

A study to Assess the Effectiveness structured teaching programme with help of a Video-Assisted Teaching Module on Knowledge and Practice Regarding Home-Based Colostomy Care of Children Among Primary Caregivers in Selected Hospital of Maharashtra state.

Dr. Urmila Chaudhari*

Assistant Professor, Department of Nursing, Tilak Maharashtra Vidyapeeth, Pune,
Maharashtra, India

urmilasalgar1959@gmail.com

Abstract: Introduction: The aim of the study is to assess the knowledge and practice skills of home-based colostomy caregivers of children with a colostomy. The objective of the study was to assess the effectiveness of video teaching module on colostomy care among home-based colostomy caregivers.

Method: A quasi-experimental study design and 30 samples were adopted. The samples selected by the purposive sampling technique those were fulfilled the sample criteria. Demographic and structured knowledge questionnaires were used for the data collection.

Result: Descriptive and inferential statistics were used for data analysis by using SPSS software version 16.0. Out of 30 samples, demographic variables, 23 (76.6%) of the participants are of age between 21 and 30 years, 21 (70%) were housewives, 23 (76.6%) were mothers, 16 (53.4%) completed higher secondary, and 23 (76.6%) have monthly family income of INR 5001–10000. The majority of the children with a colostomy were toddler 22 (73.3%), gender ratio was equal, 27 (90%) are of Hindu religion, and 29 (96.7%) undergone colostomy. Knowledge score was divided based on percentage. Good knowledge scores in pre- and posttest are 0 and 29 (96.5%); moderate knowledge in pre- and posttest, 9 (30.5%) and 1 (3.3%); and poor knowledge in pre- vs posttest, 21(70%) and 0, respectively. Inferential statistics evaluated colostomy care video intervention. Knowledge was assessed by paired *t* test, -19.607 ($p < 0.05$); similarly, practice skill assessed by Wilcoxon signed-rank was (z) -4.716 ($p < 0.01$).

Conclusion: Colostomy care video was a powerful tool to enhance primary caregivers' confidence, colostomy care skills, and attitude.

Keywords: Colostomy care, Knowledge, Practice, Primary caregivers, Video teaching module

INTRODUCTION

The colostomy is a surgical procedure in which colon was brought through the abdominal wall to ease the diversion of stool from the damaged part of the colon. It may be performed in any

part of the colon and normally prepared in the sigmoid colon [1]. Colostomy was first introduced by a French surgeon for the treatment of left colon neoplastic obstruction [2]. In 1920, Dr. Bryan Brooke developed guidelines on standard construction on colostomy care [3]. This procedure may be considered a life-saving procedure and designed for a short time or the rest of a patient's life. In children, colostomy is performed for various problems like birth defects, trauma, and infectious disease of the gastrointestinal tract [4]

The colostomy is an invasive procedure, and it may cause discomfort in various levels like pain at surgical incision, stoma complications, diet, and fluid imbalance. In addition to parent's emotion and psychological perspectives, this is a devastating circumstance for healthcare workers [5]. Colostomies for children in developing and undeveloped countries have significant social and financial effects on low-income families [6].

Developed nations like the USA reported that approximately 100000 population experienced colostomy or ileostomy. More than 50,000 patients undergo colostomy in India, and most of them are referred from peripheral centers [7]. Present incidence rates show that India needs to set up additional colostomy care and manages centers throughout the nation. A colostomy required for 4–8 months or until further definite surgery in children. However, the majority of children received colostomy by parents or primary caregivers in their home setting. Hence, caregivers required special knowledge and skills to performed colostomy care. Caregivers or parents have focused on child's diet, stomal care, and early identification and management of colostomy complications [8]. Sound colostomy has reduced the mortality and morbidity rates. Therefore, in 1970, an Indian healthcare worker was trained in the USA; later, he turned to colostomy care trainer for nurses, doctors, and surgeons in India and other parts of Asia.

This study aimed to assess the knowledge and practice skills of home-based colostomy caregivers. Parents or caregivers had poor concept of colostomy, especially those who are not admitting and taking responsibility on their child's disease. Therefore, the investigator developed colostomy care video which may strengthen the primary caregiver's confidence and practice skills.

Objective

The first objective of the study was

1. To assess the level of knowledge and practice of home-based colostomy care among primary caregivers of children with colostomy.
2. The second objective of the study was to determine the effectiveness of video-assisted teaching module on knowledge and practice of home-based colostomy care among primary caregivers of children with colostomy.

METHODS

Study Design and Participants

An evaluative study of quasi-experimental one-group pre- and postdesign was adopted with a total of 30 samples recruited between January 2018 and July 2018 in the Department of Pediatric Surgery, Sanjay Gandhi Post Graduate Institute of Medical Science, (SGPGIMS), Lucknow, Uttar Pradesh, India. The samples are selected by purposive sampling technique, and the sample size was determined by sample size calculation formula using the previous study with 80% power and 5% error. The target population of the study was primary caregivers who were giving colostomy care in their home setting.

Inclusion Criteria

Inclusion criteria for study samples were (i) primary caregivers of children with colostomy, (ii) primary caregivers of children with colostomy age between 0 and 12 years, (iii) primary caregivers who were not aware of colostomy care, and (iv) children with a colostomy for more than 2 weeks.

Exclusion Criteria

Exclusion criteria for study participants are (i) children who were admitted for colostomy closure, (ii) primary caregivers who were not able to speak or understand Hindi or English language, (iii) critical ill children, and (iv) caregivers not able to communicate.

Ethical Consideration

Instrument

Socio demographic characteristics (primary caregivers: age, gender, religion, education status, and, occupation; children with colostomy: age, gender, type of stoma, and duration of stoma). Likewise, the second instrument was standardized self-developed knowledge questionnaires

on home-based colostomy care. The knowledge questionnaire divided into four domains like general information on the human digestive tract, colostomy care, diet, and complications. The third instrument was the colostomy care checklist comprised of 22 items. The tool and video were validated by experts from various fields; later, the reliability was checked by interrater, and split method reliability of knowledge was 0.78 and practice was 0.77, respectively.

Colostomy Care Video

Colostomy care video was developed and validated by colostomy nurses and pediatric surgeons from SGPGIMS. The investigator selected a child with colostomy and explained the purpose of videography to the parent. The researcher strictly adhered to the child's privacy and does not reveal a child's identity; videographer blurred the child's face and only focused on the colostomy site. The colostomy video comprised of anatomy and physiology of the human digestive system, colostomy care, diet management, and prevention of colostomy-related complications.

Data Collection

The investigator explained the study purpose to all participants in their regional language (Hindi). The demographic and knowledge questionnaires were given and asked them to complete than observed practice skills in the procedure room department of pediatric surgery, SGPGIMS Lucknow, India. Participants have taken approximately 20–30 min to complete the first instrument; similarly, 20 min was taken for the second instrument (practice checklist). After the pretest, the researcher has displayed the self-developed video on colostomy care in the seminar hall, department of pediatric surgery, SGPGIMS, Lucknow, UP, India.

Data Analysis

Obtained data were organized, coded, tabulated, and analyzed using SPSS version 16 (IBM SPSS Inc, Chicago, IL, USA). A descriptive statistic used to describe the study sample characteristics includes frequency and percentage. Similarly, the mean and standard deviation was used for knowledge and practice scores. Inferential statistics was used to assess the effectiveness of colostomy care video among primary caregivers of children with colostomy, study findings summarised in Table [6](#) and [7](#).

Total scores	Mean	SD	Mean difference	Paired <i>t</i> test value (<i>t</i>)	<i>P</i> value
Pretest	14.20	4.046			
Posttest	28.37	1.474	14.167	- 19.607	< 0.01

Table 6.: Paired *t* test values computed between the pretest and posttest knowledge scores on colostomy care. *N* = 30

**p* < 0.05

Table 7.: Wilcoxon’s Sign rank values computed between the pre-test and post-test scores practice of home-based colostomy care. *N* = 30

Total scores	Median	Interquartile range	Wilcoxon sign ranked value (<i>z</i>)	<i>p</i> value
Pretest	12	10–13		
Posttest	18	16–20	- 4.716	< 0.01

**p* < 0.05

RESULT

The data were collected (Tables 1 and 2) from 30 primary home-based colostomy caregivers of children with a colostomy. The finding of the study shows that 23 (76.6%) of the participant’s age between 21 and 30 years, 21 (70%) were housewife, 23 (76.6%) were mothers, 16 (53.4%) completed higher secondary, and in 23 (76.6%) families, their income per month was INR 5001–10000. The majority of the children with colostomy were toddler 22 (73.3%), equal gender ratio, 27 (90%) were Hindu religion, and 29 (96.7%) undergone colostomy.

Table 1.

Participant characteristics	Frequency (<i>f</i>)	Percentages (%)
Age in year		
21–30	23	76.7
31–40	5	16.7
> 40	2	6.6

Gender		
Male	6	20
Female	24	80
Caregiver relation to child		
Father	6	20
Mother	23	76.7
Guardian	1	3.3
Caregivers education		
Higher primary and secondary	16	53.4
Intermediate	4	13.3
Graduation	6	20
Postgraduation and above	4	13
Employment status		
Employed	5	16.7
Self-employed	4	13.3
Housewife	21	70
Type of family		
Joint family	15	50
Nuclear family	15	50
Family income		
< Rs 5000	2	6.7
Rs 5001–10000	23	76.7
< Rs 10001	5	16.6
Previous knowledge		
Yes	1	3.3

No	29	96.7
If yes, the source of knowledge		
Internet	01	100

Frequency (*f*) and percentage (%) distribution of the caregivers based on sample characteristics. *N* = 30

Table 2. Frequency (*f*) and percentage (%) distribution of children with a colostomy. *N* = 30

Participate characteristics	Frequency (<i>f</i>)	Percentages (%)
Age of child in year		
0–3	22	73.3
4–6	08	26.7
Gender		
Male	15	50
Female	15	50
Religion		
Hindu	27	90
Muslim	3	10
Type of stoma		
Colostomy	29	96.7
Ileostomy	1	3.3
Duration of stoma		
0–6 months	30	100

The knowledge score was divided based on the obtained score. Those who scored more than 75% were considered good knowledge, 50–75% moderate knowledge, and poor knowledge when they obtain score less than 50%, i.e., good knowledge score in pre- and posttest 0 and 29 (96.5%), moderate knowledge in pre- and post, 9(30.5%) and 1 (3.3%), and poor knowledge pre- vs post 21 (70%) and 0, respectively (Table 3).

Table 3. Frequency (f) and percentage (%) distribution of participants based on the pretest and posttest knowledge score. N = 30

Knowledge scores on colostomy care	Pretest		Posttest	
	f	%	f	%
Good knowledge > 76% (26–34)	0	0	29	96.7
Moderate knowledge 50–75% (18–25)	9	30	1	3.3
Poor knowledge < 50% (0–17)	21	70	0	0

With regard to Table 4, knowledge of primary caregivers in different domains of mean, standard deviation, i.e., anatomy and physiology pre- and posttest 3.40 ± 1.522 and 5.47 ± 1.008 and mean percentage pre- and posttest were 48.5% and 78.1%. Peristomal care pre- and posttest was 7.03 ± 2.251 and 14.00 ± 1.365 , and the mean percentage was 41.3% and 82.3%. Diet management was 1.73 ± 1.143 and 4.40 ± 0.770 , and the mean percentages were 34.6% and 88%. Colostomy-related infection pre- and posttest was 2.03 ± 1.450 and 4.47 ± 0.629 , and mean percentage was 40.6% and 89.4%, respectively. The overall mean and SD pre- and posttest were 14.19 ± 6.366 & 28.34 ± 3.772 , respectively.

Table 4. Area wise mean and SD, mean percentage of pretest and posttest knowledge scores. N = 30

Area of knowledge	Maximum possible score	Mean \pm SD		Mean percentage	
		Pretest	Posttest	Pretest (%)	Posttest (%)
Anatomy and physiology	7	3.40 ± 1.522	5.47 ± 1.008	48.5	78.1
Peristomal care	17	7.03 ± 2.251	14.00 ± 1.365	41.3	82.3
Diet management	5	1.73 ± 1.143	4.40 ± 0.770	34.6	88
Prevention of infection	5	2.03 ± 1.450	4.47 ± 0.629	40.6	89.4

Overall		14.19 ± 6.366	28.34 ± 3.772		
---------	--	------------------	------------------	--	--

The data in Table 5 show that there was a positive correlation in colostomy practice. The following items were found the highest difference of mean and standard deviation before and after colostomy care video intervention: gathered all the articles in pre- and posttest 14 (46.6%) and 27 (90%), used warm water while cleaning the peristomal skin pre- and posttest score 11 (36.6%) and 22 (73.3%), majority of caregivers had not used the gloves after wash contaminated hands pre- and posttest 16 (53.3%) and 28 (93.3%), and performed hand hygiene followed by colostomy care procedure enhanced the pre- and posttest 14 (46.6) and 25 (83.3%), respectively. Similarly, Table 6 summarized that there was a positive statistical significant difference in the pre- and posttest of the knowledge scores of participants on home-based colostomy care as the pretest mean and standard deviation was 14.20 ± 4.046 and 28.37 ± 1.474 ; similarly, mean difference pre- and posttest was 4.167 and paired *t* test, -19.607 ($p < 0.05$).

Table 5. Frequency (f) and percentages (%) of the practice of home-based primary colostomy caregivers. N = 30

Home-based primary colostomy caregivers' practice	Pretest				Posttest			
	Yes		No		Yes		No	
	(f)	(%)	(f)	(%)	(f)	(%)	(f)	(%)
Gathered articles	14	46.6	16	53.4	27	90	3	10
Ensure assistant for help	17	56.6	13	43.4	24	80	6	20
Ensure privacy	16	53.3	14	46.7	25	83.3	5	17.7
Provide comfortable position	14	46.6	16	53.4	23	76.6	7	23.4
Perform hand hygiene	18	60	12	40	26	86.6	4	13.4
Empty the colostomy pouch	18	60	12	43.3	23	76.6	7	23.4
Ensure the colostomy pouch leakage	16	53.3	14	46.7	23	76.6	7	23.4
Carefully remove the pouch	17	56.6	13	43.4	21	70	9	30
Notified the peristomal skin condition	16	53.3	14	46.7	21	70	9	30

Use warmed water for clean the stoma	11	36.6	19	63.4	22	73.3	8	26.7
Measured the stoma size by a stoma measure guard and select stoma pouch	19	63.4	11	36.6	22	73.3	8	26.7
Apply the quaze piece over the stoma to prevent the further contamination	18	60	12	40	26	86.6	4	13.4
Removed contaminated gloves and performed hand hygiene	17	56.6	13	43.4	27	90	3	10
Wear the gloves	16	53.3	14	46.7	28	93.3	2	6.7
Apply the stoma care product, i.e, powder, paste	20	66.6	10	33.4	24	80	6	20
Fixed the stoma pouch over stoma	16	53.3	14	46.7	26	86.6	4	13.4
Clamp the new pouch on bottom	16	53.3	14	46.7	23	76.6	7	23.4
Performa hand hygiene	14	46.6	16	43.4	25	83.3	5	16.7
Ensure the comfort position	13	43.3	17	56.7	22	73.3	8	26.7
Observed the stool for nature and consistency	16	53.3	14	46.7	26	86.6	4	13.4
Perform after procedure and disposal of waste	16	53.3	14	46.7	26	86.6	4	13.4
Document date and time	16	53.3	14	46.7	26	86.6	4	13.4

The data presented in Table 7 shows positive significant practice skills. Median and interquartile range in pre- and posttest 12 vs 18 and 10–13 vs 16–20, respectively. Wilcoxon signed-rank was $(z) - 4.716$ ($p < 0.01$). Therefore, the video increased the caregiver skills, and the stated research hypothesis was accepted.

DISCUSSION

The present study described the effectiveness of self-developed colostomy care video on knowledge and practice among home-based colostomy caregivers of children with a colostomy. A colostomy is a simple procedure performed in an emergency condition and often reported in low and middle-income countries. Usually, children required long time colostomy

care while primary caregivers or parents have a major role in their home setting, and they required specific knowledge and skills. Caregivers must have adhered to new responsibility for the betterment of child's prospective life. Sound health education to caregivers and families brought down child mortality rates.

Supporting study summarized mean and standard deviation in pre- and postvideo intervention 0.9 ± 2.5 and 15.89 ± 4.02 and 16.4 ± 1.67 and 5.6 ± 2.0 , respectively. Hence, colostomy care video was significantly increased primary caregivers' knowledge and practice skills [9]. Another previous study reported that the effectiveness of an instructional package was more efficient in colostomy care among caregivers. Findings of the study reviewed that pre- and posttest mean scores was 47.00 and 65.33, respectively. After video teaching module the primary caregivers' knowledge was increased on colostomy care; paired t test – 5.98, at $p < 0.001$ [10, 11]. A similar study conducted by Angélica [12], the audio-visual technology, increased the caregiver's confidence and skills on colostomy care. Home visits and regular health education reduced the peristomal skin infection and improved the quality of life [13]. The peristomal complication is a major reason for child mortality therefore primary caregivers carefully assess the child and referred for specific treatment.

The previous research study result revealed that the instructional package on colostomy care practice was more effective [9]. Even though our study result on practice skills was significant with the colostomy care video. Similar supporting studies' findings revealed that Audio-Visual aids were more effective among primary caregivers of colostomy children. However, children are susceptible to peristomal infections therefore, early identification and appropriate intervention may reduce the complications.

Balance, variety of diet, and plenty of fluid may reduce the colostomy blockage [14]. Sound colostomy construction and caregivers' skills may improve a child's health [15]. Therefore, caregivers give attention to risk factors, early management, and stomal function [16]. Early assessments have improved the quality of life and early colostomy closure [17].

CONCLUSION

The use of educational materials in the form of audio-video can improve the confidence of primary caregivers towards the colostomy care. The authors concluded that colostomy care video was an impact on primary caregivers' knowledge and practice skills. A colostomy is a common procedure in children however most parents not ready to accept their child's

conditions. This video evidence gained more confidence of parents about home-based colostomy care.

COMPLIANCE WITH ETHICAL STANDARDS

Conflict of Interest

The authors declare that they have no conflict of interest

References

1. Colostomy: care at home. Children;s Minnesota. 2015 <https://www.childrensmn.org/educationmaterials/childrensmn/article/15610/colostomy-care-at-home/>
2. Alexander Colostomy closure: risk factors for complication 231-234. *Braz Arch Dig Surg.* 2017;30(4):231–234. doi: 10.1590/0102-6720201700040001.
3. Doughty DB. History of ostomy surgery. *J Wound Ostomy Continence Nurs.* 2008;35:34–38. doi: 10.1097/01.WON.0000308617.94131.f8.
4. Society AC. Colostomy guide. <https://www.ostomy.org/wp-content/uploads/2018/03/ColostomyGuide.pdf>
5. Linda Berti-Hearn BE (2019) Colostomy care: a guide for home care clinicians. 37(2). 10.1097/NHH.0000000000000735. <https://pubmed.ncbi.nlm.nih.gov/30829784/>
6. Krois D (2018) Sociodemographics and the impact of a colostomy to indigent families and children with colorectal disorders in Honduras. *J Pediatr Surg* 53(4). 10.1016/j.jpedsurg.2017.05.009. <https://pubmed.ncbi.nlm.nih.gov/28528713/>
7. DNA (2018) Ostomy centres needed to help patients post-surgery: expert. News paper. <https://www.dnaindia.com/health/report-ostomy-centres-needed-to-help-patients-post-surgery-expert-1133879>
8. Chandramouli S. Morbidity and mortality of colostomy and its closure in children. *J Pediatr Surg.* 2004;39(4):596–599. doi: 10.1016/j.jpedsurg.2003.12.016.

9. Heena Dabas KKSJA (2016) Video teaching program on management of colostomy: evaluation of its impact on caregivers. *J Indian Assoc Pediatr Surg* 21(2). 10.4103/0971-9261.176933. <https://pubmed.ncbi.nlm.nih.gov/27046974/>
10. Dhanalaxmi C (2016) Effectiveness of instructional package on knowledge regarding colostomy care among care givers in pediatric post operative ward at institute of child health and research Centre, Madurai. Semantic Scholar. <http://repository-tnmgrmu.ac.in/2097/>
11. Whitmore M (2017) Developing ostomy educational tools to decrease hospital length of stay. The University of San Francisco. p. 31-37. <https://repository.usfca.edu/capstone/659/>
12. Dalmolin A (2016) Educational video as a healthcare education resource for people with colostomy and their families. *SCIELO* 37. 10.1590/1983-1447.2016.esp.68373. <https://pubmed.ncbi.nlm.nih.gov/28403316/>
13. Deniz Harputlu SAÖ (2018) A prospective, experimental study to assess the effectiveness of home care nursing on the healing of peristomal skin complications and quality of life. *Ostomy Wound Manag* 64(10) <https://pubmed.ncbi.nlm.nih.gov/30312155/>
14. Akbulut G. Nutrition in stoma patients:a practical view of dietary therapy. *Int J Hematol Oncol*. 2011;21(1):61–66. doi: 10.4999/uhod.10082.
15. Kwiatt M. Avoidance and management of stomal complications. *Clin Colon Rectal Surg*. 2013;26(2):112–121. doi: 10.1055/s-0033-1348050.
16. Thamilselvam (2019) Complications of stoma and the management. *Surg Case Stud*:142–144. 10.32474/SCSOAJ.2019.02.000132. <https://lupinepublishers.com/surgery-case-studies-journal/pdf/SCSOAJ.MS.ID.000132.pdf>
17. Lan Huang HYSX. Effects of continuing nursing on stomal complications, self-care ability and life quality after Miles' operation for colorectal carcinoma. *Int J Exp Med*. 2018;11(2):1021–1026.