

Impact of an Educational Program on Nurses' Knowledge Regarding Transitional Care of Children with Intestinal Obstruction

Rehab Hassan Ali¹, Amal Mohamed El-Dakhakhny², Mohamed Ahmed Alekrashy³, Miada Mohamed Ali Hanfy⁴

1 M.Sc. in Pediatric Nursing, Faculty of Nursing, Zagazig University

2 Professor of Pediatric Nursing, Faculty of Nursing, Zagazig University

3 Professor of Surgical Pediatrics, Faculty of Medicine, Zagazig University

4 Lecturer of Pediatric Nursing, Faculty of Nursing, Zagazig University

Corresponding Author: Rehab Hassan Ali

ABSTRACT

Background: Pediatric transitional care ensures a safe and smooth shift from hospital to home through coordinated care and family education. The nurse's role is to support the family, promote treatment adherence, and ensure continuity of care to prevent readmission. **The aim of the study** was to evaluate the effectiveness of an educational program on nurses' knowledge related to transitional care of children with intestinal obstruction. **Research design:** A quasi-experimental design. **Subjects:** The sample consisted of 40 nurses working in the surgical and emergency departments at Zagazig University. **Tool of data collection:** structured interview questionnaire, divided into two sections. The first section covered the socio-demographic characteristics of the studied nurses, while the second section assessed their knowledge about intestinal obstruction and transitional care. **Results:** Regarding transitional care, 27.5% of the studied nurses had good knowledge score pre health educational program and this percentage increased to 85% post health educational program. Meanwhile, 25% of the studied nurses had good knowledge score regarding bowel management program pre health educational program and this percentage improved to 75% post health educational program. **Conclusion:** Based on the result of the present study, there was highly statistically significant difference of the studied nurses' knowledge about transitional care pre and post health educational program ($P < 0.001$). It was also concluded that studied nurses' knowledge and practice was improved after implementation of the educational program. **Recommendation:** Collaboration and continuing education of the staff regarding transitional care are vital to improve their knowledge and practices about care provided for children with intestinal obstruction.

Keywords: Intestinal obstruction, Transitional care.

INTRODUCTION

Intestinal obstruction is a frequent pediatric disorder, commonly presented with recurrent vomiting, abdominal distension, and pain. Its etiologies may be congenital or acquired from the neonatal period onward. Although modern diagnostic modalities exist, the underlying cause is sometimes elusive; delaying surgery may lead to serious complications (Twahirwa et al. 2022).

Transitional care ensures continuity and coordination of services when pediatric cases move between settings or stages of care. It relies on an individualized plan that reflects the child's goals and involves multidisciplinary professionals to manage complex pediatric needs (Huber et al. 2021; Breneol et al. 2020).

The Care Transitions Intervention (CTI) employs coaching techniques to help children, and their families restore self-management skills after illness, improving medication practices and reducing hospital readmissions (Morrison et al. 2020).

A transitional outpatient clinic brings together specialists from pediatric surgery, gastroenterology, and colorectal care, along with nursing support, to holistically address the needs of children and their caregivers (Boutwell et al. 2021).

Bowel management programs (BMPs) provide individualized, multidisciplinary care for pediatric constipation and fecal incontinence, thus improving quality of life and reducing hospital utilization (**Dai et al. 2020**). Collaboration among healthcare providers is essential for achieving favorable outcomes (**Karsten et al. 2021**).

Functional bowel disturbances may persist into adolescence, necessitating tailored BMP strategies — such as dietary modification, laxatives, or enemas — to achieve continence in children (**Vilanova et al. 2020; Brisighelli et al. 2019**).

Quality of life is deeply influenced by bowel function; structured BMPs significantly enhance physical, emotional, and social well-being among pediatric populations (**Acker et al. 2020**).

Finally, readiness for transition from pediatric to adult care demands standardized planning, provider training, and effective communication between teams to ensure continuity and maintain care quality (**Thompson & Davidson 2022**).

Significance of the study:

In children with intestinal obstruction, transitional care is essential to bridge the gap between acute hospital management and recovery at home. Nurses play a central role in coordinating discharge plans, educating family about medication adherence, wound and stoma care when applicable, and dietary adjustments to prevent recurrence. Thus comes the importance of the study as transitional care reduces complications, promotes self-care, and provide support for child and family throughout the recovery process through regular follow-up and communication.

The aim of the study:

The aim of the study was to evaluate the effectiveness of an educational program on nurses' knowledge regarding transitional care of children with Intestinal obstruction.

Research hypothesis:

Nurses' knowledge would be improved after implementation of an educational program regarding transitional care provided to children with selected intestinal obstruction diseases [intussusception and Hirschsprung disease].

Subjects And Methods:

I-Technical design

A. Research design:

Aquasi-experimental design was used in this study.

B. Setting:

This study was conducted in the pediatric surgical department in surgery building and emergency department in accidents and emergency building at Zagazig University Hospitals.

C. Subjects:

A purposive sample consisting of 40 nurses were selected from the previously mentioned settings, according to the following inclusion criteria:

- Nurses who provided direct care to children with intestinal obstruction.
- Both genders.
- Different qualifications, including diploma and bachelor nurses.

Tool of data collection: Structured interview questionnaire, developed by the researcher under the guidance of supervisors, and it was divided into two parts:

Part I:- Socio-demographic data for nurses which include; age, sex years of experience, Educational qualification and Job title.

Part II: knowledge level regarding Transitional care (5 questions) and bowel management program (23 questions)

The knowledge scoring system was assessed as follows: a score of (2) was given for a correct and complete answer, (1) for a correct but incomplete answer, and (0) for “don’t know.” For each knowledge item, the scores were summed and then divided

by the total number of items. The obtained scores were subsequently converted into percentage scores.

- Good when total score was >75%.
- Fair when the total score was 50 – 75%.
- Poor when total score was <50%.

The program was developed through the following phases:

- Assessment phase

The assessment phase aimed to evaluate the baseline knowledge and practice of nurses. Before the implementation of the educational training, each nurse was interviewed individually to assess their knowledge and practices (pretest) using structured interview questionnaire.

Planning phase

Based on the results of the pilot study, interview sheet along with a review of current local and international literature, the educational program was developed by the researcher. Identified deficiencies in knowledge were translated into specific objectives and content areas of the program. Teaching methods included lectures, group discussions, demonstrations and re-demonstrations, tailored to small groups.

Implementation phase

The educational program was implemented over three sessions, each lasting 30 minutes. The studied nurses were divided into small groups for focused learning. Sessions covered topics such as anatomy of the gastrointestinal tract, definition and management of intestinal obstruction, transitional care, and bowel management program.

-Evaluation phase

The evaluation phase involved individual interviews with all nurses immediately after the program to assess improvement in knowledge (posttest), using the same tool. These assessments confirmed statistically significant improvements in knowledge.

Operational design

The operational design included preparatory phase, content validity, pilot study and field work.

Preparatory phase:

The researcher was review local and international related literature to be aware of various aspects of the research problem.

Content Validity and Reliability: The structured interview questionnaire was developed following an extensive review of relevant literature and was then evaluated by three experts to ensure content validity. Minor adjustments were made according to their feedback, after which the final versions were prepared for use. The reliability of the tools was tested using Cronbach's Alpha coefficient. The reliability score of the nurses' knowledge assessment tool (interview questionnaire) was 0.769, which reflects a questionable level of internal consistency.

Ethical Considerations: All ethical standards were carefully maintained throughout the study. The researcher guaranteed full confidentiality for all participants. Participation was entirely voluntary, and no nurse was compelled to join. Before data collection, the purpose of the study was clearly explained to each nurse, and oral consent was obtained. Participants were informed of their right to withdraw from the study at any stage without facing any negative consequences. They were also assured that all collected data would remain confidential and be used exclusively for academic purposes, in accordance with the approval of Zagazig University's Ethical Committee.

Pilot Study: A pilot study was carried out on 10% of the nurses to evaluate the applicability of the data collection tools, the arrangement of items, the estimated time required to complete each sheet, as well as the feasibility of the study and participants' willingness to take part. Since no major modifications to the tools were required, the nurses who participated in the pilot study were included in the main study sample.

Field of Work: Data collection for this study was carried out over a six-month period, from June 2024 to December 2024. After obtaining the necessary official approvals, pilot testing of the study tools was conducted to assess their reliability and clarity.

Data collection was performed by the researcher three days per week during the morning shift, from 9:00 a.m. to 12:00 p.m.

The participating nurses were organized into 10 small groups, each consisting of 4 nurses, to facilitate effective interaction and observation. Each nurse individually completed the structured interview questionnaire. The average time required to complete the tool ranged between 30 and 45 minutes.

Administrative Design: An official approval for conducting the study was obtained through a formal letter issued by the Faculty of Nursing and submitted to the responsible authorities at the study setting to secure permission for data collection.

Significance of the results:

- Highly significant at $p\text{-value} < 0.01$.
- Statistically significant was considered at $p\text{-value} < 0.05$
- Non-significant at $p\text{-value} \geq 0.05$.

Results:

Table (1) shows socio demographic characteristics of the studied nurses. It was found that 50% of the studied nurses were aged from 30 to less than 35 years old with mean age 28.30 ± 4.97 years. Regarding to sex; 80% of the studied nurses were females, 40% had nursing technical institute qualification. As regard to job title, 67.5% were nurses, and 47.5% had from 10 to less than 15 years of experience in the field of pediatric surgical nursing.

Table (2) reveals nurses' knowledge about transitional care. Results displayed that; there were highly statistically significant difference of the studied nurses' knowledge about transitional care pre and post health educational program ($P < 0.001$). It was found that, 30% of the studied nurses didn't know meaning of transitional care pre health educational program and this percentage decreased to 5% post health educational program. While 67.5% of the studied nurses had incomplete correct answer regarding members of the transitional care team pre health educational program compared to 17.5% post health educational program. It was also found that, 32.5% of the studied nurses had complete correct answer regarding duties of a nurse in transitional care clinics pre health educational program and this percentage improved to 87.5% post health educational program.

Table (3): illustrates nurses' knowledge about bowel management program. It was clarified that; there were highly statistically significant difference of the studied nurses' knowledge regarding the bowel management program pre and post health educational program ($P < 0.001$). Regarding component of the bowel management program, 42.5% of the studied nurses had complete correct answer pre health educational program and increased to 80% post health educational program. Concerning symptoms that the child may suffer from as a result of the program, 75% of the studied nurses had incomplete correct answer pre health educational program compared to 20% post health educational program. Meanwhile, 67.5% of the studied nurses didn't know the causes of colitis as a side effect of using an enema in the long term pre health educational program and this percentage decreased to 10% post health educational program.

Figure (1): shows subtotal knowledge score of the studied nurses regarding transitional care. It was found that; there was highly statistically significant difference of the studied nurses' subtotal knowledge score regarding intestinal obstruction pre and post health educational program ($P < 0.001$). Moreover, 27.5% of the studied nurses had good knowledge score pre health educational program and this percentage increased to 85% post health educational program.

Figure (2): shows subtotal knowledge score of studied nurses regarding Bowel management program. It was found that; 25% of the studied nurses had good knowledge score pre health educational program and this percentage increased to 75% post health educational program. While 27.5% of the studied nurses had poor knowledge score pre health educational program and this percentage decreased to 20% post health educational program.

Table (1): Socio demographic characteristics of the studied nurses (n=40).

Socio-demographic characteristics	No = 40	%
Age/years		
20 < 25 years	11	27.5
25 < 30 years	7	17.5
30 < 35 years	20	50.0
≥ 35 years	2	5.0
Mean ±SD 28.30±4.97		
Sex		
Male	8	20.0
Female	32	80.0
Educational qualification		
Nursing Diploma	9	22.5
Nursing Technical Institute	16	40.0
Bachelor of Nursing	12	30.0
Postgraduate studies in nursing	3	7.5
Job title		
Nurse	27	67.5
Supervisor	8	20.0
Head Nurse	5	12.5
Years of experience in the field of pediatric surgical nursing		
1 < 5 years	12	30.0
5 < 10 years	6	15.0
10 < 15 years	19	47.5
≥ 15 years	3	7.5

Table (2): Nurses' knowledge regarding transitional care (n=40).

Knowledge about transitional care	Pre-health educational program						Post-health educational program						X ²	P value
	Complete correct answer		Incomplete correct answer		Don't know		Complete correct answer		Incomplete correct answer		Don't know			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Meaning of transitional care	8	20.0	20	50.0	12	30.0	31	77.5	7	17.5	2	5.0	26.96	.000**
Members of the transitional care team	10	25.0	27	67.5	3	7.5	37	92.5	3	17.5	0	0.0	37.72	.000**
Services that transitional care clinics provide	12	30.0	24	60.0	4	10.0	33	82.5	5	12.5	2	5.0	22.90	.000**
Function of transitional care clinics	11	27.5	21	52.5	8	20.0	32	80.0	7	17.5	1	2.5	22.73	.000**
Duties of a nurse in transitional care clinics	13	32.5	20	50.0	7	17.5	35	87.5	5	12.5	0	0.0	26.08	.000**

****Highly statistically significant difference (P<0.001).**

Table (3): Nurses' knowledge regarding the bowel control program (n=40).

Knowledge about the bowel control program	Pre-health educational program						Post-health educationalprogram						X ²	P value
	Complete correct answer		Incomplete correct answer		Don't know		Complete correct answer		Incomplete correct answer		Don't know			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Meaning of bowel control program	15	37.5	20	50.0	5	12.5	34	85.0	4	10.0	2	5.0	19.32	.000**
Why child suffer from fecal incontinence?	12	30.0	25	62.5	3	7.5	30	75.0	7	17.5	3	7.5	17.84	.000**
Components of the bowel control program	17	42.5	19	47.5	4	10.0	32	80.0	6	15.0	2	5.0	12.02	.002**
Goals of the bowel control program	14	35.0	21	52.5	5	12.5	31	77.5	8	20.0	1	2.5	14.93	.000**
Who benefit from the bowel control program?	13	32.5	20	50.0	7	17.5	29	72.5	9	22.5	2	5.0	13.06	.001**
Steps of the bowel control program	10	25.0	22	55.0	8	20.0	30	75.0	7	17.5	3	7.5	20.04	.000**
Symptoms that the child may suffer from as a result of the program.	6	15.0	30	75.0	4	10.0	32	80.0	8	20.0	0	0.0	34.52	.000**
Appropriate age for a child to start the bowel control program	7	17.5	18	45.0	15	37.5	32	80.0	7	17.5	1	2.5	27.98	.000**
Continue Table (3): Nurses' knowledge regarding the bowel control program.														
Knowledge about the bowel control program	Pre-health educational program						Post-health educationalprogram						X ²	P value
	Complete correct answer		Incomplete correct answer		Don't know		Complete correct answer		Incomplete correct answer		Don't know			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
The child who is not toilet trained go to school with a bowel control program	7	17.5	18	45.0	15	37.5	29	72.5	10	25.0	1	2.5	26.38	.000**
The right time to do enema throughout the day	10	25.0	22	55.0	8	20.0	29	72.5	9	22.5	2	5.0	16.26	.000**
Causes that could cause a child to defecate on himself during the program	9	22.5	12	30.0	19	47.5	28	70.0	9	22.5	3	7.5	27.18	.000**
Causes that may lead to diarrhea during the application of the program	9	22.5	12	30.0	19	47.5	31	77.5	7	17.5	2	5.0	31.52	.000**
What should I do if I miss an enema during the day to get back on track with the program?	11	27.5	21	52.5	8	20.0	31	77.5	9	22.5	0	0.0	22.20	.000**
Knowledge about the bowel control program	Pre-health educational program						Post-health educational program						X ²	P value
	Complete correct answer		Incomplete correct answer		Don't know		Complete correct answer		Incomplete correct answer		Don't know			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
How long does the program take during the day?	4	10.0	23	57.5	13	32.5	32	80.0	6	15.0	2	5.0	32.46	.000**
How do I make the child comfortable while implementing the program?	9	22.5	24	60.0	7	17.5	29	72.5	8	20.0	3	7.5	18.58	.000**
The causes of colitis as a side effect of using an enema in the long term	8	20.0	5	12.5	27	67.5	28	70.0	8	20.0	4	10.0	41.40	.000**
Does an enema affect nutrient absorption or growth?	5	12.5	10	25.0	25	62.5	30	75.0	10	25.0	0	0.0	40.08	.000**
The time for performing x-rays	6	15.0	11	27.5	23	57.5	30	75.0	9	22.5	1	2.5	38.60	.000**
When should a change in plan occur?	11	27.5	20	50.0	9	22.5	33	82.5	5	12.5	2	5.0	16.72	.000**
When should I advise the family to stop doing the enema?	13	32.5	24	60.0	3	7.5	29	72.5	9	22.5	2	5.0	16.36	.000**
Continue Table (3): Nurses' knowledge regarding the bowel control program.														
Knowledge about the bowel control program	Pre-health educational program						Post-health educationalprogram						X ²	P value
	Complete correct answer		Incomplete correct answer		Don't know		Complete correct answer		Incomplete correct answer		Don't know			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Purpose of laxatives in the bowel control program?	12	30.0	20	50.0	8	20.0	31	77.5	8	20.0	1	2.5	22.78	.000**
The best results when using laxatives	14	35.0	24	60.0	2	5.0	33	82.5	6	15.0	1	2.5	23.44	.000**
Which of the following foods is rich in fiber?	13	32.5	25	62.5	2	5.0	35	87.5	5	12.5	0	0.0	25.42	.000**

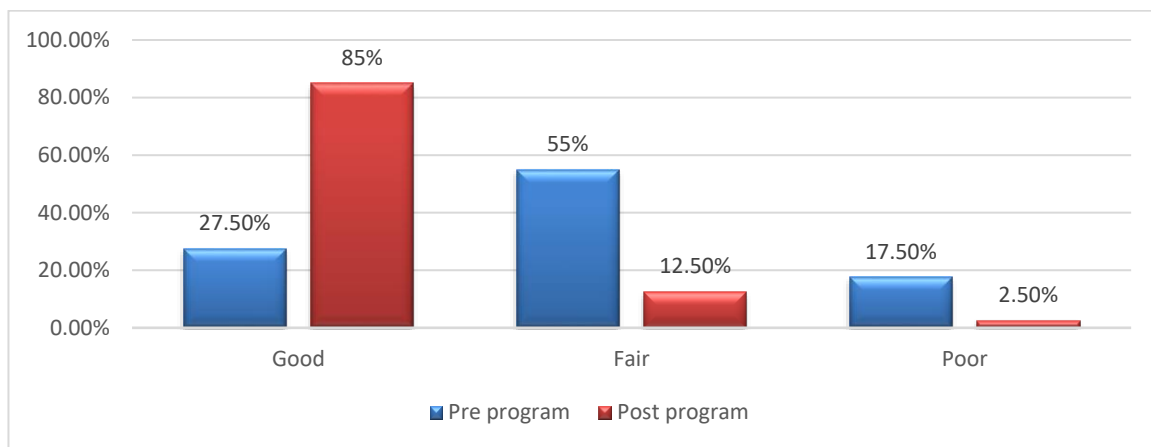


Figure (1): Subtotal knowledge score of the studied nurses regarding transitional care pre and post implementation of an educational program.

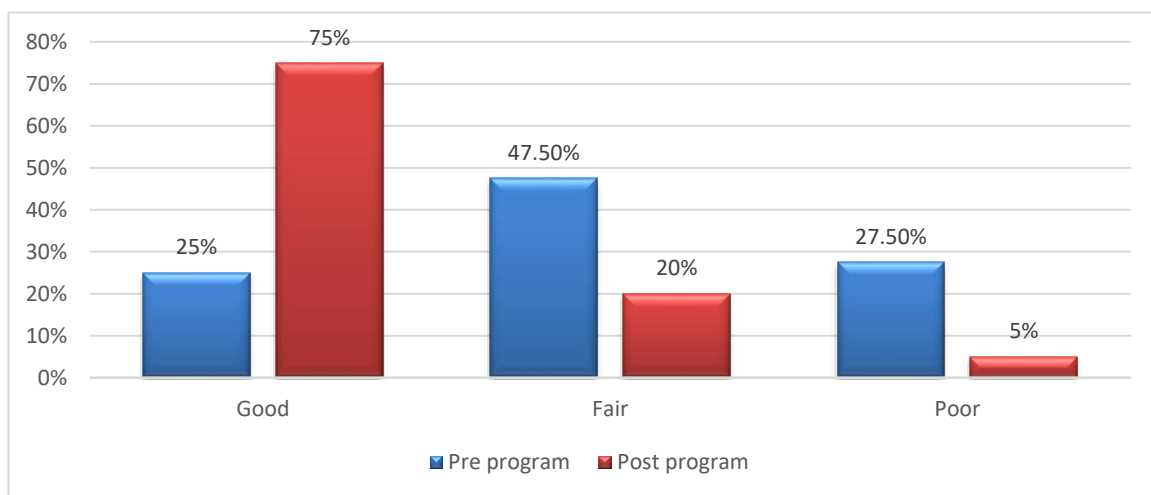


Figure (2): Subtotal knowledge score of the studied nurses regarding bowel management program pre and post implementation of an educational program.

Discussion

Transitional care has become an important aspect of patient care in the healthcare system due to shorter lengths of hospital stay and the increased requirements of post-discharge care. Given the association between patient handovers during transitional care and incidences of adverse events, transitional care has been identified as a high-risk stage of the patient care journey. Achieving optimal transitional care between healthcare settings is essential to ensure patient safety and prevent hospital readmissions (Kapoor, et al, 2019).

Concerning to characteristics of the studied nurses the present study results revealed that, more than half of them had age group from 30 and less than 35 years, this finding was agreement with *Abd Elfatah et al. (2023)*, in a study about nurses' knowledge and practices regarding care of neonates undergoing esophageal atresia surgery, who verified that more than half of them ranged in age from 30 to less than 35 years old. From the researcher point of view, this may be due to most of the studied nurses were not newly graduated. While these findings were in disagreement with *Hussein, (2016)* in a study about effectiveness of an educational program on nurses' knowledge regarding preoperative care for children undergoing intestinal obstruction surgery, who mentioned that the majority of the studied nurses were between age group from 20 - 30 years.

In relation to the studied nurses' gender, the current study showed that the majority of the studied nurses were female. This result in the same line with *Abo Zeed et al., (2019)* in a study about assessment of nursing knowledge and practices in caring of

neonatal intestinal obstruction who mentioned that all of the studied nurses were females. From the researcher point of view, this may be due to the greater fraction of the nurses in Egypt was females and may also related to the studying of nursing in Egyptian universities were exclusive for females only till few years ago. While, this finding disagreed with *Salem, et al, (2024)* who clarified in their study about knowledge and practices of pediatric nurses about pre and postoperative care of intestinal obstruction, that less than two thirds of the studied nurses were females. Besides, the male nurses preferred to travel abroad or worked in private hospitals.

Concerning level of education of studied nurses, it was found that more than one third of them had technical institute. These findings were also in agreement with *Hammod, (2016)*, who reported in his study about effectiveness of an education program on nurses' knowledge concerning complication of neonatal congenital anomalies that more than one quarter of the studied nurses had Technical Institute. From the researcher point of view, this may be due to most of bedside nurses in governmental hospitals were diploma and technical nurses because bachelor nurses in the governmental hospitals are working as head nurses.

Regarding to years of experience of studied nurses, nearly half of them had from 10 years to less than 15 years in years of experience, these results agree with the study performed by *Abd El-Naby, et al, (2023)* about nurses' role regarding application of discharge plan for Neonates from the intensive care units and stated around half of them had from 10 years to less than 15 years in years of experience.

In relation to nurses' knowledge about transitional care, the present study verified that, there was highly statistically significant difference of the studied nurses' knowledge about transitional care pre and post health educational program ($P < 0.001$) as nearly one third of the studied nurses had poor knowledge about transitional care pre health educational program compared to more than three quarter had good knowledge after implementation of health educational program. This may be due to lack of training courses about transitional care and absence of transitional care clinics in Zagazig university hospital.

Within the same context, study conducted by *Gifty, et al, (2025)* about difficulties encountered by nurses during the transition of pediatric sickle cell disease to adult healthcare, which found that most of the basic nursing training colleges do not include transition care in their curriculum. As a result, nurses had limited knowledge on how to guide patients through this process. The study highlighted the importance of organizing workshops to train nurses on how to effectively transition adolescent patients to adult care settings.

Also, these findings were similar to those reported by *Ibrahim et al. (2020)*, in a study regarding transitional care for pediatric patients with sickle cell disease, which identified that knowledge gaps among healthcare staff were one of the key challenges healthcare providers faced during the transitioning process, which may impede effective information for the preparation of the young adolescent of adult care.

Also, Doucet et al. (2022) found in their study about programs to support pediatric to adult healthcare transitions for youth with complex care needs and their families" that a significant gap in knowledge and skill exists among nurses in providing transitional care interventions to adolescent and young adult SCD patients. Additionally, they emphasized on the need for adequate knowledge about the disease through the development of interdisciplinary health education strategies. These efforts, such as in-service training and workshops, are essential for empowering healthcare providers and bridging knowledge gaps in transitional care, ultimately reducing the challenges encountered when shifting pediatric patients to adult healthcare services.

According to nurses' knowledge about bowel management program, the present study illustrated that; there were highly statistically significant difference of the studied nurses' knowledge about the bowel control program pre and post health educational program ($P < 0.001$). This result could be due to lack of policies to regulate training programs and assess their knowledge.

This result was in harmony with study made by *Pittman, et al, (2018)* about establishing a bowel management program in Critical Care. This study demonstrated a successful and effective multi method unit-based education program that that significantly enhanced nurses' knowledge and competency in utilizing bowel management techniques. It also promoted collaboration among critical care nurses and increased their confidence in applying the program. A notable improvement in knowledge scores was observed between the pre- and post-educational intervention ($P < .001$).

Conclusion:

Based on the result of the present study, there were highly statistically significant difference of the studied nurses' knowledge about transitional care pre and post health educational program ($P < 0.001$). It was also concluded that studied nurses' knowledge and practice was improved after implementation of educational problem.

Recommendation:

Collaboration and continuing education of the staff regarding transitional care are vital to improve their knowledge and practices about care provided for children with intestinal obstruction

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