International Journal of Nursing and Health Science
www.nursingjournals.net
Online ISSN: 2664-9195, Print ISSN: 2664-9187
Received: 26-11-2021; Accepted: 10-12-2021; Published: 24-12-2021
Volume 3, Issue 1, 2021, Page No. 39-47

Video-based and digital booklet guided program for parents of colostomy operated infants

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DOI: https://doi.org/10.33545/26649187.2021.v3.i1a.46

Abstract
Background: Colostomy is a frequent surgical intervention in infants that is known as a life-saving operation for anorectal malformation and Hirschsprung's disease. This necessitates providing parents with all of the knowledge, skills, and attitudes they need to care for their infant.
Methodology: A quasi-experimental design with pre- and post-tests to evaluate the effectiveness of video-based and digital booklets in enhancing parents' knowledge, skills, and attitude towards the care of infants with colostomies via guided program.
Setting: The Pediatric Surgery inward and out clinic is located in the Specialized Hospital for Children in Benha City, Egypt.
Sample: a non-probability convenience sampling method to select two groups of one hundred parents each, with intent of ensuring equivalence between the groups.
Instruments: A structured interviewing questionnaire sheet to capture demographic characteristics of parents and infant, as well as a stoma assessment scale, a colostomy care knowledge sheet, an observation checklist for skills of colostomy care, and a Likert scale for attitude comparison pre and post intervention.
Results: There was a significant difference in the level of knowledge, skills, and attitudes of the parents pre and post the guided program's implementation, with the video-based group having a hundred percent for skills performance compared to the digital booklet group's hundred percent for knowledge and ninety seven percent for positive attitude.
Conclusion: The implementation of a guided program utilizing video-based resources and digital booklets was found to be effective in enhancing parents' knowledge, skills, attitude, and assessment of the stoma scale, as evidenced by post-participation results compared to pre-participation. As a result, the author recommends that the training program begin prior to ostomy surgery and continue for as long as the ostomy exists in order to deliver, emotional assistance to the parents, boost knowledge and skills on ostomy care, minimize complications, and promote the adaptation attitude. This is accomplished by incorporating and utilizing technology in educational programs.

Keywords: Video-based, digital booklet**,** guided program, colostomy, infant, parents

Introduction

The colostomy is a surgical intervention that involves the creation of a stoma through the healthy end of the colon or large intestine. This is achieved by making an incision in the anterior abdominal wall and suturing the stoma into position. It is a reversible procedure. The present aperture, in combination with the accompanying stoma device, offers a substitute pathway for the elimination of fecal matter from the infant body (Uzsen, *et al*., 2021) [18].

Colostomy procedures performed during infancy are typically of a temporary nature. The colostomy may remain functional for a period of 12 to 18 months, necessitating proficient parental care. Colostomies in infant are frequently performed to relieve colonic obstructions resulting from congenital anomalies such as Hirschsprung's disease, colon atresia, and imperforate anus, and occasionally for pelvic and perineal tumors, Crohn's disease of the colon, and instances of rectal perforation (Dhanalakshmi., 2016) [5].

According to the findings of a study carried out by Olejnik *et al*. (2005) [12], the most prevalent complication that could occur in the case of a stoma due to inadequate management was a change in the skin's appearance (33%). Other problems included hemorrhage and stoma narrowing (which occurred in 10% of cases), prolapse (13% of cases). Colostomy construction in pediatric patients involves a high frequency of difficulties; therefore, to reduce the incidence of complications, careful technique and stoma care education for parents are required (Soomro, *et al*., 2010) [17]. Colostomies are further classified depending on the way of creation into Hartman's end colostomy, loop colostomy and double barrel colostomy. Hartman's end colostomy and loop colostomy are created frequently (Rahman. 2013) [15]. Colostomy in infant calls for zealous care, the necessary skills, and significant endurance. Fortunately, colostomy is only permanent in a small percentage of these infants. However, in order for the infant to have a healthy outcome, it is essential that the stoma and the skin around it be treated with the utmost care, and that the infant's nutritional and physical requirements be met (Wilson *et al*., (2011) [19].

Pediatric surgical Nurses are capable of assuming a pivotal role in the provision of care for infants who have undergone stoma surgery, both prior to and following the procedure. They can also aid parents and caregivers in developing self-assurance and self-sufficiency in stoma care by imparting knowledge regarding the relevant medical and surgical condition, the surgical intervention, stoma management, and the selection of appropriate pouching equipment. Also, encouraging parents to have a positive attitude and increase their acceptance rates in order to care for their infants (Lebona, *et al*., 2016) [10].

Significant of research

Infant need a colostomy for 4–8 months or until they have more treatment. The majority of infants, though, had colostomies done at home by their parents. So, caring for infants with a colostomy needed special knowledge and skills on the part of the parents. Parents have focused on the infant's nutrition, bathing, sleep, pain control, prevent infection, taking care of the stoma, and identifying and managing colostomy complications early on. Colostomy care, cleanliness, and skin care procedures need to be taught to parents of infants with colostomies. Majority of the colostomy complications are prevented or minimized by good surgical technique, education of parents on colostomy care and hygiene **(**Halemani, *et al*., 2021) [7]. A study conducted in Egypt (Rashed *et al*., 2020) [16] indicated that all caregivers had a low level of knowledge and practice with respect to pediatric colostomy care. Thus, it is strongly suggested that caregivers' understanding and skill in colostomy care be further refined. In the 21st century, it is required to use teaching tools to make the knowledge and skills that are taught in guided programs for parents more interesting and take less time. The use of educational tools like digital texts, graphics, video, and audio lets parents use their hearing or seeing skills to actively learn and put what they've learned into practice afterward (Ordu., 2021) [13]. Therefore, the aim of this study is to elucidate the efficacy of an integrated inpatient parents towards colostomy care program in enhancing the care of their infant with colostomies via using two different illustrated method.

Research goal

To evaluate the efficacy of video-based and digital booklets in enhancing parental knowledge, skills, and attitude towards caring for their infants with colostomies. The participants were assessed pre and post joining in the guided program.

Research hypothesis

Following participation in a guided program, video-based and digital booklets will develop parents' knowledge, skills, and attitude toward assuming on responsibility for the care of their colostomy's infants.

Methodology

Technical design

Research design

A quasi-experimental study design (Pre–posttest) was utilized to fulfill the aim of the study.

Setting

Pediatric surgery inward and out clinic, Specialized hospital children, Benha City, Egypt.

Sampling

Hundred parents attending the pediatric surgery out clinic and inward departments where non-probability convenience sampling technique was used for selection, i.e., those who were available. All parents of infant who had colostomy for more than 2 days after surgery, were aged 0-2 years, were hemodynamically stable, were willing to participate in the study. Parents of those children who were admitted for colostomy closure were excluded from the study.

Sampling size

Equivalent two groups fifty video-based and fifty digital booklets, the study employed a block randomization technique with two blocks (AA and BB) to ensure confidentiality and achieve an equitable distribution of participants between the two groups. The initial and subsequent blocks were assigned at random to the two groups, correspondingly. The sampling of subsequent groups was conducted in alternate blocks, resulting in a near homogeneity of conditions among the groups during the sampling period from January to December 2020 to collect sample size.

Descriptive of instruments

Tool 1: A structured interviewing questionnaire sheet, including three tools:

Part I: Demographic characteristics of the studied parents as (Gender, age, economic status, employment, and educational degree).

Part II: Infant data as age, types and rational of colostomy.

Part III: Stoma assessment scale (SAS) (pre–post) adopted from (Balachandar., (2018) [3].

Part IV: parents' knowledge regarding colostomy (pre–post) adopted from (Balachandar., (2018) [3].

Tool II: A colostomy care observation checklist (pre/post) adopted from (Balachandar., (2018) [3].

Tool III: A colostomy care attitude via modified Likert scale (Pre/post).

Score interpretation

Part I and II: The data pertaining to the characteristics of parents and infants was tabulated in terms of numerical values and percentages. The significance of homogeneity between the two groups was also determined. Additionally, the mean age was computed.

Part III: The Stoma Assessment Scale (SAS) was utilized to evaluate stoma conditions pre and post a certain guided program. The SAS comprised of eight items, where each response was assigned a score of 2 upon a completion, resulting in a maximum possible score of 16. Although every chosen response was improper a score of 1, the highest possible score was 8. The calculation of the discrepancy between the overall average and the standard deviation was performed for two distinct groups.

Part IV: The level of parental knowledge regarding colostomy pre and post a designated guided program. Each knowledge item was evaluated based on a scoring system where a response that was deemed correct was assigned a score of 2, a response that was incomplete was assigned a score of 1, and an incorrect response was assigned a score of 0. The total knowledge score was deemed acceptable if the percentage achieved was equal to or greater than 50%, and deemed mediocre if it was less than 50%.

Tool II: A checklist for observing colostomy care, both pre- and post-procedure. The checklist consisted of 15 items, and the items pertaining to care were evaluated and rated on a 3-

point Likert scale, where 0 indicated inability to perform, 1 indicated ability to perform with assistance, and 2 indicated ability to perform independently. The total skills that were observed and scored at 75% or higher were classified as demonstrating excellent performance, whereas those that scored below 75% were deemed to exhibit acceptable performance.

Tool III: The modified Likert scale on the attitude towards colostomy care, as measured by pre- and post-guided program. The survey instrument consisted of a total of 14 items, each of which was rated by participants on a 3-point where 0 represented disagreement, 1 represented neutrality, and 2 represented agreement. The total attitude score converting of 65% or higher was deemed positive, whereas a score below 65% was classified as negative.

Validity and reliability

The content validity of the instrument was established through the administration of the tool to two professionals who possess expertise in the field of pediatric nursing. The tool's reliability for the knowledge questionnaire was confirmed through the use of the alpha Cronbach's test, yielding a score of 0.90. The skills checklist demonstrated of 0.91, the attitude questionnaire resulted in 0.89, and the SAS items generated of 0.90. Thus, the instrument was considered to be highly reliable for the inquiry.

Operational design

Pilot study

Conducted on 5% of the sample to evaluate the clarity, completeness, feasibility, and practicability of the study instruments. Parents from the pilot study were included in the main study because no changes were made to the study instruments.

Ethical consideration

The researcher was furnished with a subject information sheet that contained lucid explanations for each participant in the study. Written consent was obtained from the participants prior to their enrollment in the study. The researcher also apprised the participants of the anonymity and confidentiality of their data.

Fieldwork and administrative design

The study was conducted with prior authorization obtained from the aforementioned setting. The researcher-initiated contact with the parents of infant with colostomy and provided an overview of the study's objectives, while also confirming the participants' consent to participate. The participant's identity was kept confidential and anonymous. The data were collected during one year from January to December in 2020.

Guiding program phases

Assessment: Ensure the inclusion criteria of parents, then the guiding program designed based on colostomy parents needs and level of understanding. At the outset, the questionnaire pertaining to demographic data was duly accomplished. The initial and subsequent instruments were completed by the participants in approximately 20-30 minutes, while the skills checklist took 20 minutes to complete. Following the administration of the pretest, the researcher presented the guided program session through the utilization of video-based materials and digital booklets on the topic of colostomy care, which were displayed on a laptop.

Outcome: Develop parents' knowledge, skills, attitude, and stoma assessment scale towards colostomy of their infants. This was achieved by utilizing video-based and digital booklets as a distinct method to conduct the guided program and also sought to measure the differences in development pre and post between two groups.

Planning: The researcher commenced the interview by introducing herself to the participant, thereby establishing a channel of communication. The researcher then proceeded to provide an explanation of the study's nature and objectives, and subsequently administered the study tools prior to implementing the guided program. The study involved the division of parents into small groups consisting of 2-3 parents based on the flow of participants on each day. The guided program was subsequently administered to these groups. After reviewing the literature and theoretical foundation, prepare the video-based display and digital booklets with the three program sessions' knowledge, skills, assessment stoma scale, and attitude. The parents were provided with a digital version of a video-based program and a digital booklet, both of which were presented in clear and concise Arabic language and accompanied by illustrative soft photographs for each session of the program. The researcher provided the parents with a contact number for prompt communication in the event of encountering any difficulties or concerns.

Implementation: The program is presented in a multimedia format, consisting of video content and a digital booklet. The booklet is designed with a focus on simplicity in the Arabic language and is accompanied by photographic illustrations. The didactic component was conveyed through didactic presentations and collaborative deliberations, employing visual aids and visual displays. During a single session lasting approximately 35 minutes, the following topics were addressed: the anatomical features of the gastrointestinal tract, the purpose and types of colostomy, daily life activities such as bathing, sleeping, and dietary regimens, strategies for preventing infection, pain management techniques, hydration recommendations, clothing considerations, potential complications, and the assessment of stoma scale items to identify any unusual signs that may require immediate medical attention. The skills component was conveyed through a combination of live demonstration, repeated demonstration on a simulated infant model, and visual aids in the form of video illustrations. The session consisted of multiple segments, each lasting approximately 20 minutes. The topics covered during the session included the measurement of stoma size, the process of emptying and replacing the stoma pouch, stoma irrigation techniques, and the maintenance of peristomal skin health. The components pertaining to attitude were conveyed by employing techniques that foster positive behavior in the context of colostomy, such as emphasizing the power of positive thinking to surmount challenging circumstances.

Evaluation: Measure the efficacy of a guided program utilizing video-based and digital booklets through the

administration of a posttest immediately following its implementation.

Statistical design

The collected data was systematically arranged, assigned codes, tabulated, and subjected to statistical analysis utilizing SPSS version 25. One of the descriptive statistics employed to depict the characteristics of the study sample comprises frequency and percentage. Likewise, the mean and standard deviation were employed to analyze the scores for knowledge, practice, and attitude. The Chi-square test is utilized in analytical statistics to determine the association between knowledge, skills, attitude, and demographic characteristics of parents. A paired t-test was conducted to compare variables. The threshold for statistical significance was established as $P < 0.05$.

Results

Table 1: Frequency distribution of demographic characteristics of the studied parents

Variable	Video-based group N (%)	Digital booklets group N (%)	P-value
Age			
20-30	45(90)	39(78)	P>0.05
31-45	5(10)	11(22)	P>0.05
Mean and SD	25±2.12	23±2.01	P>0.05
Gender			
Male	10(20)	8(16)	P>0.05
Female	40(80)	42(84)	P>0.05
Education			
Preparatory	2(4)	0	P>0.05
Secondary	0	1(2)	P>0.05
University	48(96)	49(98)	P>0.05
Occupation			
Employed	33(66)	36(72)	P>0.05
Unemployed	17(34)	14(28)	P>0.05
Income			
Low	12(24)	13(26)	P>0.05
Moderate	23(46)	24(48)	P>0.05
High	15(30)	13(26)	P>0.05

Table 1: Demonstrated that There were no significant differences between the characteristics of two groups. The parents' group, which utilized video-based, had a predominantly 90% falling within the age range of 20-30 years and a mean age of 25±2.12. The majority of participants identified as female, comprising 80% of the group. Additionally, a significant proportion of the group possessed a university education, with 96% reporting having attained this level of education. A majority of participants were employed, constituting 66% of the group. Finally, 46% of participants reported having a moderate income. The digital booklets were primarily accessed by a parents' group with a majority age range of 20-30 years, consisting of 78% of the sample. The group was predominantly female, with 84% of participants identifying as such. Furthermore, 98% of the group had attained a university education, with 72% currently employed. In terms of income, 48% of the group reported a moderate level of income.

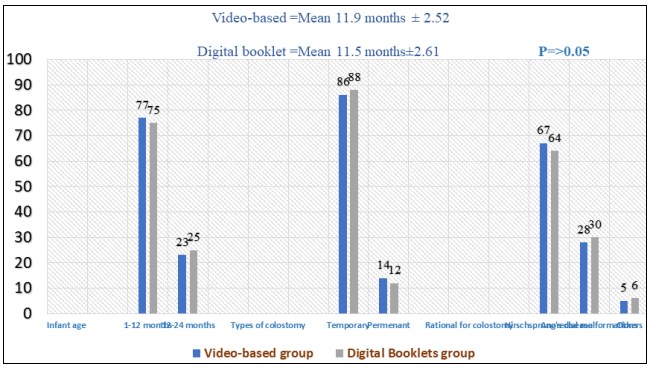

Fig 1: Infant data distribution frequency according to age, types, and colostomy rationale

Figure 1: Indicate that a majority of infants in both the video-based group and digital booklet group were between the ages of 1-12 months, with 77% and 75% falling within this age range, respectively. Additionally, a significant proportion of infants in both groups, specifically 86% and 88%, respectively, had temporary colostomy. Furthermore, a considerable number of infants in both groups, specifically 67% and 64%, respectively, were diagnosed with Hirschsprung's disease.

Table 2: Differences in the stoma assessment scale (SAS) between pre- and post-guided programs for parents' groups utilizing video-based and digital booklets

Variable	Video-based group n=50				P-value	Digital booklets group n=50				P-value
	Pre		Post			Pre		Post		
	Accomplish	Improper	Accomplish	Improper		Accomplish	Improper	Accomplish	Improper	
Condition of the adjacent epidermis as fever, reddishness, swelling	7(14)	43(86)	49(98)	1(2)	$p<0.05$	3(6)	47(94)	49(98)	1(2)	$p<0.05$
Pus secretion	6(12)	44(88)	48(96)	2(4)	$p<0.001$	2(4)	48(96)	50(100)	0	$p<0.001$
Stoma-associated bleeding	2(4)	48(96)	47(94)	3(6)	$p<0.01$	4(8)	46(92)	48(96)	2(4)	$p<0.01$
Stool evacuation from the rectum	3(6)	47(94)	45(90)	5(10)	$p<0.001$	3(6)	47(94)	49(98)	1(2)	$p<0.001$
No stoma gas or effluent, discomfort, or bloating.	4(8)	46(92)	48(96)	2(4)	$p<0.01$	4(8)	46(92)	49(98)	1(2)	$p<0.01$
Very firm stool	5(10)	45(90)	49(98)	1(2)	$p<0.001$	5(10)	45(90)	48(96)	2(4)	$p<0.001$
Watery feces	3(6)	47(94)	49(98)	1(2)	$p<0.01$	4(8)	46(92)	48(96)	2(4)	$p<0.01$
Stoma-related ulcers	6(12)	44(88)	46(92)	4(8)	$p<0.001$	3(6)	47(94)	49(98)	1(2)	$p<0.001$

Table 2: Demonstrated that there were differences and improvements in all of the stoma assessment scale items between the pre- and post-guided program in the video-based and digital booklets group that were statistically significant.

Table 3: The percentage distribution of knowledge between video-based and digital booklet groups following a guided program.

Variable	Video-based group n=50			Digital booklets group n=50		
	Correct	Incomplete	Incorrect	Correct	Incomplete	Incorrect
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Anatomical feature of GIT	36(72)	12(24)	2(4)	37(74)	11(22)	2(4)
Meaning of stomy	48(96)	1(2)	1(2)	47(94)	3(6)	0
Types of Ostomies	39(78)	8(16)	3(6)	42(84)	6(12)	2(4)
Complication	38(76)	7(14)	5(10)	42(84)	6(12)	2(4)
Bathing	44(88)	3(6)	3(6)	45(90)	2(4)	3(6)
Sleeping	46(92)	2(4)	2(4)	43(86)	7(6)	0
Hydration	45(90)	3(6)	2(4)	42(84)	8(16)	0
Clothing	47(94)	1(2)	2(4)	41(82)	7(14)	2(4)
Pain control	45(90)	4(8)	1(2)	48(96)	2(4)	0
Prevent infection and diet	47(94)	2(4)	1(2)	49(98)	1(2)	0

Table 3: Pointed that a significant proportion of parents demonstrated a high level of accurate knowledge following their participation in a guided program. Specifically, 96% of those who engaged with the video-based component of the program were able to correctly identify the meaning of colostomy. Similarly, 98% of those who utilized the digital booklets were able to accurately comprehend prevent infection and diet management.

Table 4: The proportional distribution of skills among video-based and digital booklet groups following a guided program.

Variable	Video-based group n=50			Digital booklets group n=50		
	Able to perform	Perform with assistant	Unable to perform	Able to perform	Perform with assistant	Unable to perform
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Assessment						
Examine the stoma's appearance and the bag's condition.	42 (84)	7 (14)	1 (2)	40 (80)	8 (16)	2 (4)
Examine the properties of fecal waste	47 (94)	2 (4)	1 (2)	43 (86)	3 (6)	4 (8)
Planning						
Wash hands	50 (100)	0	0	48 (96)	1 (2)	1 (2)
Gather the necessary equipment	45 (92)	3 (6)	2 (4)	40 (80)	8 (16)	2 (4)
Implementation						
Ensure Privacy	49 (98)	1 (2)	0	48 (96)	2 (4)	0
If using the toilet, place the infant on the toilet with the pouch over the toilet. Place the pouch over the bedpan if using it.	43 (86)	7 (14)	0	41 (82)	8 (16)	1 (4)
Remove the clamp from the bottom of gloved hands.	48 (96)	2 (4)	0	45 (92)	3 (6)	2 (4)
Unfold the pouch and allow the feces to drain into the bedpan or toilet.	42 (84)	8 (16)	0	40 (80)	7 (14)	3 (6)
Press the edges of the lower end of the pouch together	41 (82)	7 (14)	2 (4)	40 (80)	5 (10)	5 (10)
Squirt tap water into the bottom of the bag using an aseptic syringe.	46 (94)	2 (4)	2 (4)	44 (88)	4 (8)	2 (4)
Roll up the bag and reclaim it.	48 (96)	1 (2)	1 (2)	46 (94)	4 (8)	2 (4)
Wipe the outside of the pouch with clean washcloths.	48 (96)	1 (2)	1 (2)	37 (74)	7 (14)	6 (12)
Take off gloves and discard any filthy equipment.	49 (98)	1 (2)	0	45 (92)	4 (8)	1 (2)
Evaluation						
If necessary, spray room freshener.	50 (100)	0	0	48(96)	2(4)	0
Hand washing	50 (100)	0	0	49(98)	1(2)	0

Table 4: Demonstrated that parental skills exhibited improvement subsequent to their involvement in guided programs, who utilized both video-based and digital booklets. The group that was exposed to video-based instruction demonstrated the highest percentage, specifically 100%, of adherence to handwashing, privacy maintenance, glove removal, and utilization of room freshener. Meanwhile, digital booklets group were more effective in removing clamps from the bottoms of gloved hands, rolling up the bag, reclaiming it, and wiping the exterior of the pouch with clean washcloths, with an effective rate of 96%.

Table 5: The percentage distribution of attitude between video-based and digital booklet groups following a guided program.

Variable	Video-based group n=50			Digital booklets group n=50		
	Agree	Neutral	Disagree	Agree	Neutral	Disagree
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
I have ample time to provide care.	36 (72)	6 (12)	8 (16)	44 (88)	6 (12)	0
Willing to learn and capable of comprehension	40 (80)	8 (16)	2 (4)	47 (94)	1 (2)	2 (4)
There is no obstacle to care.	39 (78)	6 (12)	5 (10)	48 (96)	1 (2)	1 (2)
A sense of responsibility for their care	38 (76)	6 (12)	6 (12)	45 (90)	3 (6)	2 (4)
Respect parents' independence.	39 (78)	7 (14)	4 (8)	44 (88)	4 (8)	2 (4)
Stoma's concerns are complicated.	41 (82)	9 (18)	0	47 (94)	2 (4)	1 (2)
I'm satisfied with the digital booklet or video-based	45 (90)	5 (10)	0	46 (92)	4 (8)	0

teaching.						
Ready to implement and repeat	44 (88)	3 (6)	3 (6)	47 (94)	3 (6)	0
Pictures and videos provide more intuitive information.	40 (80)	9 (18)	1 (2)	46 (92)	4 (8)	0
Participants' most significant advantages	47 (94)	3 (6)	0	47 (94)	3 (6)	0
I am acquainted with colostomy information and care skills.	43 (86)	4 (8)	3 (6)	44 (88)	6 (12)	0
I am not worried about my colostomy-related care skills.	40 (80)	7 (14)	3 (6)	42 (84)	8 (16)	0
I used the knowledge and abilities I gained from these materials in clinical practice.	42 (84)	5 (10)	3 (6)	42 (84)	7 (14)	1 (2)
I offered these resources to my families and other patients who had colostomies or were planning to receive one.	43 (86)	7 (14)	0	44 (88)	6 (12)	0

Table 5: Demonstrated that a majority percentage, 94% of parents' attitudes in the video-based group were in agreement that the most significant advantages of the participants were provided by the guided program. In the meantime, 96% of those who participated in the digital booklets group agreed that there is no barrier to colostomy care. After participating in the guided program, most parents' attitudes shifted in a positive direction.

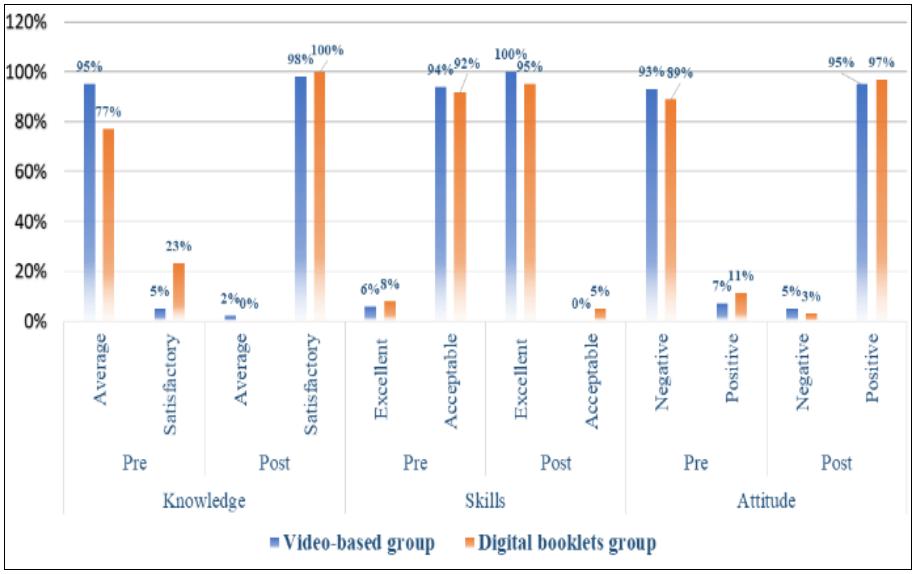

Fig 2: Difference between pre- and post-guiding program total knowledge, skills, and attitude for video-based and digital booklet parent groups.

Figure 2: Illustrated that there is a noticeable difference in the level of knowledge, skills, and attitudes of the parents pre and post the implementation of the guided program, where the video-based group had a 100% high skills performance compared to the digital booklet group's 100% high level of knowledge and 97% positive attitude.

Table 6: The mean of video-based and digital booklets pre- and post-guided program for parents' knowledge, skills, SAS and attitudes.

Variable	Video-based n=50		Paired t- test	p-value	Digital booklets n=50		Paired t - test	p-value
	Pre	Post			Pre	Post		
Knowledge	7.9±2.5	13.4±1.67	6.04	<0.05	9.9±2.9	14.5±1.04	3.09	<0.001
Skills	8.03±4.09	22.07±2.03	3.98	<0.001	9.04±4.83	21.16±2.90	6.01	<0.05
Attitude	7.23±2.78	12.02±0.67	5.01	<0.01	8.21±2.34	13.03±0.43	4.12	<0.001
SAS	4.1±2.0	7.5±1.03	5.04	<0.05	4.5±2.1	7.9±0.22	3.09	<0.001

Table 6: demonstrated that the video-based group had a substantial improvement in knowledge mean as (13.4±1.67, p=0.05). Additionally, skills were (22.07±2.03, p=0.001), attitude was (12.02±0.67, p=0.01), and SAS was (7.5±1.03, p=0.05). In comparison, the group that used digital booklets showed a statistically significant improvement in mean knowledge scores of (14.5±1.04, P=0.001), skills scores of (21.16±2.90, P=0.05), attitude scores of (13.03±0.43, P=0.001), and SAS scores of (7.9±0.22, P=0.001). These indicate that there were transformations between the pre- and post-guided program that were statistically significant.

Table 7: Correlation coefficient between parents' skills, knowledge, and attitude in both video-based and digital booklets group post-guided program

Aspects	Video-based group		Digital booklets group	
	Skills	Attitude	Skills	Attitude
Knowledge	<0.499	<0.05	<0.395	<0.01
Skills	-	<0.05	-	<0.01

Table 7: showed that a positive correlation coefficient between the skills, knowledge, and attitude of parents in both the video-based and digital booklet groups following a guided program.

Table 8: The association between parents' demographic variables and their total knowledge, skills, attitude, and SAS post-guided program

hVariable	Video-based group								Digital booklets group							
	Knowledge		Skills		Attitude		SAS		Knowledge		Skills		Attitude		SAS	
	X^2	P	X^2	P	X^2	P	X^2	P	X^2	P	X^2	P	X^2	P	X^2	P
Age																
20-30	2.98	P<0.05	0.23	P<0.000	1.92	P<0.05	1.32	P<0.05	0.31	P<0.000	2.01	P<0.05	0.32	P<0.000	0.13	P<0.05
31-45	6.03	P>0.05	3.02	P>0.05	5.02	P>0.05	3.02	P>0.05	3.87	P>0.05	5.02	P>0.05	4.23	P>0.05	3.13	P>0.05
Gender																
Male	7.92	P>0.05	4.32	P>0.05	5.82	P>0.05	3.87	P>0.05	4.98	P>0.05	2.91	P>0.05	4.87	P>0.05	4.12	P>0.05
Female	3.01	P<0.000	0.54	P<0.000	0.32	P<0.000	0.91	P<0.000	0.32	P<0.000	0.19	P<0.000	0.41	P<0.000	0.14	P<0.000
Education																
Preparatory	7.98	P>0.05	4.02	P>0.05	5.83	P>0.05	4.02	P>0.05	4.98	P>0.05	4.87	P>0.05	4.91	P>0.05	4.12	P>0.05
Secondary	8.82	P>0.05	4.87	P>0.05	5.32	P>0.05	3.97	P>0.05	3.65	P>0.05	4.23	P>0.05	5.01	P>0.05	4.41	P>0.05
University	2.03	P<0.000	0.91	P<0.000	0.64	P<0.000	0.12	P<0.000	0.23	P<0.000	0.32	P<0.000	0.12	P<0.000	0.14	P<0.000
Occupation																
Employed	2.08	P<0.000	0.30	P<0.000	0.23	P<0.000	0.60	P<0.000	0.12	P<0.000	0.23	P<0.000	0.32	P<0.000	0.12	P<0.000
Unemployed	8.02	P>0.05	5.01	P>0.05	5.02	P>0.05	3.45	P>0.05	4.65	P>0.05	4.32	P>0.05	4.90	P>0.05	4.65	P>0.05
Income																
Low	6.01	P>0.05	4.87	P>0.05	5.34	P>0.05	0.53	P>0.05	4.54	P>0.05	4.21	P>0.05	4.91	P>0.05	4.90	P>0.05
Moderate	2.01	P<0.000	0.71	P<0.000	0.23	P<0.000	0.32	P<0.000	0.23	P<0.000	0.23	P<0.000	0.12	P<0.000	0.15	P<0.000
High	7.03	P>0.05	4.32	P>0.05	3.02	P>0.05	4.02	P>0.05	4.23	P>0.05	4.12	P>0.05	4.26	P>0.05	4.12	P>0.05

Table 8: Indicated that, in both the video-based and digital booklets groups, there was a statistically significant association between parents' demographic variable such as age 20 to 30 years, female gender, university education, employed occupation, and modest income with their knowledge, skills, attitude, and SAS.

Discussion

A colostomy refers to a surgical procedure in which a stoma is created between the colon and the abdominal wall. The occurrence of colostomy in infants is typically temporary in nature and is subsequently reversed following the resolution of the underlying pathology. The provision of care for colostomy in infant is primarily of a transitory nature, yet it necessitates proficient attention and close parental engagement. As a result, the current research goal was to provide a guided program for parents that would improve their knowledge, skills, SAS and attitude toward caring for their infant with colostomy via video-based and digital booklets.

The current study affirms the homogeneity of the two groups and establishes the absence of a statistically, Table 8: Indicated that, in both the video-based and digital booklets groups, there was a statistically significant association between parents' demographic variable such as age 20 to 30 years, female gender, university education, employed occupation, and modest income with their knowledge, skills, attitude, and SAS.

Discussion

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The current study affirms the homogeneity of the two groups and establishes the absence of a statistically significant disparity between them. The parents' group, which used video-based contact, had a mean age of 25±2.12. 80% of participants were female. Ninety six percent of the participants had a college degree. Sixty-six percent of participants worked. Forty-six percent of respondents had a moderate income. Seventy-eight percent of the parents aged 20-30 accessed the digital booklets, eighty-four percent of participants were female. Ninety-eight percent had university degrees, and seventy-two percent were employed. Forty-eight percent had modest incomes. According a study conducted by Dabas *et al*., (2016) [4] focused on a program designed for caregivers of children with colostomy in India. The study revealed that the majority of caregivers were females (93.3%), homemakers (67.7%), and had a monthly family income of up to Rs. 10,000 (76.7%). The median age of the caregivers was 27.4 years (ranging from 19 to 60). Furthermore, Dhanalakshmi 's., 2016 [5] study in Madurai, who examined the impact of educational materials on caregivers' knowledge regarding the care of children with colostomies, discovered that the average age of the caregivers was between 20 and 25 years old, that 77% of them had completed middle school, that 63% of them worked as homemakers, and that 43% of them made between $500 and $1,000. Moreover, another study conducted by Halemani, *et al*., (2021) [7] in India examined the efficacy of a video-assisted module in enhancing the knowledge and practice of caregivers in relation to colostomy care for their children. The study revealed that 76.6% of the participants were aged between 21 and 30 years, 70% were housewives, 76.6% were mothers, 53.4% had completed higher secondary education, and in 76.6% of the families, the monthly income was INR 5001-10000.

As regard infant data enrolled in the present study, a majority of infants in both the video-based group and digital booklets group were between the ages of 1-12 months, with more than two third falling within this age range. Additionally, a significant proportion more than three quarter had temporary colostomy. Furthermore, nearly two third of them were diagnosed with Hirschsprung's disease. In line with research by Dabas *et al*. (2016) [4], who discovered that the median age and length of colostomy for the children in the study were 3 months. 50% of children with temporary colostomy had anorectal malformations, 43% had Hirschsprung's disease, and 7% others. In contrast, a study conducted in Karnataka by Mankar *et al*. (2021) [11]

to evaluate juvenile colostomy complications discovered that among 26 males, 20 (86.9%) had high anorectal malformations and 6 (40%) had Hirschsprung's disease.

The current study demonstrated that there were differences and improvements in all of the stoma assessment scale items between the pre- and post-guided program in the video-based and digital booklet group that were statistically significant. The aforementioned results bear resemblance to those reported by Dabas *et al*., (2016) [4], wherein a surge in SAS scores was observed post a video learning program, with an increase of 27.5% immediately after the program and 25% after a duration of two weeks.

The current study pointed that ninety-six percentage of those who engaged with the video-based component of the program were able to correctly identify the meaning of colostomy. Similarly, ninety eight percent of those who utilized the digital booklets were able to accurately comprehend prevent infection and diet management. Consistent with the research conducted by Halemani *et al*. (2021) [7], who was discovered that the average percentage score of caregivers in anatomy and physiology posttest was 78.1%. The percentage of successful peristomal care posttest was 82.3%. In the realm of diet management, the average percentage was found to be 88%. The posttest prevention of infection related to colostomy was 89.4%.

The present research exhibited that the group exposed to video-based manifested a hundred percent adherence rate towards hand hygiene, privacy preservation, glove removal, and utilization of room freshener. Meanwhile, it has been discovered that the digital booklets category outperformed in removing the clamp from the bottom of gloved hands, rolling up the bag, reclaiming it, and wiping the exterior of the pouch with clean washcloths by a margin of ninety-six percent. According to a study conducted by Halemani *et al*. (2021) [7], the posttest results indicated that the highest percentage of participants who received colostomy care video intervention achieved a score of 90% in the gathered articles category. Additionally, the posttest scores for participants who used warm water while cleaning the peristomal skin and performed hand hygiene followed by colostomy care procedure were 73.3% and 83.3%, respectively.

The present study illustrated that there is a noticeable difference in the level of knowledge, skills, and attitudes of the parents pre and post the implementation of the guided program, where the video-based group had a 100% high skills performance compared to the digital booklet group's 100% high level of knowledge and 97% positive attitude. The findings were compared to a study conducted by El Wasfey *et al*. (2015) [6] in Egypt, who examined the effectiveness of an educational program for mothers on the care of their children with intestinal stomas. The study found a statistically significant difference in the knowledge and practices of mothers caring for their children with intestinal stomas before and after participating in an educational program. A study conducted in India by Halemani, *et al*., (2021) [7] who found a significant improvement in the knowledge and practices of caregivers regarding stoma, with a statistical significance difference of p value < 0.001. Besides, Dhanalakshmi 's (2016) [5] study revealed that the posttest results indicated 56.7% of participants possessed high knowledge, while 30.0% demonstrated average knowledge, and 10.0% exhibited very high knowledge. In a similar vein, the research done by (Peiravi Dehsorkhi, *et al*., 2020) [14] in Iran, this study was conducted to investigate the efficacy of mother's empowerment program on newborn colostomy and reported a positive effect of the motherly empowerment program on reducing their distress and skin problems of colostomy among newborns.

As regards the video-based group had a substantial improvement in knowledge mean as (13.4±1.67, p=0.05). Additionally, skills were (22.07±2.03, p=0.001), attitude was (12.02±0.67, p=0.01), and SAS was (7.5±1.03, p=0.05). In comparison, the group that used digital booklets showed a statistically significant improvement in mean knowledge scores of (14.5±1.04, P=0.001), skills scores of (21.16±2.90, P=0.05), attitude scores of (13.03±0.43, P=0.001), and SAS scores of (7.9±0.22, P=0.001). These indicate that there were transformations between the pre- and post-guided program that were statistically significant. The findings of Dabas *et al*. (2016) [4] are corroborated by this study, who reported mean and standard deviation values for pre- and post-video assistance as 0.9 ± 2.5 and 15.89 ± 4.02, and 16.4 ± 1.67 and 5.6 ± 2.0, respectively. Therefore, the utilization of a colostomy care video resulted in a noteworthy improvement in the knowledge and practical ability for main caregivers. Dhanalakshmi (2016) [5] conducted a study who found that the mean scores for the pretest and posttest were 47.00 and 65.33, respectively. Following the implementation of a video educating module, there was a statistically significant increase in the knowledge of the main caregivers with regards to colostomy care, as evidenced by a paired t-test result of -5.98 at a significance level of $p < 0.001$. Halemani, *et al*., (2021) [7] performed a similarly study, who used the paired t test to measure knowledge and found that it was 19.607 (p 0.05). They also measure practice ability and found that it was (z) 4.716 (p 0.01). The colostomy caring video was an effective way to boost the confidence, skills, and attitude of main caregivers. Kalia, *et al*., (2004) [9] design an educational intervention for parents of children with colostomy and evaluate its efficacy in India. A booklet and a video film/computer disc (CD) were created as educational tools and utilized to instruct 120 parents on the proper care of colostomies. The mean scores of posttests for booklets and video film were calculated, resulting in means of 4.18 and 6.28, respectively. The standard deviations for the two modes of instruction were 1.18 and 1.48, respectively. The study's findings indicate that the education aid developed was significantly effective ($p<0.05$) in imparting knowledge and skills to parents. A study conducted by Kadam, & Shinde (2014) [8] in India and revealed that the pretest knowledge score was 7.43, while the posttest knowledge score was 13.77. The pretest yielded an attitude score of 33.67%, while the posttest showed a strongly positive attitude score of 70%, with a significant "P" value <0.05. The findings demonstrate that the implementation of an organized educational scheme yielded significant improvements in both the knowledge and attitude scores of caregivers with regards to colostomy care.

The current study indicated that, in both the video-based and digital booklets groups, there was a statistically significant association between parents' demographic variable such as age 20 to 30 years, female gender, university education, employed occupation, and modest income with their knowledge, skills, attitude, and SAS. The study conducted by Dhanalakshmi (2016) [5] revealed a noteworthy association between the posttest knowledge scores and certain socio-demographic factors, including the caregiver's age, occupation, and income. However, the study did not find any significant association between the posttest knowledge scores and the education level of the caregivers. Also, study of Kadam, & Shinde 2014) [8] who found that a

noteworthy relationship was observed between the educational level of participants and their respective scores on attitude and knowledge pertaining to colostomy care.

The author asserted that parents are regarded as partners in the care of their infant with a colostomy, which necessitates consistent and compassionate care, as well as requisite skills and substantial endurance. Fortunately, colostomy is typically a temporary procedure for most infants. However, it necessitates the highest level of attention to the stoma and surrounding skin, as well as the maintenance of the infant's physical requirements to ensure a favorable outcome. Consequently, the utilization of video-based materials and digital booklet resulted in a notable enhancement of parental knowledge, skills, SAS and attitude. As a result, the research hypothesis was deemed valid.

Conclusion

The utilization of guided program via educational resources in the form of video-based materials and digital booklets proved to be effective in enhancing parental knowledge, skills, SAS and attitude towards the care of their infant's colostomy, this is compared to pre the program.

Recommendations

- To generalize the findings of this study, a similar investigation on a large sample can be conducted.
- Parental empowerment sessions were suggested to be led by a nurse using basic, understandable language.
- Virtual education has been suggested as a method to reduce hospital stays by parents to save time and money on referrals.
- Nurses can use instructional tools to educate colostomy parents through the brochure or movie.

Further research

- A comparison study can also be conducted to evaluate the effectiveness of alternative instructional strategies for bettering the outcome of stoma care in children.
- Comparative research can be conducted by comparing the efficacy of stoma care for children between men and women.

Acknowledgement

The author expresses gratitude to all parents who participated in the study for their cooperation and support in facilitating the completion of this work.

Conflict of interests: The author did not disclose any potential conflicts of interest.

Funding: None

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