

EDUCATIONAL INTERVENTION FOR MOTHERS' UNDERSTANDING AND CARE OF CHILDREN WITH INTESTINAL STOMA

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ABSTRACT

Background: An ostomy is a surgically created opening that allows waste to exit the body, with the external opening known as a stoma. In children, intestinal stomas are commonly created for conditions such as inflammatory bowel disease, trauma, Hirschsprung's disease, and anorectal malformations, making a clear understanding of stoma anatomy and care essential for preventing complications and improving quality of life.

Methodology: A quasi-experimental single-group pre-post design was used to evaluate the effectiveness of an educational intervention on mothers' knowledge and practices regarding intestinal stoma care. The study was conducted over nine months in the Pediatric Surgery Department of the Children's Hospital and included 49 purposively selected mothers of children aged 0–12 years with colostomy, ileostomy, or urostomy. The intervention, delivered over 16 weeks in structured 45–60-minute sessions. Data were collected using validated knowledge and a practice checklist. Post-intervention assessments were conducted using the same tools. Data were analyzed in SPSS 27. Ethical approval and informed consent were obtained prior to data collection.

Results: The study included 49 mothers, most aged 27–35 years (61.22%), predominantly illiterate or under-matric (73.45%), housewives (79.59%), and residing in rural areas (61.22%). Before the intervention, 95.9% of mothers had poor knowledge and 97.9% had poor practices regarding stoma care. Following the educational intervention, knowledge improved markedly, with 93.87% achieving good knowledge ($p < 0.001$), and practices increased significantly, with 91.8% demonstrating good practice levels ($p = 0.002$). Mean knowledge scores increased from 1.57 ± 0.65 to 2.69 ± 0.62 , and mean practice scores rose from 1.94 ± 0.99 to 21.67 ± 7.28 .

Conclusion: The educational intervention significantly improved mothers' knowledge and practices regarding intestinal stoma care, transforming most from poor to good levels. This highlights the effectiveness of structured, nurse-led education in enabling safe and proper care for children with intestinal stomas.

Keywords: Stoma Care; Intestinal Stoma; Colostomy; Ileostomy; Nursing Intervention Knowledge; Practice

INTRODUCTION

Intestinal stomas are life-saving surgical procedures commonly performed in children with congenital or acquired gastrointestinal conditions (1). Despite advancements in pediatric surgery, stoma creation remains associated with complications such as mucocutaneous separation, prolapse, retraction, and peristomal skin problems (2). Children are particularly vulnerable due to their anatomical and developmental factors, making effective stoma care essential for maintaining health and preventing complications (3).

Caregivers especially mothers play a central role in stoma management, yet evidence shows that most lack adequate knowledge and practical skills for effective care. Studies from Egypt, India, and Pakistan consistently report insufficient understanding of stoma appliances, hygiene, dietary management, and complication recognition among mothers of children with stomas (4). Educational interventions have demonstrated significant improvements in caregivers' knowledge and practices, emphasizing the value of structured training programs. The high prevalence of pediatric

stoma cases and their related complications in Pakistan further underscores the need for caregiver-focused education (5).

Given the vulnerability of pediatric stoma patients and the documented gaps in caregiver preparedness, targeted educational interventions are essential to enhance mothers' competence in stoma care (6). Empowering mothers with appropriate knowledge and skills can reduce complications, support post-operative recovery, and improve the overall quality of life for children living with intestinal stomas (7). This study aims to strengthen mothers' understanding and caregiving abilities through structured education, addressing a critical need within pediatric surgical and nursing practice.

METHODOLOGY

A quasi-experimental single-group pre-post design was used to evaluate the effectiveness of an educational intervention on mothers' knowledge and practices regarding intestinal stoma care. The study was conducted in the pediatric surgery department of a tertiary care children's hospital, involving 49 purposively selected mothers who met the inclusion criteria. Data were collected over nine months using three tools: a demographic proforma, an 18-item knowledge questionnaire, and a 25-item practice checklist, all validated through expert review (CVI: knowledge 0.88; practice 0.80) and pilot-tested for reliability (Cronbach's α : 0.81 and 0.97, respectively). The intervention consisted of 16 weeks of structured education delivered in four groups through interactive teaching, demonstrations, and a 45–60-minute session format, supported by an informational booklet. Knowledge and practice were assessed before and after the intervention, with scores categorized as good, fair, or poor. Data were analyzed using SPSS-27, applying descriptive statistics and the Wilcoxon Signed-Rank Test due to non-normal distribution, with $p < 0.05$ considered significant. Ethical approval and written informed consent were obtained, confidentiality was maintained, and participants were free to withdraw at any stage.

RESULTS

Demographic Characteristics of Participants

Table 4.1 Demographic Characteristics of Participants

Demographic characteristics	Frequency (%)
Mothers' Age	
18-26 Year	19 (38.78%)
27-35 Year	27(61.22%)
36-48 Year	0 (0%)
49-60 Year	0 (0%)
Mothers' Education Level	
Illiterate	20 (40.80%)
Under matric	16 (32.65%)
High school	6 (12.24%)
Graduate	7 (14.28%)
Mothers' Work	
House wife	39 (79.59%)
Working Women	10 (20.41%)
Residence	
Rural Areas	30 (61.22%)
Urban Areas	19 (38.77%)
Age of Child	
0-4 Years	9 (18.37%)
05-8 Years	29 (59.18%)
09-12 Years	11 (22.44%)

Table 4.1 summarizes the demographic characteristics of the 49 participating mothers. Most were aged 27–35 years (61.22%), with the remainder 18–26 years (38.78%); none were 36–60 years. In terms of education, 40.80% were illiterate, 32.65% had education under matric level, 12.24% had completed high school, and 14.28% were graduates. The majority were housewives (79.59%), while 20.41% were working women. Most participants resided in rural areas (61.22%) compared with urban areas (38.77%). The children were predominantly 5–8 years old (59.18%), followed by 9–12 years (22.44%) and 0–4 years (18.37%).

Table 4.2: Comparison of frequency distribution of pre and post intervention knowledge regarding stoma care (n=49)

Knowledge Level	Pre-Intervention f (%)	Post- Intervention f (%)
Poor Knowledge	47 (95.9%)	1 (2.0%)
Fair Knowledge	2 (4.0%)	2 (4.0%)
Good knowledge	0 (0%)	46 (93.87%)

n=number of nurse educators, f=frequency of participants

Table 4.2 compares the frequency distribution of mothers' knowledge levels regarding stoma care before and after the intervention (n=49). The findings show that the majority of mothers had poor knowledge before the intervention (95.9%), while none demonstrated good knowledge. After the intervention, there was a substantial improvement, with 93.87% of mothers achieving good knowledge and only 2% remaining in the poor category. These results indicate that the educational intervention was highly effective in improving mothers' knowledge about stoma care.

Table 4.3 Comparison of frequency distribution of pre and post intervention practices regarding stoma care (n=49)

Practice Level	Pre-Intervention f (%)	Post- Intervention f (%)
Poor Practice	48 (97.9%)	1 (2.0%)
Fair Practice	1 (2.0%)	3 (6.12%)
Good Practice	0 (0%)	45 (91.8%)

n=number of nurse educators, f=frequency of participants

Table 4.3 compares the frequency distribution of mothers' practice levels regarding stoma care before and after the intervention (n=49). The results indicate that nearly all mothers demonstrated poor practice before the intervention (97.9%), with none achieving a good practice level. After the intervention, there was a substantial improvement, with 91.8% of mothers reaching the good practice category, while only 2% remained in the poor category. These findings show that the educational intervention was highly effective in enhancing mothers' practical skills related to stoma care.

DISCUSSION

The study showed that most mothers were aged 27–35 years, consistent with earlier findings that women in early adulthood commonly serve as primary caregivers for children with chronic surgical conditions (7). Similar trends were documented by Mohamed et al., (16) who noted that caregiving for stoma-bearing children is predominantly undertaken by younger mothers. The educational profile revealed that many mothers were illiterate or had education below matric, comparable to reports by Singh and Ranjan, who found low literacy to be a major barrier to comprehending stoma-care instructions [not provided]. This is further supported by Ali et al., who emphasized that maternal education strongly influences competence in specialized caregiving tasks (1).

The majority of participants were housewives, consistent with studies from South Asian contexts where women bear primary caregiving responsibilities (8). Similarly, most belonged to rural areas, aligning with findings reporting reduced access to postoperative pediatric surgical education in rural populations (9). The predominance of children aged 5–8 years is consistent with previous work noting that long-term stoma care commonly occurs among school-aged children due to delayed diagnoses or chronic gastrointestinal disease (10). Overall, the demographic profile reflects documented disparities in literacy, caregiving roles, and rural–urban access that influence caregiving capacity.

The study observed a marked improvement in mothers' knowledge following the educational intervention, increasing from predominantly poor knowledge to 93.87% scoring in the good category. These findings match results from Mohamed Elzeky et al. (16), who also observed significant gains in mothers' understanding after structured ostomy-care programs. Similar improvements have been documented in other interventional studies, where focused educational sessions enhanced knowledge related to hygiene, appliance management, and complication recognition [4, 10, 11, 13, 14, 15, 17]. Moreover, adult-learning principles suggest that relevant, skill-oriented teaching with demonstrations enhances comprehension, especially among low-literacy caregivers, consistent with the improvements observed (12, 20).

The intervention also significantly improved mothers' stoma-care practices, increasing from nearly universal poor practices to 91.8% achieving good practice scores. This aligns with findings from previous literature (13,14), who

reported substantial improvements in caregiver performance following structured and hands-on training. Studies by Dincer et al. (7), Duque et al. (11), Eray et al. (14), and Abd Elkhair & Amin (18) similarly highlight that demonstration-based and simulation-based training significantly enhance practical competence in stoma cleaning, appliance application, and identifying complications. The magnitude of improvement in practice scores in this study exceeds that reported in some previous studies, likely due to the intensive and structured nature of the intervention, repeated demonstrations, and personalized attention provided to low-competence caregivers (19).

Overall, the study reinforces the strong evidence base supporting structured, culturally appropriate, and skill-based educational interventions as an effective strategy to enhance both knowledge and practical stoma-care competence among mothers of children with intestinal stomas.

CONCLUSION

The study findings show marked improvement in mothers' knowledge and practices related to stoma care following the educational intervention. Most mothers were young, rural, and had low educational levels, indicating a clear need for structured health teaching. Before the intervention, nearly all participants had poor knowledge and practices; however, after the program, 93.87% achieved good knowledge and 91.8% demonstrated good practices. Significant increases in mean scores ($p < 0.001$ for knowledge; $p = 0.002$ for practices) confirm the effectiveness of the intervention.

REFERENCES

1. Ali, H. M. A. (2021). Video-based and digital booklet guided program for parents of colostomy operated infants. *International Journal of Nursing and Health Sciences*, 3(1).
2. Amin, H. E., Amer, W. M., & Abdelhamid, F. M. (2023). Effect of educational intervention on nurses' performance and attitude regarding intestinal ostomy care. *Zagazig Nursing Journal*, 19(2), 344-365.
3. Attia Mohammed, B., Abd Elkreem, M., Mona Abd Elnaser Ahmed Elnabawey, G., Mohammed Ahmed, S., & Ismail Ismail Elsayed, A. (2024). Educational guidelines on stress and coping strategies among mothers having children with colostomy. *Egyptian Journal of Health Care*, 15(1), 1136-1152.
4. Ayed, M., Mohammed, A., Bayoumi, M., & Zaki, A. (2022). Mothers' Knowledge and Practices regarding Caring of their Children with Stoma. *Sohag Journal of Nursing Science*, 1(1), 28-36.
5. Black, J. M., & Matassarin-Jacobs, E. (2018). *Medical-surgical nursing: clinical management for continuity of care* (5th ed. ed.). Philadelphia: Saunders
6. Babakhanlou, R., Ravandi-Kashani, F., & Kontoyiannis, D. P. (2023). Neutropenic enterocolitis: an uncommon, but fearsome complication of leukemia. *Journal of Hematology*, 12(2), 59.
7. Dincer, M., & Çıtlak, G. (2019). Indications and Complications of Stoma Formations in Emergency Surgery. *International Journal of Innovative Research in Medical Science (IJIRMS)*, 4(02).
8. D'Ambrosio, F., Pappalardo, C., Scardigno, A., Maida, A., Ricciardi, R., & Calabro, G. E. (2022). Peristomal skin complications in ileostomy and colostomy patients: what we need to know from a public health perspective. *International journal of environmental research and public health*, 20(1), 79.
9. Dawood, B. M. A. E., & Younis, A. A. E.-A. E.-R. (2025). Effect of Video assisted Teaching versus Teach-Back Method on Mothers' Knowledge, Practice and Self-efficacy regarding Colostomy Care of their Children. *International Egyptian Journal of Nursing Sciences and Research*, 6(1), 59-86.
10. de Melo Guedes, C., Darezzo Rodrigues Nunes, M., Faria da Silva, L., Bertolossi Marta de Araújo, B., Dantas de Oliveira Souza, N. V., & Teixeira de Araújo Pacheco, S. (2024). The importance of the stomal therapy nurse for the care of children with intestinal stoma: the maternal perspective. *Revista Estima*, 22.
11. Duque, P. A., Valencia Rico, C. L., Campiño Valderrama, S. M., & López González, L. A. (2023). Effects of socio-educational interventions on the quality of life of people with a digestive ostomy. *SAGE Open Nursing*, 9, 23779608231177542.
12. Eray, T., Hepşengil, D. Z., Gündüz, T. Y., & Akgül, E. A. (2024). The effect of intestinal stoma care training on knowledge and skill levels of pediatric surgery nurses. *Turkish Journal of Pediatric Surgery*, 38(2), 052-061.
13. Hakim, A., Kazemi, S., Peyvasteh, M., & Haghighizadeh, M. H. (2025). The effectiveness of the educational program on knowledge and caring performance of parents of children with colostomy: a clinical trial study. *BMC pediatrics*, 25(1), 319.
14. Halemani, K., Shashidhara, Y., & D'Souza, S. R. (2021). An evaluative study to assess the effectiveness of a video-assisted teaching module on knowledge and practice regarding home-based colostomy care of children among primary caregivers in selected hospital Lucknow, Uttar Pradesh. *Indian journal of surgical oncology*, 12(1), 146-151.
15. Liu, Y., Wang, L., & Zhu, L. (2023). The impact of stoma management education on the self-care abilities of individuals with an intestinal stoma. *Gastrointestinal Nursing*, 21(Sup4), S14-S21.

16. Mohamed Elzeky, A. M., Khalil, A., & Farrag, J. M. (2022). Effect of health care program for mothers having children with stoma. *Port Said Scientific Journal of Nursing*, 9(1), 77-99.
17. Mulyani, R. D., & Anggraeni, M. D. (2025). Colostomy care education to increase the knowledge and skills of parents caring for children with a stoma. *British Journal of Nursing*, 34(6), S14-S11.
18. Pararas, N., Pikoulis, A., Papakonstantinou, D., & Pikoulis, E. (2023). Left Colon. In *Oncologic Surgical Emergencies: A Practical Guide for the General Surgeon* (pp. 133-146). Cham: Springer International Publishing.
19. Sobhi Abd Elkhair, S., & Mohammed Amin, G. (2024). Effect of Simulation-Based Education about Colostomy on Mothers' Knowledge, and Practice among Their Children. *Egyptian Journal of Health Care*, 15(1), 2112-2130.
20. Zhong, C., He, H., Lin, B., Zheng, S., & Song, M. (2021). A Study on the efficiency of the team led by stoma specialist nurses in the treatment of enterostomy. *Ethiopian Journal of Health Development*, 35(4).