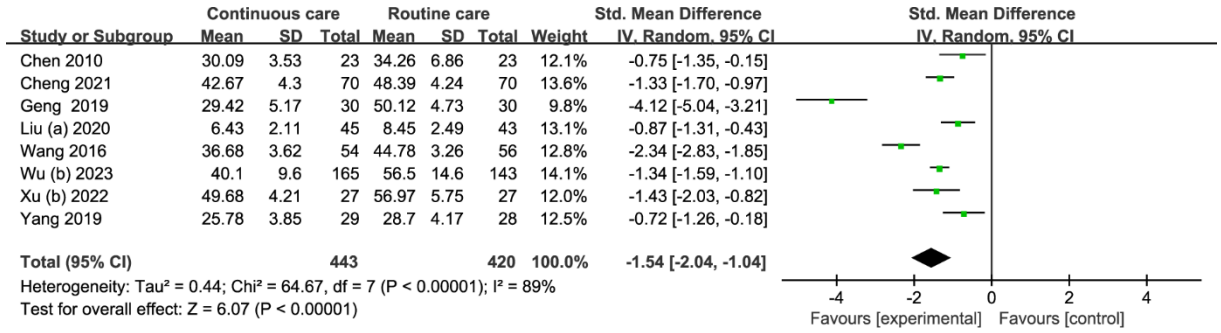

Figure 5. Forest plot of depression of family members

4. Conclusion

The findings of this review suggest that continuous care for children with enterostomy and their families in China can significantly decrease the complications of children with enterostomy, effectively promote the enterostomy care ability of family members, and alleviate negative emotions of primary caregivers such as depression and anxiety. Due to the positive effects of continuous nursing intervention on children with enterostomy and their families, it is necessary to incorporate continuous care strategy into clinical practice and conduct further research.

Disclosure statement

The authors declare no conflict of interest.

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