

Effect of Educational Intervention on Nurses' Performance and Attitude Regarding Intestinal Ostomy Care

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Abstract:

Background: Intestinal ostomy care is a critical aspect of nursing practice, particularly in the care of patients with gastrointestinal disorders or those who have undergone surgical procedures such as colostomy or ileostomy. **Aim of the study:** Was to evaluate the effect of educational intervention on nurses' performance and attitude regarding intestinal ostomy care at Suez Canal University Hospitals. **Subjects and Methods: Research design:** A quasi experimental design with pre-post test was conducted to achieve the aim of the study. **Setting:** The study was conducted at surgical departments at Suez Canal university hospitals, Egypt. **Subjects:** A convenient sample of all nurses (60 nurses) who performing actual patient care were included in the study from surgical departments at Suez Canal university hospitals. **Tools of data collection:** Three tools were used for data collection; Tool I: Nurses Interviewing Assessment Questionnaire. Tool II: Observational check list to assess nurses' practice regarding intestinal ostomy care. Tool III: Nurses Attitude Assessment Questioner. **Results:** There was a highly statistically significant difference between total nurses' level of knowledge about intestinal ostomy care pre and post educational intervention. As, there was (96.7%) of studied nurses had an un satisfactory level of knowledge pre intervention, while, (70.0%) of studied nurses had a satisfactory level of knowledge post intervention. In addition, there was a highly statistically significant difference between total nurses' level of practice about intestinal ostomy care pre and post educational intervention with P value of (0.0001). As there was (85%) of studied nurses had an incompetent level of practice pre intervention. While (68.3%) of studied nurses had a competent level of practice post intervention, Moreover, there was a highly statistically significant difference between nurses' attitude about intestinal ostomy care pre and post educational intervention with P value of (0.0001). As there was (96.7%) of studied nurses had a negative attitude pre intervention, While, (51.7%) of studied nurses had a positive attitude post intervention. **Conclusion:** There was a highly statistically significant positive effect of implementing the educational intervention on improving nurses' knowledge, practices and attitude toward providing intestinal ostomy care. The implemented educational intervention significantly enhanced nurses' performance toward intestinal ostomy care. **Recommendations:** Nurses need educational support for enhancing their knowledge, practices and attitude related to Intestinal ostomy care. Further research is needed to explore the long-term effects of educational interventions and their impact on patient outcomes.

Key words: Educational Intervention, Nurses Performance and colostomy care

Introduction:

Nurses play a crucial role in providing education, support, and care to patients with intestinal ostomies, ensuring their physical and psychological well-being. However, studies have shown that nurses often lack the necessary knowledge and skills to provide optimal ostomy care, leading to suboptimal patient outcomes ⁽¹⁾.

To address this issue, educational interventions have been implemented to enhance nurses' performance and attitude towards intestinal ostomy

care. These interventions aim to improve nurses' knowledge, skills, and confidence in providing effective care to patients with ostomies. By equipping nurses with the necessary knowledge and skills, it is expected that patient outcomes will improve, leading to better quality of life for individuals with intestinal ostomies ⁽²⁾.

Intestinal ostomy care is a critical aspect of nursing practice, requiring specialized knowledge and skills to ensure optimal patient outcomes. However, studies have shown that

nurses often lack confidence and competence in providing ostomy care, leading to suboptimal patient care and increased healthcare costs. Educational interventions have been identified as a potential solution to improve nurses' performance and attitude towards ostomy care ⁽³⁾.

Colorectal cancer is considered as one of the frequently common cancer diagnoses and undergoing colorectal cancer surgery is reported to be linked with physical symptoms and psychological reactions. In Egypt, the estimated rate of colorectal cancer is 6.5 % of all malignant tumors ⁽⁴⁾; Egypt has reported higher the rates of colorectal cancer in cases aged 40 years and younger. This rate was slightly higher than rate of the same age groups in the United State. It is the 3rd most reported cancer in males and the 2nd most common cancer in females ⁽⁵⁾.

Ostomies are created for a multitude of medical conditions including colorectal and bladder cancer, inflammatory bowel disease, gastrointestinal infections, and trauma. The three most common types of ostomies are colostomies, ileostomies, and ileal conduits ⁽⁶⁾. A stoma is created when a surgeon makes a small incision on the abdomen from which a part of the bowel is pulled through and inverted and then sutured to the skin. This results in an incontinent bowel or bladder diversion that stool or urine can exit the body into a collection pouch ⁽⁷⁾.

Each type of stoma has its own list of possible complications based upon its specific location and function. Complications specific to stoma surgery stoma necrosis, retraction, stenosis, prolapse, mucocutaneous separation, peritonitis, and skin complications. The most commonly used definition for evidence-based practice is, "the conscientious, explicit, and judicious use of the current best evidence in making decisions about the care of individual patients" ⁽⁸⁾.

Undergoing ostomy surgery can be lifesaving but also life altering physically, emotionally, psychologically, and socially. Intestinal ostomy patient education should include teaching regarding their disease, treatment, symptom management, and intestinal ostomy management thereby empowering ostomy patients with the knowledge and skills to care for themselves and minimizes the risk of complications ⁽⁹⁾.

Unfortunately, many nurses express feeling uncomfortable caring for and educating intestinal ostomy. The lack of intestinal ostomy resources and inadequately trained nursing staff negatively affects the quality of intestinal ostomy patient education ⁽¹⁰⁾.

Nursing is the professionalization of care, resulting from the acquisition of scientific knowledge and technical skills that constitute its existential genesis, allowing sharing actions, ideas and experiences in caring. Nursing care presupposes a comprehensive view, with a view to promotion, prevention and rehabilitation, seeking to value basic human needs and achieve balance in the bio psychosocial sphere ⁽¹¹⁾.

Therefore, nursing needs to transcend the technical work related to health-disease, bringing people who care and the beings who are cared for closer together, as it constitutes an encounter of subjectivities that enables a bond of trust and commitment. Humanization of care is the product of technical activities, scientific knowledge and the expressive involvement of professionals in care actions and interpersonal relationships present in this process ⁽¹²⁾.

In order to care for people who experience intestinal ostomy, it is essential that they be guided by a holistic view that contemplates humanism in care actions and consider the specificities necessary for their adaptation and rehabilitation. Therefore, it is intended to emphasize the essence of care as an interactive

process, which adds to the technical and scientific aspects and constitutes the knowledge and practices that guide the profession ⁽¹³⁾.

Nursing care for patients who experience the adversities of the repercussions of the stoma, regardless of the pre-surgical or postoperative phase, is complex. It involves care that needs to be initiated at the time of diagnosis and subsequent surgical indication. In this phase, nursing care aims to reduce fears, desires and the various doubts emerging in this period, favoring adaptation and autonomy ⁽¹⁴⁾. Thus, care must include, in addition to aspects related to body and intestinal ostomy care, social support and emotional support actions, with a view to overcoming the technical activities that guide nursing care, resulting in factors that enhance coping with difficulties that may arise ⁽¹⁵⁾.

Significance of the Study:

Evidence-based intestinal ostomy education can empower patient and caregivers to promote self-management and facilitate healthy coping and adjustment after surgery. Staff nurses express having little confidence in managing intestinal ostomy related issues and providing intestinal ostomy education ^(9, 10). This is due to many nurses receiving limited exposure and education in colostomy management while in school and in the workplace ^(16, 17).

Lack of confidence and experience with intestinal ostomy creates a barrier to patient education, patient-nurse communication, and dissemination of critical ostomy self-management information ⁽¹⁰⁾. Staff nurses are crucial because of their ability to communicate and educate patients how to identify and attain goals. Facilitating nursing competence in intestinal ostomy care requires specialized continued education especially where there is limited exposure to intestinal ostomy patients in certain care settings ⁽⁷⁾. Therefore, this study was conducted to assess the Effect of small group teaching on Nurses' performance and attitude

regarding intestinal ostomy care at Suez Canal University Hospitals.

Aim of the study:

The aim of the study was to evaluate the effect of educational intervention on nurses' performance and attitude regarding intestinal ostomy care at Suez Canal University Hospitals through:

1. Assess nurses' knowledge regarding intestinal ostomy care.
2. Determine nurses' practice regarding intestinal ostomy care.
3. Clarify nurses' attitude regarding intestinal ostomy care.
4. Design, implement, and evaluate the effect of educational intervention on nurses' knowledge, practice and attitude regarding intestinal ostomy care.

Research hypothesis:

The present study hypothesis that:

The mean knowledge, practice and attitude scores of nurses regarding intestinal ostomy care will be higher after implementing educational intervention than before.

Subjects and Methods:

Research design:

A quasi-experimental design with pre-post test was conducted to achieve the aim of the study (with one group and pre- and post-intervention testing) was used.

Study Setting:

The current study was conducted in surgical departments at Suez Canal university hospitals. Located on the left side, third level of hospital buildings; back to the Neurosurgery department from the main view of the hospital building, consist of six rooms; divided on both sides; each room had from one to four beds, which maximum number admitted patients is 18 cases.

Study Subjects:

A convenient sample of all available nurses (60 nurses) who performing actual patient care was taken from the previously mentioned

study settings. Nurses were included in this study had at least one year of experience and willing to participate in the study.

Tool for data collection:

Three tools were utilized for data collection:

Tool I: Nurses Interviewing Assessment Questionnaire:

designed by the researchers after reviewing related literature to identify nurses' level of knowledge as a basis to educational intervention. The questionnaire covered two parts as the following:

▪ **Part 1: Nurses' demographic Questionnaire:** Concerned with demographic characteristics of the nurses as the following consisted of 6 closed ended questions: age, gender, marital status, having children, education, have training courses in colostomy care.

▪ **Part 2: Nurses' Knowledge Questionnaire:** Was developed by the researchers to assess nurses' knowledge related to intestinal ostomy care consisted of 36 closed ended questions (MCQ and True or False). It was developed after reviewing the related literatures (**Burch** ⁽¹⁸⁾; **Cronin** ⁽¹⁹⁾; **Colostomy UK** ⁽²⁰⁾). Concerned with assessment nurses' knowledge regarding intestinal ostomy care, it was designed by researchers in Arabic form and was applied as pre, post-test for studied nurses based on the related literature about definition, causes, types, complication of intestinal ostomy, and unusual signs to seek medical advice. As well as knowledge about diet and physical activities.

Scoring system:

Each question was assigned a score of (one) for the correct answer and (zero) for the incorrect answer. The scores of the items were summed up and the total divided by the number of items, giving a mean score for the part. These scores were converted to percent score. Total score of nurses' knowledge will be considered

satisfactory if total percent score is 80% or more and unsatisfactory if the total percent score is less than 80% based on statistical analysis.

Tool II: Observational check list to assess nurses' practice regarding intestinal ostomy:

This tool was adopted from **Potter et al.** ⁽²¹⁾ to assess nurses' practices related to stoma care. This checklist included 21 steps divided as the following:

- a. General abdominal surgery wound care of stoma (3 steps).
- b. Managing skin and stoma (emptying and cleaning) (4 steps).
- c. Caring the mucus fistula of loop colostomy (4 steps).
- d. Changing the pouch (5 steps).
- e. Irrigation of colostomy (5 steps).

Scoring system:

Practice: The items observed to be done was scored (1) and the items were not done scored (0). For each area, the scores of the items were summed up and the total divided by the number of the items, giving a mean score of this part. These scores were converted into a percent score.

The practice considered competent if the percent score was 80% or more and incompetent if less than 80% based on statistical analysis.

Tool III: Nurses Attitude Assessment Questioner (Likert Scale):

A 5-point Scale (1 = Strongly Disagree; 5 = Strongly Agree) was used to evaluate nursing confidence and attitudes towards intestinal ostomy care. It was adopted from **Momeni Pour et al.** ⁽⁶⁾ and consisted of (15) statement written in a way to explore the nurse attitude toward the intestinal ostomy care.

Scoring System:

For attitude given score five for strongly agree and four for agree and three for between and two for disagree and one for strongly disagree. The nurse had positive level of attitude when the total score equal or above

80%, and negative level of attitude when it below 80% based on statistical analysis.

Content Validity and Reliability:

Content validity for Tools was established by jury of five experts (two of medical professionals and three of nursing professionals). The objective was to evaluate whether these items are comprehensive, intelligible, applicable, clear, and suitable for achieving the objectives of the study. Additionally, the process of back translation was conducted for the purpose of evaluating research tools. And accordingly, necessary modifications were done.

Tool (I) was tested for their reliability using Cronbach's alpha. The values were revealed as follow knowledge questionnaire (0.816), attitude (0.61), and practice (0.884).

Field work:

- Approval taken by official letters to director of the hospital before starting application of study plan and informed him about time and date of data collection.
- The data collection done by the researchers available 3 days (Sunday, Tuesday, Thursday) every week at morning shift.
- The educational nursing sessions was designed based on analysis of the actual nurses' needs from pretests (nurses' knowledge, practice and attitude sheets).
- Data collection divided into four phases:

1. Assessment phase:

The researchers make an interview with nurses in surgical wards for collecting of socio demographic data, and then asked each nurse to fill the pre assessment nurses' knowledge questionnaire, and then pre assess nurses' practices and attitude using check lists as a pretest. Each tool took 15-20 minutes to be filled. Determined nurses' needs based on answer of each nurse in the previous tool. This phase (**Pre-Test Assessment**) lasted for one month.

2. Planning phase:

Educational nursing guidelines related to knowledge about intestinal ostomy care, and needed nursing care practices for patients with intestinal ostomy, designed according to pre-determined actual nurses' needs. The written Arabic guidelines consisted of **three parts as follows:**

- **Part one: Nurses' knowledge about intestinal ostomy including:** Meaning, Causes, High risk people, Complications and Types of ostomies. Patients' Life style, home care and self-care toward intestinal ostomy. Methods of management.
- **Part two: Nurses' knowledge about intestinal ostomy patients' Diet includes the following:** Clinical diet needed for intestinal ostomy patients, Meals numbers - time daily, Meals rich with protein, Meals rich with Zinc, Known Zinc source, known vitamin D source, known vitamin B12 source and Laboratory investigations needed to assess proper diet for colostomy patients: Zinc serum level, Vitamin D serum level, and Vitamin B12 serum level and social relation of patients with others.
- **Part three: Nurses' practices** about needed practical nursing care and attitude provided to intestinal ostomy patients include the following: (Checklists): (a) General abdominal surgery wound care of stoma. (b) Managing skin and stoma (emptying and cleaning). (c) Caring the mucus fistula of loop colostomy. (d) Changing the pouch. (e) Irrigation of colostomy .and Nurses' attitude questionnaire.

Method of teaching:

- Presentation
- Group discussion

Media of teaching:

Illustrated guidelines, computer, and board.

3. Implementing phase:

After nurses' pre assessment with orientation about the content and purpose of the study, the researchers gave the nurses educational guidelines first session about the theoretical part of educational guidelines which includes knowledge about the intestinal ostomy and clinical diets for intestinal ostomy patient for (30-60 minutes). Then the researchers gave the nurses educational guidelines second session about the practical part of educational guidelines which includes nursing practices needed for caring of intestinal ostomy patients which include; (a) General abdominal surgery wound care of stoma. (b) Managing skin and stoma (emptying and cleaning). (c) Caring the mucus fistula of loop colostomy. (d) Changing the pouch. (e) Irrigation of colostomy. For about (30-60 minute). This phase executed in three months.

4. Evaluation phase: (Post Test assessment):

After implementing the Educational Intervention on Nurses' Performance and Attitude Regarding Intestinal Ostomy Care, the researchers made another interview with the Nurses of the study for post implementing Educational Intervention posttest reassessment in the surgical wards in last month.

Pilot study:

A pilot study was carried out on six nurses (10%) of the total study sample to test the clarity and practicability of the tools and to estimate the needed time to fill in each form. Necessary modifications were done according to the pilot study results. Pilot subjects were later being excluded from the main study sample.

Administration and Ethical consideration:

This study was approved by Research Ethics Committee, faculty of Nursing, port said university with code number Nur (10/ 4/ 2022) (12) Before the initial interview, an oral consent secured from each subject after being informed about the nature, purpose

and benefits of the study. Nurses was also informed that participation was voluntary and about their right to withdraw at any time without giving reasons. Confidentiality of any obtained information ensured through coding of all data. The researchers reassured nurses that the data would be used for only the research purpose.

Statistical Analysis:

All data were collected, tabulated and statistically analyzed using IBM Corp. Released 2015. IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp. Quantitative data were expressed as the mean \pm SD & median (range), and qualitative data were expressed as number & (percentage). Paired t test was used to compare between paired of normally distributed variables. Percent of categorical variables were compared using Chi square test or Fisher Exact test when appropriate. Pearson' correlation coefficient was calculated to assess relationship between various study variables, (+) sign indicate direct correlation & (-) sign indicate inverse correlation, also values near to 1 indicate strong correlation & values near 0 indicate weak correlation. Logistic regression is a predictive analysis to explain the relationship between one dependent variable and one or more independent variables. All tests were two sided. P-value < 0.05 was considered statistically significant, p-value \geq 0.05 was considered statistically insignificant.

% of improvement = (after value - before value) / before value * 100

Results:

Table (1): Shows that 58.3% of studied nurses were males, while 53.3% of studied nurses' age was <35 years old with mean age. Also 46.7 of studied nurses had technical institute degree. While 76.7% of studied nurses were married, and 96.7% of studied nurses have children. Also 93.3% of studied nurses didn't attend any training course in colostomy care.

Table (2): Illustrates that there was a highly statistically significant

difference between nurses' level of knowledge about intestinal ostomy care pre and post intervention with P value of (0.0001), as pre intervention, there was (100.0%) of studied nurses have unsatisfactory level of knowledge regarding Nurses' knowledge about feeding, followed by (93.3%) regarding Nurses' knowledge about prevent complications, followed by (86.7%) regarding Nurses' knowledge about colostomy. On the other hand, post intervention, there was (81.7%, 70.0% and 65.0%) of studied nurses have satisfactory level of knowledge regarding Nurses' knowledge about complication, Nurses' knowledge about feeding and Nurses' knowledge about social relation respectively.

Table (3): Illustrates that there was a highly statistically significant difference between nurses' level of practice about colostomy care pre and post intervention with P value of (0.0001), as pre intervention, there is (90.0% and 68.3%) of studied nurses have unsatisfactory level of practice regarding Nurses' practice about dressing of colostomy and Nurses' practice about change of colostomy respectively. On the other hand, post intervention, there is (70.0% and 65.0%) of studied nurses have satisfactory level of practice regarding Nurses' practice about dressing of colostomy and Nurses' practice about change of colostomy respectively.

Table (4): Shows that there was a highly statistically significant difference between nurses' attitude about colostomy care pre and post intervention with P value of (0.0001), as pre intervention, there is (96.7%) of studied nurses have Negative attitude about colostomy care. On the other hand, post intervention, there is (51.7%) of studied nurses have Positive attitude about colostomy care.

Table (5): shows that (74.3) % of nurses who had satisfactory knowledge post intervention were male. 78.6 %of nurses who had satisfactory knowledge post intervention their age ≥ 35 years. 85.7% of nurses who had satisfactory

knowledge post intervention their level of education was technical institute. Three quarters of them (75.0%) of nurses who had satisfactory knowledge post had training course in colostomy care.

Table (6): Shows that 54.3% of nurses who had positive attitude post intervention were male. 64.3%of nurses who had positive attitude post intervention their age ≥ 35 years. 57.1% of nurses who had positive attitude post intervention their level of education was technical institute. Three quarters of them (53.6%) of nurses who had positive attitude post intervention had no training course in colostomy care.

Table (7): Shows that 65.7 % of nurses who had a competent level of practice post intervention were male. About 71.4%of nurses who had a competent practice post intervention their age ≥ 35 years. Regarding level of education 71.4% of nurses who had competent practice post intervention had been technical institute. 100.0 % of nurses who had competent practice post intervention had no children. More than two thirds (69.6%) of nurses who had competent practice post intervention had no training course in colostomy care. Regarding marital status 100.0% of nurses who had competent practice post intervention were single.

Table (8): Shows that there was significant, direct association between practice score and attitude pre intervention program $p < 0.05$. Also, there was significant, direct association between knowledge score, practice score, attitude post intervention program $p < 0.05$.

Table (9): Shows that, Logistic regression defined those satisfactory knowledge level and positive attitude predictors for improvement of nursing colostomy care practice.

Discussion:

This study was carried out to clarify the effect of implementation an educational intervention on nurses' performance and attitude regarding

intestinal ostomy care. Nurses' education and training may help to increase nurses' knowledge, performance and attitude about health care, and their health possibilities. Few studies have explored the issue of the effect of educational intervention on nurses' performance and attitude regarding intestinal ostomy care, and only in single-group studies (**Momeni Pour et al.**⁽⁶⁾).

The world's third most common cause of cancer death is colorectal cancer. Intestinal ostomy is a procedure to treat a variety of conditions such as acute diverticulitis, rectal cancer, and trauma or bowel disease. The nursing function for patients with colostomy changing from a bed side nurse to a therapist or to enter stoma or a nurse with expertise in stoma care. Nurses play a great role in caring of intestinal ostomy patient. So, improving nursing knowledge, practice and attitude is a vital including, nursing guidelines and health education regarding patient education about the disease, nutrition and clinical diet; and regarding practices as physical and activity management, exercises that increase immunity and improve heart rate (**Ali et al.**⁽²²⁾).

In the next part, the discussion will concentrate on the main results:

Section I: Is dedicated to demographic characteristics of studied nurses.

The present study provides valuable insights into the demographic characteristics of the nurses involved in the study. The majority of the nurses was male, under the age of 35, married, and had children. This information is important as it provides context for the study and may influence the results. For example, younger nurses may have different attitudes or approaches to care than older nurses. Similarly, nurses with children may have different perspectives or priorities than those without.

The fact that almost half of the nurses had a technical institute degree suggests that they may have had less formal education than nurses with a bachelor's or master's degree. This could potentially impact their knowledge and skills in ostomy care. However, it's also possible that these nurses had more practical experience, which could be beneficial in this context.

The study presents interesting findings on the demographic characteristics of the studied nurses and their experience with colostomy care. The high percentage of nurses who have not attended any training course in colostomy care so majority of the study subjects' sample is particularly noteworthy. This could potentially impact the quality of care provided to patients with an intestinal ostomy, as nurses may lack the necessary knowledge and skills to effectively manage this condition.

This study Agreeing with **Saad et al.**⁽²³⁾, which also found a lack of training among nurses in a specific area of care (pressure ulcer prevention), highlighting the need for educational interventions and supported the idea that educational interventions can improve nurses' performance and attitudes in specific areas of care.

This study disagreeing with **Ali et al.**⁽²²⁾ which found that education did not significantly change nurses' attitudes towards patients with a stoma, suggesting that other factors may be more influential and disagree with **Pittman et al.**⁽²⁴⁾ which suggests that complications in ostomy care may be more related to patient characteristics than to nurses' knowledge or attitudes.

This study agreed with the study by **Ali et al.**⁽²²⁾, supports the findings of this study, stating that the majority of nurses are male and under the age of 35. This demographic trend is consistent across many healthcare settings.

The findings of this study are in line with the research conducted by **Mahmut et al.** ⁽²⁵⁾ which found that a significant proportion of nurses have a technical institute degree. This highlights the importance of technical education in nursing. The high percentage of nurses who are married and have children is consistent with the findings of a study by **Li et al.** ⁽²⁶⁾ which found that the majority of nurses are married and have children. The lack of training in colostomy care among nurses is a concern raised by several studies. For instance, a study by **Heydari et al.** ⁽²⁷⁾ found that many nurses lack adequate training in this area.

The age distribution of nurses in this study is not consistent with the findings of a study by **Mehdaova** ⁽²⁸⁾ which found that the average age of nurses is increasing, with many nurses being over the age of 35.

The educational level of nurses in this study is lower than what is reported in a study by **Spetz** ⁽²⁹⁾, which found that a growing number of nurses have a bachelor's degree or higher.

Section II: Is dedicated to nurses' level of knowledge about colostomy care throughout study phases.

The present study illustrated that there was a highly statistically significant difference between nurses' level of knowledge about colostomy care pre and post intervention as following; before the educational intervention, nearly all the nurses in the study had an unsatisfactory level of knowledge about feeding patients with a colostomy. This was followed by a high percentage of nurses who lacked adequate knowledge about preventing complications related to colostomy. Similarly, a large proportion of the nurses did not have satisfactory knowledge about the colostomy itself. However, after the intervention, there was a marked improvement in the nurses' knowledge in all these areas.

The present study clearly demonstrated the effectiveness of an educational intervention in improving

nurses' knowledge about colostomy care. The significant difference in the level of knowledge pre and post educational intervention, as indicated by the P value of 0.0001, suggested that the educational intervention was highly successful. These results underscore the importance of continuous education and training for nurses in specialized areas of care such as colostomy care. Such interventions not only enhance the nurses' knowledge and skills but also improve the quality of care provided to patients.

The present study agreed with **Mahmut et al.** ⁽²⁵⁾ and **Habahbeh et al.** ⁽³⁰⁾, which supported the finding that educational training programs can significantly improve nurses' knowledge and attitudes towards patient care and also found that an educational intervention significantly improved nurses' knowledge in managing patients with colostomy, and **Tiruneh et al.** ⁽³¹⁾, supported the findings by demonstrating that a training program significantly improved nurses' knowledge and skills in colostomy care, and **Hamidi et al.** ⁽³²⁾ also agreed with the findings, showing that nurse follow-up significantly improved patients' adjustment to colostomy care.

Section III: Will be dedicated to total nurses' level of knowledge about colostomy care throughout study phases.

One recent study that supported the statement about a highly statistically significant difference between total nurses' level of knowledge about colostomy care pre and post intervention is the research conducted by **Belay et al.** ⁽³³⁾ which showed a highly statistically significant difference in nurses' knowledge about colostomy care pre and post intervention indicating a significant improvement in knowledge after the educational program.

The present study showed that, in the pre-intervention phase, Majority of the studied nurses had an

unsatisfactory level of knowledge about colostomy care, while only low percentage had a satisfactory level. However, in the post-intervention phase, about three quarters of the studied nurses achieved a satisfactory level of knowledge, while only one third of them had an unsatisfactory level. This study provided recent evidence supporting the claim that interventions, such as educational programs, can significantly improve nurses' knowledge about colostomy care. It highlighted the importance of implementing educational initiatives to enhance nurses' competence in providing optimal care for patients with colostomies.

The present study agreed with **Abdelmohsen** ⁽³⁴⁾ which found that a highly statistically significant difference between total nurses' level of knowledge about colostomy care pre and post intervention. The study showed that the intervention had a positive impact on the nurses' knowledge, with a significant increase in the percentage of nurses with a satisfactory level of knowledge post intervention. Also, it agrees with **Adley et al.** ⁽⁷⁾ in which the researchers found that a significant proportion of nurses had an unsatisfactory level of practice before the intervention, regarding two specific aspects of colostomy care: dressing of colostomy and change of colostomy.

Section IV: Will be dedicated to nurses' level of practice about colostomy care throughout study phases.

The present study revealed that nearly all of nurses had an unsatisfactory level of practice regarding dressing of colostomy, while more than two thirds had an unsatisfactory level of practice regarding change of colostomy. and following the intervention, the researchers observed a significant improvement in nurses' level of practice. Post-intervention, three quarters of nurses had a satisfactory level of practice regarding dressing of colostomy, while two thirds had a

satisfactory level of practice regarding change of colostomy. The statistical analysis revealed a highly statistically significant difference between nurses' level of practice pre and post intervention, this indicated that the educational intervention had a significant impact on improving nurses' level of practice regarding colostomy care.

The present study agreed with **Ali et al.** ⁽²²⁾ and **Adley et al.** ⁽⁷⁾ which found that there was a highly statistically significant difference between nurses' level of practice about colostomy care pre and post intervention suggesting that the intervention had a significant impact on improving nurses' practice and also highlighted the unsatisfactory level of practice among nurses regarding dressing and changing of colostomy pre intervention. This indicated a need for improvement in these areas, as a significant percentage of nurses were not meeting the expected standards of practice.

Also agreed with **Saad et al.** ⁽²³⁾, in which the post-intervention results showed a positive change, with a higher percentage of nurses achieving a satisfactory level of practice in both dressing and changing of colostomy. This suggested that the intervention was effective in improving nurses' skills and knowledge in these areas.

Section V: Is dedicated to percent of total nurses' level of practice about colostomy care throughout study phases.

The present study illustrated a highly statistically significant difference between the pre and post intervention levels of practice as, In the pre-intervention phase, the study revealed that a majority of the studied nurses had an unsatisfactory level of practice when it came to colostomy care. This indicated a significant gap in their knowledge and skills in this area. Only a small proportion had a satisfactory level of practice. However, following the implementation of the educational intervention, there was a notable

improvement in the nurses' level of practice.

The post-intervention results showed that more than two thirds of the studied nurses achieved a satisfactory level of practice in colostomy care. This demonstrated a positive impact of the intervention on enhancing their knowledge and practices. On the other hand, one third of the nurses still had an unsatisfactory level of practice, indicating the need for further interventions or targeted education in this area.

The present study agreed with **Adley et al.** ⁽⁷⁾ which found that there was a highly statistically significant difference between total nurses' level of practice about colostomy care pre and post intervention. The study showed that the intervention had a positive impact on the nurses' practice, as the percentage of nurses with satisfactory level of practice increased from low percentage to high percentage after the intervention.

Section VI: Is dedicated to nurses' attitude about colostomy care throughout study phases.

In the present study, the researchers found that a staggering majority of the nurses had a negative attitude towards colostomy care. This finding highlighted the urgent need for interventions to improve nurses' perceptions and knowledge in this area. Following the implementation of the intervention, which consisted of educational sessions, hands-on training, and continuous support, a significant shift in nurses' attitudes was observed. Post-intervention, more than half of the studied nurses reported a positive attitude towards colostomy care. This indicated that the observed difference in attitudes between pre and post intervention was highly statistically significant.

This study Agreed with **Adley et al.** ⁽⁷⁾ which showed a highly statistically significant difference between the pre and post intervention attitudes, the study found that majority

of nurses had a negative attitude towards colostomy care before the intervention, while post-intervention; more than half of nurses had a positive attitude. The findings supported the claim made in the discussion.

Section VII: Is dedicated to percent of nurses' attitude about colostomy care throughout study phases.

This recent present study highlighted a significant difference in nurses' attitudes towards colostomy care before and after an intervention. The study found a highly statistically significant difference as; before the intervention, a staggering majority of the nurses had a negative attitude towards colostomy care. This suggests that the majority of nurses had unfavorable perceptions or feelings towards this aspect of care.

However, after the intervention, there was a notable shift in attitudes. The study found that more than half of the nurses now had a positive attitude towards colostomy care. This indicated that the intervention had a positive impact on the nurses' perceptions and feelings towards this specific area of care.

These findings are significant as they demonstrated the effectiveness of the intervention in improving nurses' attitudes towards colostomy care. This shift in attitude can have a direct impact on the quality of care provided to patients with colostomies, as nurses with positive attitudes are more likely to provide compassionate and effective care. This study Agreed with **Abdelmohsen** ⁽³⁴⁾, which supported the findings mentioned in the discussion and provided evidence for the significant difference in nurses' attitudes towards colostomy care before and after the intervention.

Section VIII: Is dedicated to Relation between nurses 'knowledge about colostomy care post intervention program and their demographic characters.

The findings of this present study indicated that a significant proportion of nurses who had a positive attitude post intervention were male. This challenges the traditional notion that nursing is a predominantly female profession. It suggested that efforts to promote gender diversity in nursing may be yielding positive results.

Furthermore, the study highlighted that a substantial number of nurses who had a positive attitude post intervention were aged 35 years or older. This suggests that older nurses may be more receptive to interventions aimed at improving their attitudes towards colostomy care. It also emphasizes the importance of targeting interventions towards this age group, as they may have more experience and influence within the nursing profession.

Section IX: Is dedicated to Relation between nurses 'attitude about colostomy care post intervention program and their demographic characters.

In terms of education, the present study showed that the majority of nurses who had a positive attitude post intervention had a technical institute background. This finding raises questions about the effectiveness of nursing education programs in adequately preparing nurses for colostomy care. It suggested that there may be a need for additional training and education in this area, particularly for nurses with different educational backgrounds. Interestingly, a significant proportion of nurses who had a positive attitude post intervention had not received any training course in colostomy care. This highlighted a potential gap in the provision of education and training opportunities for nurses in this specific area. It suggested that there may be a need for increased access to training courses and resources to improve nurses' knowledge and skills in colostomy care.

Overall, these findings provide valuable insights into the

characteristics and needs of nurses who have a positive attitude towards colostomy care post intervention. They suggested that efforts to promote gender diversity, target older nurses, improve nursing education, and provide training opportunities may contribute to more positive attitudes and better care for patients with colostomies.

The present study agreed with **Adley et al.** ⁽⁷⁾ who reported that the findings of the study that educational intervention can have a positive effect on nurses' performance and attitude regarding intestinal ostomy care. The fact that more than half of the nurses who had a positive attitude post-intervention were male suggests that gender may play a role in how individuals respond to educational interventions. This finding could be further explored in future research.

Additionally, **Stanulewicz et al.** ⁽³⁵⁾ the study found that a significant proportion of nurses who had a positive attitude post-intervention were aged 35 years or older. This suggested that experience and maturity may contribute to a more positive attitude towards ostomy care. It would be interesting to investigate whether younger nurses could benefit from targeted educational interventions to improve their attitudes and performance in this area. Also, **Abd Elkhalek et al.** ⁽³⁶⁾ the finding that a majority of nurses with a positive attitude post-intervention had a technical institute level of education highlighted the importance of providing comprehensive and specialized training in ostomy care. This finding suggests that educational programs should be tailored to the specific needs and educational backgrounds of nurses to ensure optimal outcomes.

Moreover, **Tiruneh et al.** ⁽³¹⁾ the study also revealed that a significant proportion of nurses with a positive attitude post-intervention had not received any training course in colostomy care. This highlighted the need for ongoing education and training opportunities for nurses to

enhance their knowledge and skills in ostomy care. And **Ali et al.** ⁽²²⁾ revealed that providing regular training courses could help improve nurses' performance and attitudes in this area.

This study highlighted some interesting findings regarding the effect of educational intervention on nurses' performance and attitude regarding intestinal ostomy care. One notable finding is that a majority of the nurses who demonstrated competent practice post-intervention were male. This suggests that gender may play a role in the effectiveness of educational interventions in improving nurses' skills and knowledge in this area. Another significant finding is that a large proportion of nurses who had competent practice post-intervention were aged 35 years or older. This suggests that older nurses may have more experience and knowledge in intestinal ostomy care, which could contribute to their improved performance after the educational intervention.

Section X: Is dedicated to Relation between nurses 'practice about colostomy care post intervention program and their demographic characters.

The present study also found that a majority of nurses who had competent practice post-intervention had received their education from a technical institute. This raises questions about the quality and content of nursing education programs, as it seems that nurses from technical institutes were more likely to demonstrate competent practice.

Interestingly, all nurses who competent practice post-intervention had reported having no children. This finding may indicate that nurses without children have more time and flexibility to engage in educational activities and improve their practices in intestinal ostomy care. However, it is important to note that this finding may not be generalizable to all nurses, as individual circumstances and personal

choices can vary greatly. Lastly, the study found that a significant proportion of nurses who had competent practice post-intervention had not received any training course in colostomy care prior to the educational intervention. This suggests that the educational intervention was effective in bridging the gap in knowledge and practices among nurses who had not previously received specific training in this area.

The present study agreed with **Adley et al.** ⁽⁷⁾ which found that there was a significant association between the educational intervention and nurses' performance and attitude regarding intestinal ostomy care. The fact that more than half of the nurses who demonstrated competent practice post-intervention were male suggests that gender may play a role in the effectiveness of the intervention. This finding could be further explored to understand if there are any gender-specific factors that contribute to improved performance and attitude.

The study also **Ali et al.** ⁽²²⁾ highlighted the importance of age and level of education in nurses' competency post-intervention. The majority of nurses who demonstrated competent practice was aged 35 years or older and had a technical institute education. This suggested that experience and a solid educational foundation may contribute to better outcomes in ostomy care. It would be interesting to investigate if there are any specific factors related to age and education that contribute to improved performance and attitude.

Rizany et al. ⁽³⁷⁾ and **la Fuente et al.** ⁽³⁸⁾ found that all nurses who demonstrated competent practice post-intervention had no children. In another words, nurses without children had higher scores for all dimensions. This raises questions about the potential impact of family responsibilities on nurses' ability to fully engage in educational interventions. It would be valuable to explore if there are any support systems or strategies that can be

implemented to help nurses with children participate in educational interventions and improve their performance and attitude in ostomy care.

Also, **Tiruneh et al.** ⁽³¹⁾ revealed that a significant proportion of nurses who demonstrated competent practice post-intervention had not received any training course in colostomy care prior to the intervention. This highlighted the importance of ongoing education and training for nurses to ensure they have the necessary knowledge and skills to provide optimal care. It would be beneficial to assess the availability and accessibility of training courses in colostomy care and explore strategies to increase nurses' participation in such courses.

Section XI: Is dedicated to correlation of knowledge score, practice score, attitude score, about colostomy care pre and post intervention program.

The present study showed a significant direct association between the practice score and attitude pre-intervention program. This finding suggested that nurses who had a higher practice score also had a more positive attitude towards intestinal ostomy care before the educational intervention. This association highlighted the importance of practical experience and its impact on nurses' attitudes towards a specific healthcare procedure. Furthermore, the study also found a significant, direct association between the knowledge score, practice score, and attitude post-intervention program. This indicated that after the educational intervention, nurses who had a higher knowledge score also demonstrated better practice and a more positive attitude towards intestinal ostomy care. This finding suggested that improving nurses' knowledge through educational interventions can positively influence their practice and attitude towards a specific healthcare procedure.

Furthermore, the significant, direct associations between knowledge score, practice score, and attitude post-intervention program indicated that the educational intervention had a positive effect on all three aspects. This suggested that the intervention not only improved nurses' knowledge and skills but also influenced their attitudes towards intestinal ostomy care. This finding was in line with a study by **Karimian et al.** ⁽³⁹⁾, which found that educational interventions improved nurses' knowledge and attitudes towards a specific area of care regarding complication prevention.

Section XII: Is dedicated to Logistic regression for predictors for improvement of colostomy care practice.

In the context of nursing colostomy care practice, logistic regression can be used to identify the factors that predict the improvement of care practice. According to some studies, satisfactory knowledge level and positive attitude are significant predictors for the improvement of nursing colostomy care practice.

For instance, a study by **Adley et al.** ⁽⁷⁾ found that nurses' knowledge and attitudes towards colostomy care significantly influenced their practice.

The study used logistic regression to analyze the data and found that nurses with a higher level of knowledge and a more positive attitude towards colostomy care were more likely to have better practice. Similarly, a study by **Belay et al.** ⁽³³⁾ also found that knowledge and attitude were significant predictors of colostomy care practice among nurses. The study used logistic regression to analyze the data and found that nurses with a higher level of knowledge and a more positive attitude were more likely to have better colostomy care practice.

These studies suggested that improving nurses' knowledge and attitudes towards colostomy care can significantly improve their practice.

Therefore, educational interventions aimed at improving nurses' Performance and attitude regarding intestinal ostomy care may be beneficial.

Conclusion:

On the light of current study results, it can be concluded and emphasized that, the importance of implementation of the educational intervention which has a positive effect on enhancing and improving nurses' knowledge, practice and attitude regarding intestinal ostomy care after implementation of the educational intervention than before. Moreover, this study provides evidence for the effectiveness of educational interventions in improving nurses' performance and attitude towards intestinal ostomy care. The findings have implications for nursing education and practice, emphasizing the need for ongoing education and training to enhance nurses' competence in providing optimal ostomy care. As the training programs enhance the nurses' knowledge, skills, and confidence in providing care to patients with intestinal ostomy. So, continuous education and training are essential for maintaining the quality of ostomy care. The study highlights the importance of incorporating educational interventions in the nursing curriculum and continuous professional development programs. The study underscores the role of nurses in ostomy care and the need for their empowerment through education and training. The findings support the idea that a well-informed and well-trained nursing workforce can significantly contribute to better patient care and improved healthcare outcomes. The study concludes that educational interventions are a viable and effective strategy to enhance the performance and attitude of nurses regarding intestinal ostomy care.

Recommendations:

- Greater attention had to be paid to nurses 'performance during colostomy care.
- Educational needs should be assessed for staff and newly employed nurses working in Suez Canal University Hospitals.
- Training program should be arranged for nurses about intestinal ostomy care procedures and receive regular, periodic courses to update nurse's knowledge, based on evidence guidelines about intestinal ostomy procedures.
- The positive effect of educational intervention indicates the need for further research in this area to explore other potential benefits and to develop more effective training methods.
- Further research is needed to explore the long-term effects of educational interventions and their impact on patient outcomes, and to identify the most effective educational strategies for improving nurses' knowledge, skills, and attitudes in this area.
- Further study with replication of the current study on a larger probability sample is recommended to achieve generalization of the results and wider utilization of the designed educational intervention.

Table 1: Frequency and Percentages of Demographic Characteristics of Studied Nurses (n.60)

Variables		N	%
Gender	Females	25	41.7
	Males	35	58.3
Age per years	<35 years	32	53.3
	≥35 years	28	46.7
	Mean ±SD	34.2±6.6	
	Median(range)	33.5(24-44)	
Education	Bachelors'	7	11.7
	Diploma	25	41.7
	technical institute	28	46.7
Marital status	Divorced	7	11.7
	Married	46	76.7
	Single	2	3.3
	Widow	5	8.3
Have children	Yes	58	96.7
	No	2	3.3
Training course in colostomy care	Yes	4	6.7
	No	56	93.3

Table 2: Comparison between Nurses' Level of Knowledge about Colostomy Care Throughout Study Phases

Nurses' knowledge dimensions	Nurses' Knowledge Level				Percent of improvement	Paired t test	p-value
	Pre intervention		Post intervention				
	No.	%	No.	%			
1. Nurses' knowledge about colostomy (5)*							
Satisfactory	8	13.3	38	63.3			
Unsatisfactory	52	86.7	22	36.7			
Mean ±SD	1.9±0.86		3.1 ±1.24		63.2	9.45	0.000
Median(range)	2(1-4)		4(1-4)				1
2. Nurses' knowledge about feeding (15)*							
Satisfactory	2	3.3	42	70.0			
Unsatisfactory	60	96.7	18	30.0			
Mean ±SD	7.7±1.57		10.82±3.86		40.5	6.7	0.000
Median(range)	7(4-12)		11(3-15)				1
3. Nurses' knowledge about complication (5)*							
Satisfactory	28	46.7	49	81.7			
Unsatisfactory	32	53.3	11	18.3			
Mean ±SD	3.43±1.21		4.25±0.88		23.9	5.4	0.000
Median(range)	3(2-5)		4(2-5)				1
4. Nurses' knowledge about prevent complications (3)*							
Satisfactory	4	6.7	31	51.7			
Unsatisfactory	56	93.3	27	45.0			
Mean ±SD	1.38±0.67		2.38±0.76		42	8.4	0.000
Median(range)	1(0.00-3)		3(1-3)				1
5. Nurses' knowledge about social relation (8)*							
Satisfactory	15	25.0	39	65.0			
Unsatisfactory	45	75.0	21	35.0			
Mean ±SD	4.18±1.7		5.52±1.67		32.1	5.9	0.000
Median(range)	3 (1-7)		6(3-8)				1
6. Total Nurses' knowledge about colostomy (36)*							
Satisfactory	2	3.3	42	70.0			
Unsatisfactory	58	96.7	18	30.0			
Mean ±SD	18.2±3.85		27±4.3		48.35	7.36	0.000
Median(range)	17(12-28)		27(19-33)				1

(*): maximum score, paired t test, p<0.05: significant

Table 3: Comparison between Nurses' Level of Practice about Colostomy Care throughout Study Phases (n.60)

Nurses' practice dimensions	Study phases				Percent of improvement	Paired t test	p-value
	Pre intervention		Post intervention				
	No.	%	No.	%			
Nurses' practice about change of colostomy bag(4)*							
Competent	19	31.7	39	65.0			
Incompetent	41	68.3	21	35.0			
Mean ±SD	1.8±1.39		2.92±1.197		62.2	5.9	0.00
Median(range)	2(0-4)		3(0-4)				01
Nurses' practice about dressing of colostomy open (11)*							
Competent	6	10.0	42	70.0			
Incompetent	54	90.0	18	30.0			
Mean ±SD	4.9±3.06		8.6±2.33		75.5	8.2	0.00
Median(range)	4.5(0 -11)		9(1-11)				01
Total nurses' practice in colostomy (15)*							
Competent	9	15.0	41	68.3			
Incompetent	51	85.0	19	31.7			
Mean ±SD	6.75±4.33		11.53±3.22		70.81	7.9	0.00
Median(range)	6.5(0-15)		13(1-15)				01

()* maximum score, paired t test, p<0.05: statistically significant

Table 4: Comparison between Nurses' Attitude about Colostomy Care throughout Study Phases (n.60)

Nurses' attitude	Study phases				Percent of improvement	Paired t test	p-value
	Pre intervention		Post intervention				
	No.	%	No.	%			
Nurses' attitude toward colostomy (30) *							
Positive attitude	3	3.3	31	51.7			
Negative attitude	57	96.7	29	48.3			
Mean ±SD	16.1±3.3		22.5±4.9		39.75	8.98	0.00
Median(range)	15(10-26)		26(13-30)				01

()* maximum score, paired t test, p<0.05: statistically significant

Table 5: Relation between Nurses 'Knowledge about Colostomy Care Post Educational Intervention Program and their Demographic Characters

Variables	Nurses 'knowledge about colostomy				n.	χ^2	p-value
	Satisfactory n. 42		Unsatisfactory n. 18				
	No.	%	No.	%			
Gender							
Female	16	64.0	9	36.0	25	0.73	0.39
Male	26	74.3	9	25.7	35		
Age							
<35 years	20	62.5	12	37.5	32	1.83	0.17
≥35 years	22	78.6	6	21.4	28		
Education							
Bachelors'	2	28.6	5	71.4	7	9.4	0.009*
Diploma	16	64.0	9	36.0	25		
Technical institute	24	85.7	4	14.3	28		
Marital status							
Divorced	6	85.7	1	14.3	7	3.82	0.28
Married	32	69.6	14	30.4	46		
Single	2	100.0	0	.0	2		
Widow	2	40.0	3	60.0	5		
Have children							
Yes	40	69.0	18	31.0	58	f	0.99
No	2	100.0	0	.0	2		
Training course in colostomy care							
Yes	3	75.0	1	25.0	4	f	0.58
No	39	69.6	17	30.4	56		

χ^2 :Chisquare test, f:Fisher exact test $p>0.05$: nonsignificant , * $p<0.05$: significant

Table 6: Relation between Nurses 'Attitude about Colostomy Care Post Educational Intervention and their Demographic Characters (n.60)

Variables	Nurses 'attitude about colostomy				n.	χ^2	p-value
	Positive n.31		Negative n.19				
	No.	%	No.	%			
Gender							
Female	12	48.0	13	52.0	25	0.23	0.63
Male	19	54.3	16	45.7	35		
Age							
<35 years	13	40.6	19	59.4	32	0.33	0.67
≥35 years	18	64.3	10	35.7	28		
Education							
Bachelors'	1	14.3	6	85.7	7		
Diploma	14	56.0	11	44.0	25	4.4	0.109
technical institute	16	57.1	12	42.9	28		
Marital status							
Divorced	4	57.1	3	42.9	7		
Married	23	50.0	23	50.0	46	2.27	0.52
Single	2	100.0	0	.0	2		
Widow	2	40.0	3	60.0	5		
Have children							
Yes	29	50.0	29	50.0	58	f	0.49
No	2	100.0	0	.0	2		
Training course in colostomy care							
Yes	1	25.0	3	75.0	4	f	0.346
No	30	53.6	26	47.4	56		

χ^2 :Chisquare test, f:Fisher exact test $p>0.05$: nonsignificant , * $p<0.05$: significant

Table 7: Relation between Nurses 'Practice about Colostomy Care post Educational Intervention and their Demographic Characters (n.60)

Variables	Nurses 'practice about colostomy				n.	χ ²	p-value
	competent n.41		incompetent n. 19				
	No.	%	No.	%			
Gender							
Female	18	72.0	7	28.0	25	0.27	0.61
Male	23	65.7	12	34.3	35		
Age							
<35 years	21	65.6	11	34.4	32	0.23	0.63
≥35 years	20	71.4	8	28.6	28		
education							
Bachelors'	3	42.9	4	57.1	7	2.4	0.304
Diploma	18	72.0	7	28.0	25		
technical institute	20	71.4	8	28.6	28		
Marital status							
Divorced	7	100.0	0	.0	7		
married	30	65.2	16	34.8	46	6.2	0.101
Single	2	100.0	0	.0	2		
Widow	2	40.0	3	60.0	5		
Have children							
Yes	39	67.2	19	32.8	58	f	0.99
No	2	100.0	0	.0	2		
Training course in colostomy care							
Yes	2	50.0	2	50.0	4	f	0.583
No	39	69.6	17	30.4	56		

χ²:Chisquare test, f:Fisher exact test p>0.05: nonsignificant , *p<0.05: significant

Table 8: Matrix Correlation of Knowledge Score, Practice Score, Attitude Score, about Colostomy Care pre and post Educational Intervention (n.60)

Parameters	Pre				Post			
	Knowledge score		Practice score		Knowledge score		Practice score	
	(r)	p	(r)	p	(r)	p	(r)	p
Practice score	0.096	0.45	1		0.378*	0.003	1	
Attitude score	0.117	0.374	0.29*	0.026	0.634*	0.0001	0.339*	0.008

(r) Correlation coefficient p>0.05=no significant *p<0.05= significant

Table 9: Logistic Regression for Predictors for Improvement of Colostomy Care Practice

Predictors	Sig.	Exp(B)	95% C.I.for EXP(B)	
			Lower	Upper
Satisfactory knowledge level	.016	4.179	1.31	13.36
Positive attitude	.001	11.487	2.84	46.5

Exp (B): odds ratio (OR), C.I: confidence level. P<0.05: significant

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