EFFECT OF STRUCTURED EDUCATION REGARDING PATIENTS WITH A STOMA, ON NURSES' KNOWLEDGE AND PRACTICES AT MULAGO NATIONAL REFERRAL HOSPITAL, UGANDA

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Declaration

This is to declare that I personally did the work presented in this dissertation and it has not been presented to any other university or institution before for any other award.

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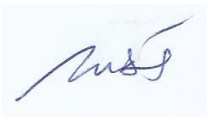
Signature: 

Date: 8th July 2024

This dissertation was submitted for examination with approval by this supervisor.

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Date:……29 August 2024……..

Dedication

I would like to dedicate this work to my departed mum who loved and fostered in me hard work and perseverance.

Acknowledgement

I extend my sincere gratitude to teaching staff of Uganda Christian University department of Nursing and members of Bethel University who over saw me through the years of my study.

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Muganga Jessica Damali

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Acronym and Abbreviations

D/C: Discharge

WOCN: Wound Ostomy and Continent Nursing Society

MNRH: Mulago National Referral Hospital

SCN: Specialized Certified Nurse for stoma

RN: Registered Nurse

Abstract

Background/Purpose: Receiving a stoma is a life changing event. Preparation of a patient with a stoma for discharge (D/C) is critical in adjusting to the new life. There are gaps in nurses' knowledge, and practices regarding discharge planning of patients with a stoma. Structured education on discharge planning for patients with stomas, helps greatly in improving nurses' confidence and comfort. However, in some settings, such as Uganda, structured education tailored for preparation of patients for stoma is lacking. The study examined effect of structured education on discharge of patients with a stoma on nurse's knowledge, and practices at Mulago National referral Hospital (MNRH) in Uganda.

Theoretical Framework: Kurt Lewin's 3-step change theory was used. The theory has 3 stages of unfreezing, change, and refreezing and 3 major concepts: driving forces, restraining forces, and equilibrium. These elements were key in guiding nurses to change behavior following structured education intervention.

Methodology: It was a pre-test posttest design. A single sample of nurses (n=23) purposively selected from nurses working on patients with a stoma participated in the study. Self-administered questionnaire was used at before and after structured education intervention. Analysis for knowledge was done using descriptive, inferential statistics. Practices were analyzed using descriptive, inferential statistics.

Results: It was found that structured education on D/C for patients with a stoma had an improvement on nurses' knowledge (P -value: <0.001 with significance at 0.05 % CI, using paired t test), and practices (p -value: <0.001, with significance at 0.05 %, using Wilcoxon Signed Ranks test). Because knowledge and practices of nurses improved, it can be concluded that structured education had a positive effect.

Conclusion: This study provides a timely response to needs of nurses preparing patients with stoma for discharge. Comparing before and after structured education, findings show that

nurses were better equipped with knowledge by the educational intervention on preparation of patients for discharge. Their practices regarding D/C planning were also improved following structured education.

Recommendation: From findings of the study, structured education regarding D/C of patients with a stoma had an effect on nurses' knowledge and practices. A structured approach to educating nurses about physiological, social and psychological needs of a patient with stoma like skin care, isolation, and anxiety needs to be incorporated in their care. The need for continuing education and demonstrations to guide nurses in performing D/C planning for patients with a stoma is critical for better patients' outcomes.

Key Terms: Discharge planning, structured education on discharge plan, stoma, nurses, knowledge, and practices.

Chapter One: Introduction

There is a growing number of people undergoing bowel ostomy surgeries worldwide (Findik, Yesilyurt, Unver, & Ozkan, 2019). At an urban tertiary hospital in sub-Saharan Africa, it was reported that colostomy cases alone were 15% and the third most common surgical procedure behind bowel resection and anastomosis, and hernia repair (Nakanwagi, Kijjambu, Ongom & Luggya, 2021). In Uganda, raw admission data from Mulago National Referral Hospital (MNRH) records showed that an average of 27 bowel ostomy procedures, were performed in the hospital each month (Mulago Hospital Records, July 2021-June 2022)

Receiving a stoma is a life changing event. Studies showed that preparation of a patient with a stoma for discharge (D/C) was critical in adjusting to the new life. Patients faced physical, psychological and social challenges following ostomy surgeries. There were gaps in nurses' performance in helping patients with a bowel stoma in this transition. These inadequacies were more profound in areas of knowledge, and practices regarding discharge planning of patients with a stoma (Nieves et al., 2017). Structured education regarding patients with a stoma, helped greatly in improving nurses' confidence and comfort (Bare et al., 2017; Millard, Cooper, & Boyle, 2020).

The purpose of this study was to determine the effect of structured education on D/C for patients with a stoma on nurse's knowledge, and practices in a Mulago National Referral, Hospital Uganda.

Background

Bowel ostomies are broadly classified as either ileostomies involving the small bowel or colostomies involving the large bowel. These can be temporary or permanent (Ambe et al., 2018). A colostomy is the surgical formation of an artificial anus by connecting the colon to an opening in the abdominal wall. An ileostomy is a similar procedure, but connects the ileum to the abdominal wall (Merriam Webster, n.d.).

There is a growing number of colorectal cancers in the adult population worldwide, contributing to the formation of bowel stomas. It is estimated that over 1.8 million new cases are diagnosed with colorectal cancer worldwide, and over 900,000 deaths, in 2020 (Ferlay et al., 2021; Findik et al., 2019; Motto et al., 2021).

In Europe, Oceania and the Americas colorectal cancers are the third commonest cause of deaths behind prostate, and lung cancer among men, and in women, the third behind breast and lung cancer (Ferlay et al., 2021). In the above geographical areas, colorectal cancer is approximately 12.6% of all cancers among men, and 14.1% in women. The rest of the world have an increasing number of cases, although the number is comparatively low. These are reflected in 7.7% among men, and in women 7.9 % (Boyle, & Langman, 2000).

In sub-Saharan Africa, despite the numbers of colorectal cancers being lower, other causes such as enteric fever complicated with gut perforation, and abdominal tuberculosis do increase the rate at which bowel stomas are formed (Massenga et. al., 2019; Motto et al., 2021; Ssewanyana et. al, 2021). In Uganda, raw admission data from Mulago National Referral Hospital (MNRH), showed that an average of 27 bowel ostomies are formed in the hospital each month (Mulago Hospital Records, July 2021-June 2022). People with stoma may experience complications such as anxiety, depression, and concerns of body image (De Camposa et al., 2017; Findik et al., 2019; Ssewanyana et al., 2021). They also experience anger, fear, denial and isolation (Ayik, Özden & Cenan, 2019; Cross, Roe, & Wang., 2014). Patients with a stoma may experience early or late physiological complications. Some of the complications are: ischemia, hemorrhage, peristomal skin irritation, fistula, prolapse and can lead to a reduced quality of life (Massenga et al., 2019; Silva et al., 2018). Nurses perform a pivotal role in educating these patients for self-care to minimize such complications. The success of living with a stoma is associated with several risk factors. These may include system, health professional, patient, and social factors (Pinto et al., 2017; Wong et al., 2011).

A number of challenges or barriers affect successful discharge (D/C) planning of patients. Nurses may not be aware of patient's needs. This may result in delayed or inadequate education to patients, breakdown of communication and coordination between the hospital and the community multidisciplinary team of health workers, and patients. Patients may fear to be discharged or are frequently readmitted due to failure to address their social, physical, and psychological issues (Wong et al., 2011).

The first stoma care nursing, which included formal discharge planning, was performed in 1958. Training for professionals was first offered in 1961, which in turn helped them to educate people with stomas to adjust to their new life. In 1969, a United Kingdom (UK) ward sister, Barbara Saunders, set up a stoma clinic and became the first stoma specialist nurse (Burch, 2008). In 1972, Saunders started the first training for nurses at the Bartholomew's Hospital, and by 2014 there were over 400 stoma care nurse specialists in the UK (Menezes, 2014). Today, stoma care includes pre-operative care, post-operative care, discharge planning and continuing care (Securicare Stoma Care Clinical Nursing Standards, 2019).

Discharge planning using a guide is an interdisciplinary approach to continuity of care. It is a process that includes: identification, assessment, goal setting, planning, implementation, coordination, and evaluation of patients' readiness for discharge. It is thought that discharge planning reduces the length of hospital stay and readmission rates (The Association of Discharge Planning Coordinators of Ontario, 1997)

Discharge plan (Appendix A) for patients with a stoma and their families, is coordinated by nurses following surgery. Nurses systematically use information, and resources to support a patient for a successful transition from hospital to home. Discharge process for patients with a stoma involves a number of steps. It involves assessment for readiness to learn and pouch management. It also involves skin care, diet management,

medication precaution. Patients are also advised on physical exercise, problems to look out for, support groups and follow-up (Carmel, Colwell & Goldberg, 2022).

The first enterostomal therapist was Norma N. Gill, and is credited for establishing the first enterostomal therapist nursing program. The American Association of Enterostomal Therapy was established in 1968, later becoming International Association of Enterostomal Therapy. From this came the current Wound Ostomy and Continence Nursing society (WOCN). The society's initial focus was on ostomy management alone, but today wound and continence management are also inclusive.

The first discharge plan titled: **Discharge planning for a patient with a new ostomy; Best practice for Clinicians** was developed in 2014 by WOCN. In 2016 a guide for new ostomates from home healthcare was released. The current version (2022) is a review based on studies carried out from 2000-2022. It is a guide for ostomy management of adult patients with fecal or urinary diversions with focus on patients and caregivers. Li, Yuan, Geng, Chen, Zhang… & Yue. (2022) in quality assessment of Clinical Practice Guidelines on Ostomy Care, rated WOCN as grade A, among the 5 top rated guidelines published from 2012-2021. Many researchers have used various versions of WOCN in research and establishment of their own guidelines, (Nurlelia, Roma, & Rapitos, 2021; The New Zealand Stomal Therapy National Clinical Guidelines). The systematic approach on discharge of patients for this study was based on elements in the guide. Some elements such as; dealing with urostomy, the use of the term certified nurse, ostomy equipment supplier information, and hotlines of support groups in America were excluded.

Quite often nurses are not competent in performing discharge planning of patients with a stoma (García-Goñi, 2019). Studies show that nurses have inadequacies in knowledge, and practices regarding discharge planning of patients with stomas (Findik et al., 2019; Pandey & Dhungana, 2015; Elfeki et al., 2018). Studies show that discharge planning if not

done in an organized manner, leaves gaps that can affect patients' quality of life (Bare et al., 2017, Milliard et al. 2020). Nurses demonstrate poor practices regarding discharge planning of patients with stomas (Cross et al. 2014; Findik et al., 2019; Hashem & Abusaad, 2016; Milliard, Cooper & Boyle, 2020). Some nurses do not have skills in dealing with the application of a colostomy bag and hygiene of the patient (Sujianto, Billy & Margawati, 2020). Nurses may be inefficient in the application of stoma bags, assessment for normal stoma output, and support for self-care (Lapkin, Levido, Palesy, Mamo & Perez, 2018).

When I interviewed some ostomy patients who had returned for review at the surgical out-patient's clinic, at one of the national referral hospital, discharge planning for stoma patients was reported to be inadequately performed. Emphasis had been placed on the pouch change, with no mention of danger signs pertaining to the stoma. Also, the kind of life to expect following ostomy was not mentioned, leaving patients fearful to go home.

Efforts have been made to improve nurses' knowledge and practice regarding discharge planning of patients with stoma. In service education with lectures, demonstration, and group discussion have been applied with little success (Farouk et al., 2016). Education using a stoma model on knowledge and skill levels of student nurses has been tried with some success (Findik et al., 2019). One Brazilian study by (Alencar, Andrade, Rabeh, & Araujo, 2018), tried distance education to successfully influence nurses' knowledge of ostomy surgeries.

Various standardized tools have been developed to aid in discharge planning of patients with stoma. In one study the use of a discharge planning guide improved nurses' confidence (Bare et al., 2017). In another study, the introduction of an ostomy discharge tool was associated with a reduction in nurse consultations (Milliard et al., 2020).

Not much is known about the effect of structured education regarding discharge of patients with a stoma on nurses' knowledge and practices in MNRH, Uganda. This study

determined effect of structured education regarding discharge of patients with a stoma on nurses' knowledge and practices in MNRH, Uganda.

Problem Statement

Bowel stomas are not well documented, but colorectal cancers that are majorly responsible for their creation are on the rise. It was estimated that over 1.8 million new cases were diagnosed with colorectal cancer worldwide, and over 900,000 deaths, in 2020. In Uganda raw admission data from Mulago National Referral Hospital (MNRH) showed that an average of 27 bowel ostomies are performed at the hospital each month. Receiving a bowel ostomy is a life changing event, whether it is temporary or permanent. Patients with a stoma may be anxious, angry and fearful to be discharged home. There are concerns of early and late physiological complications such as ischemia, hemorrhage, peristomal skin irritation, fistula, and prolapse. Patients should be adequately prepared by nurses to deal with this new experience. Studies showed that preparing patients for discharge has evolved over the years, from general to structured teaching.

Today organizations such as Wound, Ostomy, and Continence Nursing society have provided a lot on patient's transition from hospital to home. However some studies show gaps in nurses' knowledge and practices regarding patients' preparation for discharge. In Uganda there is no structured teaching on preparing patients for discharge. When I interviewed some ostomy patients who had returned for review at the surgical out-patient's clinic, discharge teaching for stoma patients was inadequate. Emphasis had been placed on the pouch change, with no mention of danger signs pertaining to the stoma. Also, the kind of life to expect following ostomy was not mentioned, leaving patients fearful to go home. Nurses lack of confidence and skills to address patients' needs, subsequently leads to increase in complications, readmissions, long hospital stay, and reduction in patients' quality of life and outcomes.

By improving knowledge and skills through structured teaching on preparing patients in this transition, nurses become confident and skilled in addressing patients concerns. This leads to reduction in complications, readmissions, long hospital stay, and improvement in patients' quality of life and outcomes. The aim of the study was to determine the effect structured teaching on discharge of patients with a bowel stoma, on nurses' knowledge and practice at MNRH. It was a pre-posttest design using purposive sampling on nurses working on general surgical units in MNRH. Structured education on discharge teaching was guided by the 3-step Change Theory by Kurt Lewin. Concepts of increasing driving forces, and reducing restraining forces in moving from prior nurses practices to a new equilibrium were key in guiding the education intervention.

Study Purpose

The purpose of the study was to determine the effect of structured education regarding patients with a stoma, on nurses' knowledge and practice at Mulago National Referral Hospital, Uganda.

Research Question

The research question was; what was the effect of structured education regarding discharge of patients with a stoma on nurses' knowledge and practices in MNRH, Uganda.

Specific objectives.

- To identify the effect of structured education regarding discharge of patients with a stoma on nurses' knowledge in MNRH, Uganda.
- To describe the effect of structured education regarding discharge of patients with a stoma on nurses' knowledge and practices in MNRH, Uganda.

Significance of the Study

Findings from this study may help demonstrate that using structured education in preparation patients with a stoma, is a way to improve nurses' knowledge and practices. This may be through dissemination of information at the unit or hospital level.

Patients with a stoma and their families may also benefit from teaching offered by nurses, gained from structured education. This may lead to a more systematic and inclusive discharge process, and improve their quality of life. Patients may easily adapt to a new way of living and put less strain on their families. Family members may more easily support their family member with optimism to thrive, and cope with daily living.

Findings of the study could be used by nursing leadership to improve discharge planning for stoma patients, and ultimately improving their quality of care. The findings may also challenge nurse leaders to advocate for tailored continuing education for nurses. Structured education may bring success for nursing care, within the healthcare system.

Three-step Change Theory by Kurt Lewin

The 3-step Change Theory by Kurt Lewin Fig. 1 (Burnes, 2004) was used to provide structured education regarding patients with a stoma, to nurses at MNRH, Uganda. Lewin was a physicist as well as a social scientist, who developed the 3-step theory in the 1940s (Petiprin, 2023. He did most of his work in socially constrained populations in the world. The model (Fig. 1) is integral to his earlier work on Planned Change Theory, which he used to develop the Field Theory of Change, Group Dynamics Theory of Change, and Action Research Theory of Change (Burnes, 2004; Chung & Ngtiyen, 2005; Sarayreh, Khudair., & Barakat, 2013).

Lewin (1947) posits that permanence of achieved change requires a 3-step model of unfreezing, moving change, and refreezing. The 3-step model employs elements of all of the 3 earlier models. He used the analogy of a block of ice, where transforming a cube of ice into

another shape, it had to be unfrozen first. Desired change was then done by solidifying the liquid into the desired shape. There has to be motivational factors for change. These could be assumptions dearly held by people who may not only be cautious about change, but may be resistant to it. The status quo must be confronted with the compelling message of change.

The model has 3 stages of unfreezing, change, and refreezing in this order. Lewin defines behavioral change as a dynamic balancing of forces, working in opposite directions. There are restraining forces working against drivers for change, to achieve equilibrium. The model has 3 major concepts: driving forces, restraining forces, and equilibrium. The driving forces cause the change to happen. The restraining forces oppose the drivers for change. These opposing driving and restraining forces cause a shift in equilibrium. The model has successfully been applied in many nursing and non-nursing studies to introduce change (Hussain et al., 2016; Šuc, Prokosch & Ganslandt, 2009). It has also been used at individual, group and organizational levels to promote change (Burnes, 2004; McEwen, & Willis, 2014). The three stages in the theory are described below.

Unfreezing.

Unfreezing is a process of discarding old unproductive ways of doing things. This could be behaviors and values affecting peoples' emotions. These could be entrenched in individuals or a group, and affecting their perception to change. It has 4 stages of assessing the status quo, creating an environment for change, increasing the drive for change, and decreasing the resistance to change (Burnes, 2004; Schriner et al., 2010).

Assessing status quo.

Assessing status quo, is taking a closer look at the present situation necessitating change. This helps to find gaps in processes, the environment affecting change, and people's behaviors. The factors compounding the situation, players involved, and their behaviors are assessed (Burnes, 2004; Schriner et al., 2010).

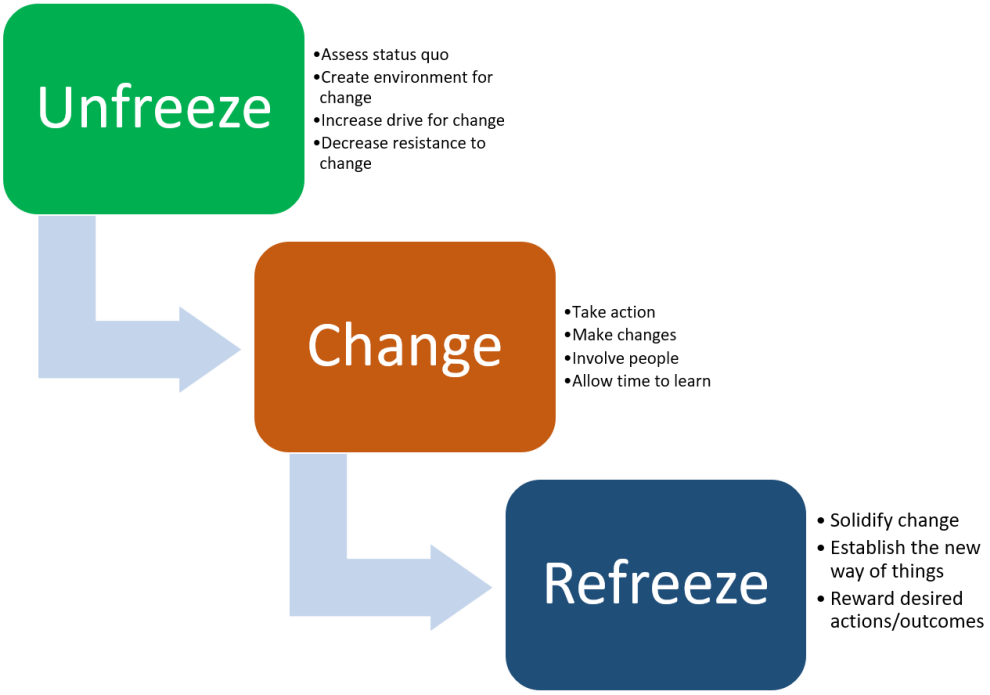

Figure 1. Change Management- An introduction to Kurt Lewin's change management model by Valerian Zaitsev (2020)

Creating environment for change.

Creating an environment for change is based on the above assessment. The factors limiting change, the environment influencing behaviors and forces, and their potency to resist change can be identified and rectified. These forces could be external, or internal, affecting people's output, and their possible response to change. These need to be addressed through sharing experiences, discussions, and forging solutions together. Positive behaviors are fostered, and the benefits of introducing change become vivid (Burnes, 2004; Schriner et al., 2010).

Increasing drive for change.

Increasing drive for change can be by increasing the driving forces thus swaying current behavior away from the usual situation. It can also be by reducing the restraining forces that antagonize movement to the desired equilibrium. Both driving and restraining forces can be used to stabilize at the desired change (Burnes, 2004; Schriner et al., 2010).

Decreasing resistance to change.

Decreasing resistance to change involves confronting resistance. This may be factors contributing to fear of experiencing change, or inadequate knowledge about change. People experiencing change may be hampered by the work environment, or their own external factors. Such restraining forces need to be explored, and addressed through collaboration and discussions (Burnes, 2004; Schriner et al., 2010).

Change.

Change stage involves a transformation of the situation into something new. It involves 4 steps: taking action, making changes, involving people, and allowing time to learn (Burnes, 2004; Schriner et al., 2010).

Taking action.

Taking action involves changing peoples' behaviors, in a change process that is iterative and complex. People's concerns are addressed, and they are encouraged to contribute any solutions or alternatives that may oppose the predictable restraining forces. Training about change, and improvement in communication is crucial (Burnes, 2004; Schriner et al., 2010).

Making changes.

Making changes is the step of bringing something new to staff. It calls for continuous teaching of people about the new innovation and creating awareness. A poster on discharge plan (Appendix A) was put up in the environment experiencing change. More and more

inquiries about change are made from staff for the process to move on (Burnes, 2004; Schriner et al., 2010).

Involving people.

Involving people, such as those experiencing change, wherever change is being introduced is done. Trust is built among those experiencing change, by involving them in the process. It is critical that during this transition, the benefits of change in behavior, and the advancement in process effectiveness and outcomes are realized (Burnes, 2004; Schriner et al., 2010).

Allowing time for people to learn.

Allowing time for people to learn is important for change to take root (Tracy, 2020). Continuing support to staff during this stage, is used to prevent them from reverting to their old behavior. The initiative for change would encourage management to provide support for training (Burnes, 2004).

Refreezing.

Refreezing stage is the third and last stage of Lewin's 3-step change model. It involves 3 stages of solidifying change, establishing new ways of doing things, and rewarding desired actions or outcomes (Burnes, 2004; Schriner et al., 2010).

Solidifying change.

In solidifying change, the new innovation becomes part of the routine. All staff embrace change, and guard against decline to old habits. All future employees are given training on how to effectively use the new change. Periodic in-service training on the topic can be organized to solidify change (Tracy, 2020; Bowers, 2011).

Establishment of new ways of doing things.

Establishment of new ways of doing things is important for refreezing to happen. It is important that staff stabilize at a new equilibrium, safe from degenerating into the old habits.

Each staff member exhibits the new behavior in line with others, thus shifting the norms. This could be in the form of standard guidelines or protocols incorporated in the system, and given nomenclature (Schriner et al., 2010).

Rewarding desired actions or outcomes.

Rewarding desired actions or outcomes, is acknowledging efforts people put into the change. This helps to motivate the good performers and encourages others to improve their behavior. Organizational support for training, and new roles for staff can be found. These staff with new responsibilities can be helpful in teaching and mentoring of new staff (Burnes, 2004; Tracy, 2020).

Operationalizing Kurt Lewin 3-step Change Theory

The 3-step Change theory by Kurt Lewin, was used to guide this study. Due to time constraints, only 2 steps of unfreezing and change, were used to provide structured education regarding discharge of patients with a stoma to nurses. The third step of refreezing was beyond the scope of this study. The 2 steps in the change theory by Kurt Lewin were operationalized below.

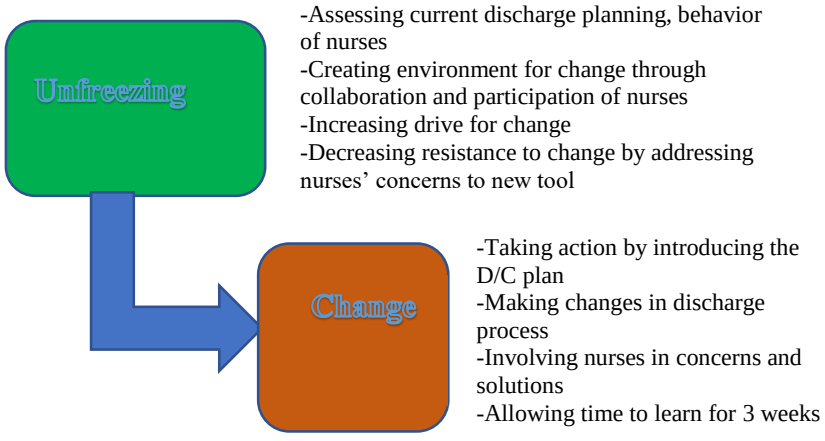

Figure 2. Adjusted Model for Structured Teaching on bowel stoma Selected from Kurt Lewin Change Management model by Kurt Lewin by Valerian Zaitser 21st April 2020)

Unfreezing.

Assessing status quo.

The researcher took a closer look at the situation on the discharge of patients with a stoma, and discussed with the nurses. Possible patients' complications, and dangers based on current nurses' knowledge and practices without use of a tool were explored. Data on gaps in educating patients was used, such as a patient's challenge when inadequate education was offered haphazardly by nurses. The researcher asked patients with a stoma who are readmitted with complications, to share their experiences before and after discharge with nurses. The researcher together with nurses discussed the environment on the general surgical wards. Negative forces regarding systematic approach to discharge were noted, such as limited time and a huge number of patients. Roles and interactions of nurses working on the general surgical units were discussed as well as handling of such patients.

Creating environment for change.

Based on predicted restraining forces above, the nurses reacted and discussed what was needed to achieve the best outcomes. The researcher identified potency of these forces affecting nurses' norms, when discharging patients in the initial session of teaching. The researcher discussed with nurses the external forces affecting them, such as their individual personalities, upbringing, school experiences, and the communities from which they come.

Nurses' dependency on one another in adversity during past experiences was also discussed. The researcher put emphasis on working as a group. Also, a systematic approach to discharge, supported by literature was discussed. The strength of this approach was discussed with nurses to influence change. Support from nurse leaders, and sharing information, skills were key. The researcher and nurses explored the working environment in terms of supplies, expertise, interdisciplinary team support, the nature of patients being attended to and opportunities for change.

Increasing drive for change.

Drivers of change oppose restraining forces antagonizing change. Nurses' involvement in the structured education on discharge helped to propel drivers of change and counter restraining forces. For unfreezing to happen 3 methods were employed: increasing the driving forces that can sway current behavior away from the usual situation; reduce the restraining forces that antagonize movement to the current equilibrium; and use of both measures (increasing driving + decreasing restraining forces)

The researcher was aware that change may be perceived as unsettling to a nurse's knowledge and practices. She encouraged the nurses to perceive structured education on discharge as advancing their strengths in learning and discovery in transition for these patients. When obstacles or opportunities became vivid to nurses the researcher acknowledged them, and provided support. The researcher also addressed fears about systematic approach to discharge, such as time it might take, problems that may arise as a result, being overwhelmed, and failing in using it, and loss of routine, by discussing with the nurses attending to patients with stoma.

Reducing resistance to change.

Nurses had a fear of experiencing the preparation of patients with stoma using systematic approach. Also, nurses were not knowledgeable about discharge plan (Appendix A). Fear for such change can affect nurses' behaviors working on such patients. They were initially not confident in using a systematic approach to discharge. The researcher identified and shared external negative forces affecting the nurses, such as individual personalities, upbringing, school experiences, and communities with the group.

Nurses' internal environmental challenges for change such as supplies, expertise, interdisciplinary team support, and the nature of patients were shared with the group. Challenges to the nurses' dependency on one another in adversity during past experiences,

were identified, shared and discussed with the researcher. Challenges to nurses' routine and possible hindrance to change, were identified and discussed with researcher. The researcher addressed possible perceived time delays, duplication of work, challenges in using systematic approach through training and discussion.

The researcher emphasized the need for group or unit leader in structured education. Ordering appropriate stoma supplies and weighing costs versus duration of use were discussed. The researcher encouraged nurses to voice their concerns in order to find solutions. The researcher encouraged nurses to seize the opportunity, to deal with gaps in D/C planning in participative and collaborative manner. Also they were encouraged to reflect on the new experience and gain a new insight of the situation.

Change.

This stage of providing structured education regarding patients with a stoma for nurses involved taking action, making changes, involving nurses, and allowing time for nurses to learn. This stage of change was iterative and took 3 weeks.

Taking action.

The researcher addressed nurses' concerns. They were encouraged to contribute any solutions or alternatives that opposed predictable restraining forces. Sharing individual beliefs, experiences, skills, and competencies with the team were crucial in encouraging drivers of change. The researcher trained nurses, provided education resources, and discussed with them 3 cases. This helped them to embrace a systematic approach to discharge. The researcher ensured improvement in communication, documentation, commitment and behavior of nurses towards change.

Making changes.

Structured education regarding discharge of patients with stoma was done by the researcher to all staff working on general surgical units. The researcher continuously taught

nurses about systematic approach to discharge. She put a poster on D/C plan (Appendix A) in the duty and procedure rooms, gave handouts, and demonstrated teaching with real patients during discussions.

Involving nurses.

The researcher informed the department of general surgery about the education intervention and appealed for their support. Nurses discussed, shared concerns, and participated in preparation of patients for discharge. The researcher built trust among the nurses during this transition. This was important in improving nurses' knowledge and practices. It consequently propelled process effectiveness and positive patients' outcomes.

Allowing time for nurses to learn.

It was critical that driving forces outweigh the restraining forces at this level. The researcher offered continuing support to the nurses during this time. She made an effort to see that the nurses do not to revert to their old behavior, by reminding and encouraging them. While the restraining forces were not easily be identified, the researcher made an effort to ask group members what they are experiencing. Therefore, more and more inquiry from the nurses about any concerns regarding change were made. Nurses shared their experience following education intervention. Restraining forces were identified, and addressed as a group. This helped nurses to forge ahead, and moved from less acceptable to more acceptable behavior. The initiative for change encouraged nursing management to advocate for continued training.

Operationalization of Terms.

Key terms for this study included: stoma, colostomy, ileostomy, nurses' knowledge regarding D/C planning for patients with a stoma. Also described is nurses' practice regarding D/C planning for patients with a stoma, structured education on discharge plan (Appendix A) of patients with a stoma, and discharge planning for patients with bowel stoma.

Stoma.

This was referred to as an artificial permanent or temporary opening, especially made in the abdominal wall in open surgical procedures for patients whose medical records indicated so. Patients who had such opening were a subject for teaching and preparation for discharge by nurses.

Ostomy.

This referred to an open surgical procedure that created an opening (a stoma) connecting either the small intestine or the large intestine to the exterior of the abdominal wall for elimination of fecal matter. Nurses referred to the stoma types, output in terms of volume, consistency and frequency during teaching of patients for discharge.

Colostomy.

This referred to either through observation of medical documentation of an open surgical procedure that created an opening (a stoma) connecting the large intestines to the exterior of the abdominal wall for elimination of fecal matter. Nurses referred to different types of colostomy, output in terms of volume, consistency and frequency during teaching of patients for discharge.

Ileostomy.

This focused on either through observation of medical documentation of an open surgical procedure that created an opening (a stoma) connecting the small intestines to the exterior of the abdominal wall for elimination of fecal matter. Nurses referred to different types of ileostomy, output in terms of volume, consistency and frequency during teaching of patients for discharge.

Nurses' knowledge regarding D/C teaching of patients with a stoma.

This focused on the level of Nurses' awareness in preparation of patients for discharge before and after education intervention.

Nurses' practices regarding D/C teaching of patients with a stoma.

This considered the level of Nurses' skills in preparation of patients for discharge before and after education intervention.

Discharge planning for patients with a bowel stoma.

This referred to teaching a patient the necessary skills to enable him/her to manage the stoma independently. Nurses offered information, tools and resources to support the patient for a successful transition from hospital to home.

Structured education on discharge of patients with a stoma.

This entailed a well-defined and organized approach to nursing teaching on discharge of patients with a stoma. It encompassed a clear systematic approach to teaching patients with objectives, and systematic progression through essential competencies of knowledge and practices about the process.

Summary

This chapter looked at the introduction to the study, the background of the problem, the problem statement, study purpose, research question, specific objectives, and significance of the study. It also looked at the 3- step Change theory by Kurt Lewin, and how it was operationalized provide structured education regarding patients with a stoma to nurses in improving their knowledge and practices. Operationalization of terms in this study were also presented. The next chapter discussed the literature reviewed, and the third chapter described the methodology that was used in this study.

Chapter Two: Review of Literature

This chapter presented literature that has been reviewed on the burden of conditions leading to bowel stomas, types and incidences worldwide, implications a patient with stoma experiences. The role of a nurse in performing effective D/C planning for patients with a stoma and related positive patient outcomes is also covered in this chapter. Also discussed are challenges with knowledge and practice that nurse's face during D/C planning globally and subsequent negative consequences for the patient with stoma. Various efforts aimed at improving nurse's knowledge and practice regarding D/C planning of patients with a stoma are described. Finally, it describes the gap that this research study addressed, the need for the structured education regarding discharge of patients with a stoma to improve nurses' knowledge and practices.

There are Increasing Number of People, Requiring an Ostomy Each Year

A stoma is an artificial permanent or temporary opening, especially made in the abdominal wall in surgical procedures (Merriam-Webster, n.d.). An ostomy is an operation to create an opening (a stoma) from an area inside the body to the outside. There are 2 major types of bowel stomas; ileostomy and colostomy. Both types will be described in detail.

Ileostomy.

An ileostomy is an artificial opening created surgically, to connect the small gut to the exterior of the abdomen for elimination of fecal matter. It is created on the lower side of the right abdomen. The stoma output is liquid to paste, and contains digestive enzymes. Ileostomies and colostomies can be classified as temporary or permanent depending on whether reversal will be done or not.

A temporary ileostomy can be created to treat or rest the lower part of the gut. Reversal of the stoma can be done after a period of 3-6 months or even years, depending on the condition. It can also be the first stage for creation of an ileo-anal reservoir or J-pouch. A

permanent ileostomy is created to permanently rest or remove the distal part of the gut. This may be done due to cancer of the gut. A temporary colostomy is created for a short-term use, ranging from weeks to years to allow healing or rest the part of the colon. Colostomy reversal is done afterwards and normal elimination of stool ensues. On the other hand, a permanent colostomy is created for long term use due to removal of a diseased part of colon.

An ileostomy may be created due to ulcerative colitis, Crohn's disease, familial polyposis, and bowel cancer (Ambe et al., 2018; American Cancer Society, 2019). In some developing countries, bowel stomas have been created as a result of small gut rupture in enteric fever (Ahmad, Sharma, Saxena, Choudhary, & Ahmed, 2013; Chaudhary et.al., 2015; Nakanwagi et al., 2021).

There are 3 types of ileostomies; standard or Brooke ileostomy, continent ileostomy (abdominal pouch), and ileo-anal reservoir (J-pouch). Standard or Brooke ileostomy is the most common of ileostomies performed for managing ulcerative colitis, Crohn's disease, familial polyposis, and cancer. The end of the ileum is brought out through the abdominal wall, and sutured to the skin. The output is liquid with digestive enzymes and without control. The pouch can be emptied. In continent ileostomy, the small gut is looped on to itself to form a reservoir within the abdomen. A nipple valve is made from part of the ileum, and a catheter is inserted regularly to empty the reservoir. The output is liquid to paste. This procedure is indicated for ulcerative colitis, familial polyposis, and cancer of the lower gut. In ileo-anal reservoir, a pouch is made from ileum and rectum, placed in the pelvis and connected to the anus. Waste is stored in the pouch, and when there is urge, the stored fecal matter moves to anus allowing the sphincter to eliminate it. This allows for elimination of soft or formed stool with natural bowel movement (Ambe et al., 2018; American Cancer Society, 2019).

Colostomy.

A colostomy is an artificial opening created surgically, to connect the large gut to the exterior of the abdomen for elimination of fecal matter. In colostomy, nutrients are absorbed in the ileum, but re-absorption of water and storage of stool prior to moving content to anus is hindered. The higher a segment where the colostomy is created, the shorter the functioning colon. The lower the segment the longer nutrients take in the colon, and thus production of formed stool.

Indications for colostomy may be due to a number of factors. The most common indication for colostomy creation is colorectal cancer (Ahmad et al., 2013; Silva, Andrade, Luz, Andrade, J.X., & Silva, G.R.F, 2017). Diseases of the large bowel such as diverticulitis, inflammatory bowel disease, obstruction, injury, and birth defects are some of the other reasons for colostomy creation (American Cancer Society, 2019; Ambe et al., 2018; Ercolano et al., 2016; Kadam & Shinde, 2014; Lemini et al., 2021).

A sigmoid volvulus is quite a common indication for creation of colostomy in the African race (Ssewanyana et al., 2021; Wismayer, 2016). In sub-Saharan Africa, while diagnosed colorectal cancer cases may be lower, other causes such as enteric fever, complicated with gut perforation has led to stoma formation (Bulage et al., 2015; Chalya et al., 2012; Contini, 2017). Abdominal trauma is another factor contributing to creation of stoma in the sub-continent (Traoré et al., 2017). The high prevalence of HIV, and tuberculosis in the sub-continent has led to increasing cases of abdominal tuberculosis with gut involvement (Islam, Clarke, & Thomson, 2014).

The transverse colostomy is one of the most common colostomies. It is created at the right or middle part of upper abdomen. Stool exits before reaching the descending colon. Loop transverse colostomy is seen as one very large stoma with 2 openings for stool, and mucus. Mucus elimination, can be through the anus or the stoma. Double barrel transverse

colostomy, involves complete transection of the distal bowel, creating stoma for stool, and mucus. Both transected ends of colon if brought out through abdomen can be separated by a small amount of skin. Sometimes the one for mucus is closed and left in abdomen to allow elimination via anus. The double barrel transverse colostomy allows elimination of soft and loose stool with digestive enzymes. Management of output, is by use of a drainable pouch.

An ascending colostomy is a rare type of colostomy created on the right side of the abdomen, leaving a very short section of colon active. Ileostomy is preferred in this case. The output is liquid or paste-like, with a high level of digestive enzymes. Descending colostomy is created at the lower left side of the abdomen. The sigmoid colostomy is the most common. It is created just a few inches lower than the descending colon. Both types can be double barrel or single ended. The latter is more commonly created. Output is more solid, controlled and more regular. Also, it has no digestive enzymes, thus is less irritating to the skin. Stool elimination is once every 2 to 3 days, by reflex action. There is spilling in between eliminations. Elimination can be influenced by eating certain foods at certain times. Gut irrigation can be done depending on how regular elimination was, prior to surgery (Ahmad et al., 2013; Ambe et.al., 2018; American Cancer Society, 2019).

Incidences globally and in Uganda.

Statistics of bowel stomas are not well documented worldwide, but there is a growing number of colorectal cancers in the adult population worldwide contributing to this (Findik et al., 2019; Motto et al., 2021). It was estimated that over 1.8 million new cases were diagnosed with colorectal cancer worldwide, and over 900,000 deaths, in 2020 (Ferlay et al., 2021).

Colorectal cancers are the third most common cause of cancer deaths behind prostate, and lungs among men, and in women, the third behind breast and lungs, in Europe, Oceania and the Americas (Ferlay et al., 2021). In the above geographical areas, colorectal cancer is

approximately 12.6% of all cancers among men, and 14.1% in women. The rest of the world including Africa have an increasing number of cases, although the number is comparatively lower. These are reflected in 7.7% among men, and in women 7.9 % (Boyle, & Langman, 2000). In Uganda raw admission data from Mulago National Referral Hospital (MNRH), showed that an average of 27 bowel ostomy procedures, are performed in the hospital each month (Mulago Hospital Records, July 2022-June 2023).

There are higher incidences of stoma creation among the population with advanced age in the developed world, compared to the developing world. This may be due to advancement in technology in early screening and diagnosis for cancer of the gut. In the developing world, late diagnosis with inoperable cancer do occur. This may also be a factor for fewer patients with colostomies (Boyle, & Langman, 2000).

The estimated mean age of patients getting a bowel stoma varies within country and across continents. It may depend on such factors as income, advancement in medical technology and geographical environment. It is estimated to be 50 years and above across China, Brazil and Turkey (Cengiz & Bahar, 2017; De Camposa et al., 2017; Chunli & Ying, 2014; Silva et al., 2017).

However, the mean age for stoma creation in sub-Saharan Africa, is estimated to be lower. This may be related to having more ileostomies resulting from non-malignant conditions such as abdominal tuberculosis and typhoid in a younger population. Estimated range of ages is between 36.7 and 42.8 years in Tanzania and Cameroun (Massenga et al., 2019; Motto et al., 2021). Ssewanyana et al, 2021, in their study done at a national referral hospital in Uganda, reported mean age of 44 years while Bulage et al., 2017, reported mean age of 28 years for typhoid related gut perforations in Kampala, Uganda.

Bowel stoma formation is on the rise globally, with a number of factors that play a part in their creation. These vary depending on geographical location globally, how

advanced economies are, access to advanced diagnostic and medical services and age of these populations.

Surgical Stoma Formation has Physical, Psychological, and Social Implications for a Patient

Patients often suffer from physical, psychological, and social implications leading to reduced quality of life. Each of these critical implications were discussed.

Physical implications.

Patients with stoma may experience many complications, regarding their physical functioning, thus greatly impacting their quality of life. Complications can occur in the early stage of stoma creation and later on.

Early physical complications in bowel stomas may be related to sub-optimal site demarcation, especially in emergency operations, individual patient factors, poor surgical technique, and unsatisfactory care. Skin complications are most commonly observed, and can be related to obesity, and diabetes mellitus (Babakhanlou, Larkin, Hita, Stroh & Yeung, 2022). Skin problems range from mild dermatitis to severe ulceration. Itching and excoriation can result from fungal or bacterial infection. Frequent changing of pouch can also cause skin damage. Plaster if used on the pouch, can also cause skin erosion (Babakhanlou et al., 2022; Zewude, Derese, Suga, & Teklewold, 2021).

Patients with a bowel stoma may experience leakage of stool. This causes cutaneous erosion especially in an ileostomy, where the stoma content has proteolytic enzymes. High output stomas (> 1200mls per day) can occur early in the post-operative period, especially in ileostomy where there is reduced absorption. Dehydration, electrolyte imbalance, and kidney injury may result. If the patient is undergoing chemotherapy, fluid intake may be reduced, and diarrhea may be present (Carmel et al., 2022; Smith, & Boland, 2013).

Patients with stomas also experience lack of sleep, remaining awake for fear of damaging the stoma or getting the bag full (Claessens, Probert, Tielemans, 2015). They experience sleep position restriction for the sake of managing the bag (Ercolano et al., 2016).

Stoma edema is expected in the immediate post-operative period. During this time, application of pouch may be a problem. An ideal cut for skin barrier to accommodate the stoma is crucial, not to damage the stoma or leave too much space for content to irritate the peristomal skin. Patients may suffer from fatigue, lack strength, and experience aches and pains (Ambe et al., 2018; Babakhanlou et al., 2022; Ercolano et al., 2016; Motto et al., 2021).

Patients with a stoma may experience excess gas from the stoma, which may be associated with some types of food and beverages intake. Loss of appetite may subsequently result from such food restrictions. Malnutrition is another complication related to prescribed dietary intake (Babakhanlou et al., 2022; Krogsgaard et al., 2022).

Late physical complications, may be due to individual factors such as obesity, malnutrition, and intra-abdominal pressure. Surgical technique such as an excessively large opening relative to the rectus sheath, may result in complications. Late physical complications include: muco-cutaneous separation, stoma stenosis, stoma retraction, parastomal hernia, and stoma prolapse (Babakhanlou et al., 2022; Zewude, et al., 2021).

Stoma necrosis may be the result of tension from tight ligatures, and obesity of the patient. Stoma stenosis and obstruction may be as a result of ischemia, necrosis, retraction, and fistula formation. The patient with stoma stenosis may experience a noisy flatus (Babakhanlou et al., 2022).

A parastomal hernia is a type of incisional hernia allowing abdominal contents to protrude through an abdominal wall defect in the stoma. Parastomal hernia may be due to obesity, malnutrition, prolonged duration with a stoma, steroid use, tobacco use, pulmonary disease, and surgical technique. Presence of ascites and advanced age may also cause

parastomal hernia. Hernia can result in strangulation, obstruction, and perforation of the gut. Stoma prolapse is where the proximal gut folds back onto itself and protrudes through the stoma. This is more common in transverse loop colostomy (Babakhanlou et al., 2022).

Psychological implications.

People with bowel stoma may experience many psychological challenges. These range from such issues as negative self-concept, lack of independence, and slow or lack of adaptation to stoma.

Studies show that some patients may suffer from anxiety about pouch leakage, embarrassment, suffer from loss of control, and see themselves as a burden to others (Cengiz &Bahar, 2017; Ssewanyana et al., 2021). Some may experience a feeling of bad odor all the time (Cengiz & Bahar, 2017; Krogsgaard et al., 2022). Patients may also experience uncertainty, helplessness and frustration (Sultan, 2019).

Reports indicate that patients felt restricted in performing Activities of Daily Living (ADLs) due to stoma-related problems, such as bad odor, leakage, skin problems, stool consistency and frequency of the need for pouch change. They reported feeling a of lack privacy, limitation on the use of particular clothing, and not being able to perform self-care (Cengiz & Bahar, 2017; Krogsgaard, et al., 2022).

Patients with a bowel stoma may be slow or fail to adapt to having a stoma. This may result in insufficient self-care, inadequate social support, and persistent physical complications. They may not be able to do self-management tasks, or may struggle to carry out necessary steps of stoma care. Patients also fail to adapt because of feeling of uncertainty, and stigma. (Cengiz & Bahar, 2017; Sultan, 2019).

Social implications.

Studies show that patients with stoma may experience clothing style change. They may find it difficult to choose clothing, and also feel embarrassed with what they have to

wear. They may also have concerns of being noticed that they have a stoma, thus feel the need to hide it (Özşaker & Yesilyaprak, 2018; Hubbard et al., 2019).

Patients with a bowel stoma, may suffer from social isolation. They may decide not to engage with family or members of the community. In other situations, the social environment may not be conducive to patients with stoma. Some see themselves as a cause of distress to their families. Members of family or society may not easily engage, or provide support to such patients. (Özşaker & Yesilyaprak, 2018).

Many may not be able to resume their job, or have to change to a new job. Resumption of work depends on individual recovery, ease of pouch management, and how physical one's job is. Patients with stoma may not wish to share information on their stoma with workmates. The need for frequent use of rest rooms and the lack of private accommodation may be a hindrance to resuming work. Some types of jobs may be in situations that cause excessive sweating, leading to poor adherence of pouch (Settlemire, 2020). In one study it was reported that where stoma closure was possible, there was improved chance of resuming and staying at work compared to those with a permanent stoma (Bianchi et al., 2022).

Bad odor is another common distressing symptom that may result in loss of appetite, restrict daily activities, limit socialization, lead to feeling embarrassed, and experiencing low self-esteem (Babakhanlou et al., 2022; Krogsgaard et al., 2022).

Patients may suffer socially because of inability to bathe on a daily basis, depending on the pouch change schedule (Özşaker & Yesilyaprak, 2018). Patients may not routinely participate in social activities such as non-contact sports, for fear of getting leakage. Some do keep their stoma as a secret, even from their family members (De Camposa et al 2017; Chunli & Ying 2014; Özşaker & Yesilyaprak, 2018).

Patients' sexual life may be affected by fear of engagement with their partners. Also, partners may have separated from them. They may lack motivation to engage in sex, and some men experience retrograde ejaculation. They may be reluctant to engage in intimate relationship, and remain with just a few friends. Some are dissatisfied with their body image, and suffer from low-esteem (Davis, Ramamoorthy, & Pottakkat, 2020; De Camposa et al 2017; Özşaker & Yesilyaprak, 2018; Chunli & Ying, 2014)

Having a stoma affects the patient immensely. Their physical functioning may be affected by pain, discomfort and feeling of unease. Their social engagement may be reduced tremendously due to failing to adjust to new life. They may be affected psychologically by the mere presence of stoma, and inadequacies related to self-concept and self-care.

Effective discharge planning for patients with a stoma is critical for positive patient outcomes.

This section described effective D/C planning of a patient with stoma. Patient outcomes as a result of effective D/C planning were discussed.

Effective Discharge planning.

Effective discharge planning (Appendix A) for patients with stoma is performed by a nurse to help patients adjust to a new life and continues from admission until they go home. It involves assessment for readiness, methods used to teach patient, pouch management, peristomal skin care, problems to report, living with a stoma, diet, medication, physical activities, follow-up care and use of support groups (Carmel et al., 2022).

Role of a Nurse in performing effective D/C planning.

Nurses perform a critical role in educating patients with stoma during D/C planning. Newcombe (2016), highlighted the importance of providing education and emotional support to patients in adjusting to illness and recovery. Colwell (2022), emphasized the need for a nurse to help the patient find a pouching system that protects peristomal skin, acceptable and

accessible. Russel (2020), describes parastomal hernias and patients' fear about exercise. She suggests use of person-centered approach, strength-based language and advice on appropriate rehabilitation exercise program.

Globally nurses have challenges in performing ostomy discharge leading to negative patient's outcomes.

The section below described nurses' knowledge gaps regarding discharge of patients with stoma. Practice gaps regarding the same were also described.

Nurses' knowledge gaps.

Nurses' knowledge on such issues as classification of stoma, collecting equipment and awareness on network of support to the patients, were reported to be low in some studies (Bagheri, et al., 2017; Nieves et. al., 2017Sultana, 2016; Oliveira et. al., 2019). Also, gaps were reported on knowledge about diet, awareness about availability of nurse specialist, follow-up, resumption of sexual relations, complications, resumption of activities, and stoma output (Bagheri et al., 2017; Culha et al., 2016; Sultana, 2016).

Gap in nurses' knowledge regarding classification of stoma were reported in some studies (Bagheri et al., 2017; Nieves et. al 2017; Sultana, 2016; Oliveira et. al., 2019). Awareness about classification of stomas, or the type of surgery, makes it easier for a nurse to plan personalized discharge teaching. The type of stoma determines stoma output frequency, consistency of output, and the choice of appropriate pouch and accessories. Lack of awareness may to lead complications.

Studies show that nurses have gaps in knowledge about types of stoma equipment and accessories. This may lead to leakage of stoma output, and damage to peristomal skin (Bagheri et al., 2017; Nieves et. al 2017; Sultana, 2016). There are various types of pouches and accessories available, for proper management of patients with different types of stomas.

An appropriate stoma appliance is chosen to prevent, or deal with possible peristomal skin complications.

Studies indicate that nurses do not have awareness about the support available to patients. This poses delays in their transition to their new life (Lapkin et. al, 2018; Oliveira et. al., 2019). A network of support for patients is critical as they transition to a new life. This can be in the form of material, psychological, and social support, to address the patient's needs.

When performing discharge planning of patients with a stoma, nurses advise patients on appropriate foods and those to avoid. There are a number of complications related to the intake of some foods in patients with a stoma. Complications such as bad odor, passing a lot of gas, diarrhea, constipation, dehydration and intestinal obstruction, can result when a patient is not given proper advice on what to consume. (Cross, et al., 2014; Culha et al., 2016; Sultana, 2016).

Studies show that there is lack of awareness among nurses regarding follow-up of patients (Diaz et al., 2018; Gholizadeh, Delgoshaei, Gorji, Torani, &Janati 2016; Silva et al., 2017). Nurses should be aware of what care can be accessed in nearby centers, when a patient leaves hospital. This helps them adjust to the community.

Bagheri et al. (2017), in a cross-sectional study on 63 nurses working in 2 general hospitals and a cancer hospital in Iran, reported that only half of nurses were aware of when patients may resume of sexual relations. On the other hand, Bird (2019), in his personal journey dealing with sexual issues of patients, highlighted sexual identity, gender roles, cultural, social and biological issues as contributing factors to nurse and patients' reluctance to discuss sexual relations. Some people feel embarrassed to discuss sex, especially with strangers. Patients with stoma also fear to inquire about sex, they feel their situation is

inevitable. Some experience loss of interest, fear, and separation from spouses. Nurses need to commit time to discuss sexual relations during discharge planning.

Reports indicate that there are gaps in nurses' awareness about complications in patients with a stoma. Bagheri et al. (2017), reported that only 50% of nurses were aware of adult patient's possible complications. Hashem and Abusaad (2016) reported poor knowledge in prevention and management of stoma complications, in 35 nurses working in-patient pediatric surgery department and pediatric surgery ICU at Mansoura University Children's Hospital, Egypt. Nurses during discharge planning can ably educate patients about such if they are knowledgeable.

Studies show that nurses do not adequately advise patients on when and how to resume activities. Bagheri et al. (2017), reported that only 50% of nurses were knowledgeable about authorized activities at 2 general and a cancer hospital in Iran. Culha et al. (2016), reported that nurses were only able to offer on 25% of information regarding activities of daily living to patients in a university research hospital and two state hospitals at Eskisehir in Turkey.

Reports indicate that some nurses are not knowledgeable about expected stoma output to effectively guide patients. This may result in stool leakage (Abdulmutalib et al., 2018; Culha et al., 2016; Wong, et al., 2011).

Nurses practice gap.

Nurses practice gaps regarding discharge planning for patients with bowel stoma have been reported in various studies. There are gaps in application of stoma bag, non-use of discharge planning, improper management of stoma, reluctance in responding to patient's calls, and sub-optimal assessment of patients. Also, gaps in discussing stoma output, psychosocial issues of patients, nutritional requirements, and foods to avoid have been reported (Golpazir-Sorkheh et al., 2022; Dalmolin et al., 2020; Sujianto, et al., 2020).

Studies show that nurses have gaps in application of stoma bag (Dalmolin et al., 2020; Nieves et. al, 2017). It was also reported that there were gaps among nurses in use of accessories (Poland et al., 2017; Sujianto, et al., 2020).

It was reported in some settings that nurses do not have a standardized tool in performing discharge of patients with a stoma (Dalmolin et al. 2020; Wong, et al. 2011). Structured education on D/C planning guides nurses in carrying out the process for patients with stoma. Some issues with the patient may not be addressed if a systematic approach in discharge not used in the process.

It has been found in some studies that nurses do not demonstrate proper cleaning and measuring size of stoma to patients. This may result into peristomal skin complications (Lapkin et.al, 2018; Sujianto et al., 2020).

Studies indicate that nurses take longer to respond to patients calls**,** leading to desperation and possible complications (Maurício et al., 2020; Sujianto et al., 2020). Patients with stoma depend on nurses to overcome their fear, especially in the early days following ostomy. When patients need help from nurses to address their concerns, a prompt response is expected.

It was reported that nurses performed a sub-optimal assessment in some studies (Culha et al., 2016; Wong, 2011). Studies show that psycho-social concerns of patients are not addressed. This may delay their physical functioning, recovery, and reintegration in society (Golpazir-Sorkheh, Ghaderi, Mahmoudi, Moradi, & Jalali, 2022; Poland et al., 2017). Patients suffer from depression, lack of privacy, worry about the future, and all need to be addressed in the process of discharge planning.

The above section described gaps in nurses' knowledge. These ranged from classification of bowel stoma, nutrition, management of stoma, frequency of stoma output, resumption of sexual relations to other activities and social support. Practice gaps included

non-use of systematic approach to discharge of patients, sub-optimal assessment of patients, and lack of proper demonstration regarding cleaning the stoma and measuring stoma size. Issues that may arise from these gaps have also been described. These inadequacies rendered poor patient adjustment with stoma, and readmissions common due to complications.

Globally Efforts to Improve Nurse's Knowledge and Practice Regarding D/C Planning have been Tried

This section discussed various efforts used to improve nurses' knowledge and practice regarding D/C planning. Lectures, focal group discussions, demonstrations, distance education and use of a systematic approach to discharge have been used in various settings.

Lectures, focal group discussions and demonstrations.

Various strategies have been employed to enable nurses to improve on knowledge and practice in many settings. Hashem and Abusaad, 2016, used lectures, demonstrations and group discussions at Mansoura University Children's Hospital in Egypt, with improvement in knowledge about intestinal stomas, precautions and care of children with stomas. Similarly, Hanaa, Jehan, and Sahar (2020) used lectures and demonstrations at Oncology Centre and Minia University Hospital with some improvement in nurses' knowledge about colostomy care. Also, Shreef, Abdallah, and Shaib (2022) used lectures and demonstrations in Khartoum Sudan, with improvement in nurses' practice on stoma care. Omar and Sadiq, 2023, used mediation program to improve nurses' ostomy practices in Iraq.

Distance education.

Alencar et al. (2018) used distance education in a regional health Centre/ Nortre de Teresina, Brazil, to greatly improve nurses' knowledge on classification of stomas, indications, and immediate post-operative care. Similarly, Hoeflok (2010), used online education at Gastroenterology & General Surgery unit at St. Michael's Hospital in Canada, to improve non- specialized nurses' assessment and documentation of stoma care.

Systematic Approach for effective D/C planning.

A systematic approach to discharge planning (Appendix A) for patients with a stoma and their families, is coordinated by nurses following surgery. Nurses use it to offer information and resources to support a patient for a successful transition from hospital to home. Discharge plan on patients with stoma have a number of items. The process involves assessment for readiness to learn and pouch management. It also involves skin care, diet management, and medication precautions. Patients are also advised on physical exercise, problems to look out for, support groups and follow-up (Carmel, Colwell & Goldberg, 2022).

The first enterostomal therapist was Norma N. Gill, and is credited for establishing the first enterostomal therapist nursing program. The American Association of Enterostomal Therapy was established in 1968, later becoming International Association of Enterostomal Therapy. From this came the current Wound Ostomy and Continence Nursing society (WOCN). The society's initial focus was on ostomy management alone but today wounds and continence are inclusive.

The first discharge planning guide titled: **Discharge planning for a patient with a new ostomy; Best practice for Clinicians** was developed in 2014 by WOCN. In 2016 a guide for new ostomates from home healthcare was released. The current version (2022) is a review based on studies carried out from 2000-2022. It is a guide for ostomy management of adult patients with fecal or urinary diversions with focus on patients and caregivers. Li, Yuan, Geng, Chen, Zhang… & Yue. (2022) in quality assessment of Clinical Practice Guidelines on Ostomy Care, rated WOCN as grade A, among the 5 top rated guidelines published from 2012-2021. Many researchers have used various versions of WOCN guidelines in research, and establishment of their own guidelines, (Nurlelia, Roma, & Rapitos, 2021; The New Zealand Stomal Therapy National Clinical Guidelines). The adapted version of the discharge plan (Appendix A) for this study was based on elements in the guide except for dealing with

urostomy, the use of the term certified nurse, ostomy equipment supplier information, and hotlines of support groups in America.

Various standards have been developed and taught nurses to aid in preparation of patients with a stoma for discharge (Registered Nurses' Association of Ontario, 2019; Peckford, n.d.). Bare et al. (2017), used education on evidence- based and content validated standardized Ostomy Algorithm Tool at 300 home care centers, in Santa Clara, California USA, with some success in nurse's confidence and comfort. Similarly, Millard et al. (2020) used education and standardized discharge criteria at a home healthcare agency, in Southern California, USA, with gains in nurse's confidence at discharge planning of patients with a stoma.

Summary

While many interventions have been developed to directly improve patients with stoma, not much has been studied regarding teaching nurses on how to educate patients with stoma. Also, there isn't much that has been studied in the developing world on use of a systematic approach to discharge of patients with stoma. This study assessed the effect of use of structured education regarding discharge of patients with a stoma on nurses' knowledge and practices in MNRH, Uganda.

Chapter Three: Methodology

This chapter presented the methods and design that were used for this study on the effect of use of structured education regarding discharge of patients with a stoma on nurses' knowledge and practices in MNRH, Uganda. The following topics were described: the study design, study population, study sample, sampling, sample size, and setting. Also, described, is the data collection tool, data collection procedure, inclusion criteria, data analysis, and rights of human subjects.

Design

A pre-test posttest design was used for this study. The choice of design allowed for data to be collected for more than once from the same group. The intervention in this study was structured education regarding discharge of patients with a stoma offered to nurses.

Study Population

The study population were nurses preparing ostomy patients for discharge from general surgical units in regional referral hospitals in Uganda.

Setting

Mulago National Referral Hospital is a super specialized hospital located on Mulago hill, 2 miles north from Kampala city center, Uganda, is the country's largest hospital. It is a major national referral and teaching hospital. It has a bed capacity of 1600. The hospital was purposively chosen because it is a teaching hospital offering specialized care including colorectal, upper gastrointestinal, and general surgical care. The general surgical units performed approximately 27 ostomies each month.

Sample

The study sample comprised of nurses from 3 general surgical units at Mulago National Referral Hospital, Uganda. These nurses attended to patients who had undergone a bowel ostomy. All nurses who were working on general surgical units and caring for patients

who had undergone bowel ostomy in Mulago National Referral Hospital, were invited to participate in the study. Purposive sampling technique was used to recruit nurses in the study. This allowed for selection of participants who are most relevant to answer the research question. Structured education intervention was best suited for respondents who were involved in preparation of patients for discharge. The study targeted only nurses working on general surgical units in MNRH, essentially limiting the sample size (Polit & Beck, 2012).

Sample size.

The desired sample size was 30 nurses drawn from 3 general surgical units at MNRH. A census was done to identify and recruit nurses for participation in the study. A potential list of participants was created to enable researchers select a representative sample. Of the 30 participants, 2 were on annual leave and 4 declined participation because of personal reasons, and twenty-four (24) consented to take part in the study. Out of these 24, one person for personal reasons did not complete posttest, neither attended training. So, 23 respondents did pretest intervention and posttest. Their data was checked was checked by researcher and then computed.

Inclusion Criteria

All nurses who were working on general surgical units at the time of data collection were given an informed consent form to sign (Appendix B) and invited to participate in the study. This study had no exclusion criteria.

Description of the Tool

The questionnaire was developed by the researcher, using themes from literature. There was no need for translation of the questionnaire because respondents understood English.

Item Description.

The questionnaire (Appendix C) had 3 sections. These were demographic data, knowledge and practices of nurses regarding discharge planning for patients with stoma. Instructions for each section were indicated.

The first section was for demographic data and had 7 items, with both open and closed ended responses. Items included: gender, highest level of qualification, duration of general working experience, duration working experience on a surgical unit, previous or recent training on care of patients with stoma, and duration of training, and age. Descriptive statistics was done, data was analyzed and presented in form of mean, SD, and ME.

The second section was on nurse's knowledge regarding discharge planning of patient with a stoma in MNRH, Uganda. Knowledge assessment aimed at determining nurses' level of awareness regarding patients' transition from hospital to home before and after education intervention. The study identified the effect of structured education on nurses' knowledge regarding discharge of patients with stoma. Nurses who attended and prepared patients for this transition were targeted. It was anticipated that nurses would become aware of the discharge process and address patients' physical, psychological and social concerns as they transit from hospital to home. Factual knowledge of nurses for before and after education intervention was assessed.

Test items elicited for factual knowledge about pouch management, type of equipment, and accessories, and their use. Also, awareness about physical, psychological and social concerns of patients were tested. The test was intended to identify how much knowledge respondents would have prior to and after structured education intervention.

The section had 20 multiple choice questions with clear instructions on how to respond. Each stem had multiple choice with 5 response options of which one was picked. The right response was coded as five (5), while a wrong response was coded as zero (0).

Maximum score was 100 %. Blooms Knowledge Cut-Off Points was adopted from prior studies to rate the mean knowledge score for nurses into categories. This ranged from low: <60%, moderate: 60-79%, and high: 80%-100% (Khaled, Sidiqqua, & Maqqi, 2020; Chand, Mohammadnezhad, & Khan, 2022).

The third section was on nurse's practices regarding discharge of patient with a stoma in MNRH, Uganda. Practices assessment aimed at determining nurses' level of skills regarding patients' transition from hospital to home before and after education intervention. The study determined the effect of structured education on nurses' practices regarding discharge of patients with stoma. Nurses who attended and prepared patients for this transition were targeted. It was anticipated that nurses would acquire skills of the process and confidently teach and involve themselves in addressing patients' physical, psychological and social concerns as they transit from hospital to home. Procedural skills of nurses for before and after education intervention were assessed.

Self-test items elicited for procedural skills about pouch management, selecting appropriate pouching equipment and accessories, and using them. Also, skills about involvement and teaching patients about possible physical, psychological and social concerns of patients were tested. The test was intended to identify how much skills respondents had prior to and after structured education intervention. The section had 10 questions, with response options of never (1), sometimes (2), frequently (3), and always (4). The frequencies nurses encountered with patients to address their physical and psycho-social concerns before and after intervention were captured. The series of 1-4 indicated coded for frequencies from lowest to highest scores regarding practices on a Likert scale. Each individual respondent's score on practices was computed as raw, mean, and SD and analyzed. A rating in categories of poor, good, and very good was computed to analyze individual and overall mean scores before and after intervention. For overall mean category score of >35 for all practice items

was rated as very good for each respondent and, 30-35 as good, <30 as poor. (Joshi, Kale, Chandel, &. Pal, 2015).

Questionnaire Validity

Construct validity.

Items in the questionnaire (Appendix C) were looked at by 2 nurse academicians with PhD qualifications. Items included covered all major aspects of nurses' knowledge and practices related to performing D/C planning.

Content validity.

The researcher ensured content validity of the instrument, by requesting for expert opinion from clinical areas. A nurse working in a surgical outpatient's clinic (SOPD) and a surgeon with specialty in colorectal surgery looked at the tool. The 2 clinical experts had vast experience in ostomy management, and Master of Nursing and Masters of colorectal surgery qualifications respectively. A scale of 1-4 was used to validate the items in the instrument. Not relevant/ not important (1), unable to assess relevance/ important without revision (2), Relevant/ important but needs minor alteration (3), Very relevant /very important (4). Two knowledge questions had overlapping responses and were thus discarded. One knowledge question was confusing, so it was discarded too. Three more were added and rated to make a total of 20. The score average from knowledge and practices yielded a Content Validity Index 0.98 which was good.

Internal Validity

The researcher ensured that there was no other training related to stoma, at the time of structured education to nurses. Also, the same group of nurses were invited to fill the same questionnaire at pretest and posttest. Researchers guarded against maturation by making sure that the period of implementation, between pretest and posttest was kept limited to a few weeks. Attrition was avoided by emphasizing the importance of completing the 2nd test. Also,

time was limited to a total of 5 weeks for before and after intervention. The number of anticipated contacts for the study were explained when consent was sought. All nurses were subjected to same intervention and number of contacts during the study.

External Validity

It was ensured that data collection was done from units where patients with ostomy were being prepared for discharge. Nurses who were attending to these patients regularly and not any other such as students during the time of the study were recruited for the study. The researcher ensured that the same duration for intervention for nurses working on the 3 surgical units was allotted during the period of implementation. The type of structured education intervention was the same for all nurses.

Reliability

The researcher checked for reliability of the questionnaire (Appendix C) items. The questionnaire was piloted on 11 respondents, who were nurses performing D/C planning in another regional referral hospital. Results from a pilot study were checked for internal consistency in measuring the critical attributes of different parts of the questionnaire using Cronbach's Alpha. Statistical analysis was done for 20 knowledge and 10 practice items yielding a Cronbach's Alpha of 0.82. This was acceptable score owing to a prior set score of 0.7 and greater. This was done using Statistical Package for Social Science version 20 (SPSS). During the pilot study it was noted that time for filling in the questionnaire ranged from 15-20 minutes. This was used to report the time involved on the Informed Consent. Feedback about any difficulty in reading sections of the questionnaire was sought from respondents. Items were well understood.

Data Collection Procedure

Nurses were requested to fill out a questionnaire at any given opportunity during the day in their units. This made it possible for nurses working on different shifts to fill in the

questionnaire. Data collection was done from early morning before night nurses left at 7:00 AM, up to 6:00 PM. The researcher afforded courtesy to participants when collecting data, by being patient, respectful and grateful for their participation. The researcher kept 2 separate files for questionnaires and consent forms to ensure anonymity during data collection. A consent form (Appendix B) accompanied the questionnaire explaining the study. Each nurse participating in the study was able to fill the questionnaire at pretest and posttest apart from 1 nurse who did pretest but could not do intervention and posttest for personal reasons. Two other nurses were on annual leave thus not able to participate, 4 declined. Filling a questionnaire took a duration of 15-18 minutes. The process of data collection took 5 days prior to the structured education during the study period. This allowed almost all nurses working on general surgical units to fill questionnaire and attend training on the D/C planning.

The researcher was personally involved in all steps of data collection and intervention. Self-administered questionnaires using a face-to-face approach was done. The researcher requested the respondent to note down the serial number that was appearing on the pre-test questionnaire on a piece of paper. The paper with serial numbers was then placed in an envelope and sealed by the respondent, then wrote their name on the envelope. The envelope containing the serial number was kept by the researcher and then returned to the participant when filling the posttest tool in order to correlate it with the information collected earlier during data entry.

Intervention

The study was implemented from November 2023 to December 2023. Researchers informed nurse heads of general surgical units about the study. Then requested them and the rest of the nurses for their cooperation. Nurses' duty rostas were used to determine nurses' schedule and shifts as well as getting their contacts. Researchers worked out a schedule based

on their availability. For those who were on night duty, and off duty a request to meet with them over the phone during their next schedule was made. Five days were used to obtain consent and pre-test from nurses from all the 3 surgical units. Because the 2 units are adjacent to one another and third floor above, it was possible to move from unit to unit 3 times a day, (07:00hrs-09:00hrs, 11:00hrs-13:00hrs, 16:00hrs-18:00hrs), using their most convenient time for each or groups of them. Education intervention was scheduled for 2 different groups on 2 different days. All nurses, including those who declined were requested and scheduled to attend structured education depending on their more convenient day. Nurses were given pre-test prior to intervention. The intervention (Appendix D) involved lecture using power point, discussions and demonstrations both in class and on the ward. Training involved identifying nurses' gaps at the start of the training session in form of brainstorming and a list of expectations.

The session had discussion on bowel stomas, indications, patients' challenges and current gaps in nurses' knowledge and practices. Structured teaching on discharge plan (Appendix A) for patients with a stoma was guided by Kurt Lewin's three step change theory and every element discussed. The D/C plan (Appendix A) was adapted with approval from the authors (Appendix E). Demonstration of stoma sites, changing bag, and use of various equipment in care of stoma was done. Posttest was administered thereafter. It was a day training for all nurses including those who declined, followed by 2 discussion sessions at their convenient time on wards.

Practices on ward were reinforced by researcher through discussions and demonstrations with different groups of nurses for a period of three weeks. Drivers for change were reinforced while restraining forces were discouraged or reduced during the process. The aim was to move from status quo to a new normal. Posttest period then followed lasting 5 days. The relatively short period between pre-test and posttest was due to hospitals

impending surgical camp that were to cause temporary re-deployment of some nurses away from general surgical wards to other units.

Data Analysis

Respondents were asked to double-check data for missing bits before submission of the questionnaire. Researcher also cross checked filled questionnaires for any missing information before leaving site. This was helpful in adding missing information. Data was then entered into Excel sheets and subsequently imported into SSPS for analysis.

Demographic variables, some of which were grouped into categories, was analyzed using descriptive statistics. They were presented in form of Mean, SD, frequencies, and percentages.

The knowledge variable was analyzed using descriptive and inferential (paired t test, at p-value 0.05%, and 2 tailed) statistics. Results were presented in form of raw scores, percent, frequency, categories (high, moderate, and low), overall mean change, mean, standard deviation, p-value, and level of significance. Also analyzed were nurses' performance on each knowledge item before and after intervention. Three items with an improvement of 40% and greater were presented. Three items of decline in performance or no improvement after intervention were presented.

The practice variable was analyzed using descriptive and inferential (Wilcoxon signed ranks test, at p-value 0.05%, and 2 tailed) statistics. Results were presented in form of raw scores, frequency, categories (very good, good, and poor), overall mean change, mean, standard deviation, p-value, and level of significance. Also analyzed was nurses' performance on each practice item before and after intervention. Four items performed very well with improvement of 0.87 % and greater and were presented. Two items that were poorly performed, with a score of less than 3 on a Likert scale after intervention were also presented.

Rights of Human Subjects

The study was approved by Research and Ethics Committee (REC) at Uganda Christian University, Mukono (Appendix F). Permission was granted from REC Mulago National Referral Hospital where the study was conducted (Appendix G). The Clinical Head, General Surgery, and Nursing leadership also gave support to the researcher to carry out the study.

Privacy

Data was collected by the researcher to ensure privacy. Data was collected by the researcher from groups or individual nurses and the questionnaire used serial numbers not names to ensure anonymity. At pretest respondents were asked to write serial numbers on piece of paper, place it in an envelope, and sealed by self. Then they were asked to write their name on the envelope. The envelope containing the serial number was kept by the researcher and then was given out when filling out the posttest tool, in order to match the two questionnaires during data entry. Researcher kept 2 separate files for the questionnaires and consent forms to ensure confidentiality during data collection at pre-test.

Confidentiality

Confidentiality was ensured during the study. Access to data in form of print was limited to researcher, statistician, and research supervisors. Data was kept in safe place under lock and key by the researcher during the study. Findings of the study were presented in aggregates not identifiable with any participant, including future presentations and publications. Data was securely transferred between researcher, statistician and supervisors during the process of analysis. It will then be destroyed after 3 years.

Benefits of the study.

It was hoped that nurses may benefit by gaining knowledge about a new approach in the discharge of patients with stoma. They may also find it much easier in caring for patients with a stoma.

Risks of the study.

The study posed no major risks to study participants. The researcher did not directly supervise the participants, so they did not find holding discussions with researcher intimidating.

Culture

The Researcher guided nurses to their level of understanding during introduction of a structured education and discussions on the units. Participation in training and discussions regarding preparation of patients for transition was open to all who consented and those who declined.

Consent

An informed consent (Appendix B) in writing was obtained from participants. All participants were requested to voluntarily participate. Participants were informed about the details of study and then requested to participate. They were asked to fill consent then a pre-test was given, were thanked for accepting participation in the preliminary part. Those who declined were also invited for training.

Summary

This section discussed the methodology. It entailed discussion of the sections including; the study design, study population, sampling, setting, data collection tool, data collection procedure. Also, data analysis, and rights of human subjects, consent were described. Chapter 4 discussed the findings of this study.

Chapter Four: Results

This chapter presented the findings of the study which looked at the effect of structured education regarding discharge of patients with a stoma on nurses' knowledge and practice. The data was analyzed using SPSS version 20. The demographics of the respondents were presented first. Then the two objectives were used to present the findings that answered the research question. The first objective was to identify effect of use of structured education regarding discharge of patients with a stoma on nurses' knowledge. The second was to describe the effect of use of structured education regarding discharge of patients with a stoma on nurses' practices.

Demographics

The study examined the demographic information of the respondents so as to understand their characteristics. These included age in years, gender, highest qualification level, experience as a nurse, years of experience working in a general surgical unit, training in stoma care in the past 12 months, and duration of training. The study findings were presented in Table 1.

The majority (96%) of respondents were female. Age range of respondents was 29-59 years. Mean age was 47.5 years, SD ± 9.27, ME 1.93. The majority, 69 % of respondents, were above 45 years of age. Respondent's highest qualification was almost equal with diploma nurses being 52% and bachelors being 48%. The majority of respondents (69%) had worked as nurses for over 15 years. Mean duration working as a nurse was 20.4 years, SD ± 7.25. More than half 57% of respondents had worked on a general surgical unit for 5 years or less. Mean duration working on a general surgical unit was 5.87 years, SD ± 3.61. Almost all respondents (96%) had not had any form of training to do with stoma care prior to intervention.

Table 1

Respondents' Demographics (N=23)

Characteristic	Frequency (F)	Percentage (%)
Age in Years		
<36	4	17
36-40	2	9
41-45	1	4
46-50	6	26
51-55	4	17
56-60	6	26
Gender		
Female	22	96
Male	1	4
Highest Qualification Level		
Diploma in Nursing	12	52
Degree in Nursing	11	48
Experience as a nurse in years		
6-10	3	13
11-15	4	17
16-20	4	17
21-25	6	26
26-30	6	26
Experience working in general surgical unit in years		
1-5	13	57
6-10	8	35
11-15	2	9
Training in stoma patients care		
Yes	1	4
No	22	96

Effect on Nurses' Knowledge

The study examined descriptive and inferential findings, on nurses' knowledge before and after introduction of a D/C planning tool. Also examined were findings on nurses' performance about specific questions before and after intervention.

Descriptive findings.

Descriptive findings were analyzed at 2 levels. These were comparison of raw knowledge scores and comparison by category.

Comparison of raw scores on nurses' knowledge.

Raw knowledge scores before and after the intervention were calculated and described**.** Appendix H presented nurses' knowledge score before intervention. Mean percent of nurses' knowledge before intervention was 34. Appendix I showed nurses' knowledge after intervention. Mean percent of nurses' knowledge after intervention was 57. Appendix J presented the comparison of the raw scores for each individual including the percent of change after the intervention. The overall mean percent for change was 23.

Comparison of nurses' knowledge by categories.

Nurses' knowledge scores before and after intervention were categorized into levels of high, moderate, and low. Knowledge categories were described and presented in Table 2. All respondents (100%) had a low score before the intervention. After the intervention, 61% had moderate knowledge while 39% had low knowledge. There was no respondent who obtained a score of 80% and above.

Table 2

Comparison of nurses' knowledge by categories (N=23)

	Pre-test		Posttest		Change
Knowledge overall scores	F	%	F	%	(%)
High (80% and above)	00	00	00	00	00
Moderate (60-79%	00	00	14	61	+61
Low (<60%)	23	100	9	39	-39

Inferential analysis of knowledge.

Analysis using the paired t-test for comparison of the mean knowledge was done. Mean percent knowledge before intervention, after intervention, confidence level, level of significance, two tailed test, standard deviations of both, and test t and p-value were presented in Table 3.

Table 3

Comparing mean of knowledge before and after introduction of D/C planning tool using paired t-test (N=23)

	Mean %	S D	P-value
Before Intervention	34.1	10.41	
After Intervention	57.2	13.14	<0.001
Test Statistics			
Knowledge score after DC - Knowledge score before DC			
t(22) =	9.602		
Sig. (2-tailed)=	.000**		
** Significant at 5% level			

The results were such that it could be concluded that there was a statistically significant improvement in mean knowledge following structured education of nurses from mean of 34% to 57 %. Structured education on patients with a stoma thus had a statistically significant positive effect (p-value of <0.001) on nurses' knowledge. The effect of change was significant, ($t(22)=9.602$, $p<0.001$).

Nurses' performance on knowledge questions.

Knowledge items in the questionnaire were analyzed before and after the intervention, to determine nurses' performance on each item. The magnitude of change between before and after the intervention was analyzed and presented in frequencies and percentage (Appendix K). Overall there was improvement in knowledge scores in the majority (85%) of items. Seventeen knowledge test items: 1,2,3,5,6,7,8,9,10,11,13,14,15,16,17,19, and 20 had improvement. There were greatly improved knowledge scores of 30% or greater on several items but three items stood out. The first was *the location, nature of output*. The second was *advice on care of surrounding skin in ileostomy*. The third was on *advice on precautions regarding medicine intake in ileostomy*.

However, it was noted that 3 knowledge test items (4, 12, and 18), had no improvement in knowledge scores by respondents. One was *duration of how often to change a bag in a patient with a new ileostomy*. *Factors related to lack of independence* was another, and finally *when change of colostomy bag can be done*.

The Effect on Nurses' Practices

The study examined descriptive and inferential findings on nurses' practices before and after structured education regarding discharge of patients with a stoma. Also examined were findings on nurses' performance on specific questions before and after intervention.

Descriptive findings.

Descriptive findings were analyzed at 2 levels. These were comparison of mean practices scores and comparison by category.

Comparison of raw scores on nurses' practices.

Raw scores were calculated before and after the intervention**.** Description of individual score for nurses' practices before and after intervention were presented in the form of means and standard deviations. Appendix L presented mean practice at 2.59 before intervention. Appendix M showed mean practice at 3.24 after intervention. Appendix N presented the comparison of the mean score for each individual including the mean change of 0.65 after the intervention.

Comparison of nurses' practice by categories.

Nurses' mean practice scores before and after the intervention were categorized into levels of very good, good, and poor. Mean practice categories were described and presented in Table 4. Overall practice of nurses by category improved after structured education on preparation of patients for discharge. Before the intervention, only 26 % had good practices, 74% had poor practices, and there were none with very good practices. After the intervention, 26% had very good practices, 39% had good practice while 35% had poor practices. Mean

practice change after intervention was noted. Mean practice improvement of 26% was noted in the Very Good category, also there was an improvement of 13 % in the good category, while there was now less in the Poor category (39%) after intervention.

Table 4

Comparison of proportion of nurses' practices by categories (N=23).

	Pretest		Posttest		Change
Interpretation of practices scale	F	%	F	%	%
Very Good practices (≥3.5-4)	0	00	6	26	+26
Good practices (≥3.0-<3.5)	6	26	9	39	+13
Poor practices (<3)	17	74	8	35	-39

Inferential Analysis of nurses' practices

Analysis using the Wilcoxon signed ranks test for comparison of the mean of nurses' practice was done. Mean practice before and after the intervention, standard deviations of both and p-value are as shown in Table 5.

Mean practice before intervention was 2.59. Mean practice after intervention was 3.24 and a P-value <0.001. The effect of the change was significant, ($W=2$, df =22, p<0.001).

Table 5

Comparison of mean practices (N=23).

Wilcoxon signed ranks test on Practices			
	Mean	SD	P-value
Before intervention	2.59	0.47	
After intervention	3.24	0.45	<0.001

Two tailed test, value of $W = 2$. $df = 22$ ($p < .001$).

The result is significant at $p < .05$.

Nurses' performance on practice questions.

Overall, there was improvement in mean practice item scores in all items. An improvement of more than 0.8 on the Likert scale was noted in 4 practice items. The first was *discussing with patient concerns of body image*. The second was *teaching patient about management of gas and odo*r. Another was *discussing with patient appropriate ostomy*

appliance for their care. The fourth was *educating patients on identification of ostomy complications.* Two items, despite slight improvement recorded low mean scores both before and after intervention. The first was *discussing with patient concerns regarding resumption of intimate relationship.* The other was *discussing with patient possible isolation concerns* (Appendix O).

Summary

This section discussed the findings of this study. It entailed discussion of the sections including demographic findings, description of nurses' knowledge in terms of raw score, scores by category and overall scores before and after the intervention. Inferential findings using paired t-test were described and were found to be significant. Analysis on nurses' performance on knowledge items before and after intervention was done to determine which did well and those that were poorly done. Also, description of nurses' practices in terms of raw score, mean scores by category and overall means before and after intervention was done. Inferential findings using Wilcoxon signed ranks test were described and were found to be significant. Analysis on nurses' performance on practice items before and after education intervention was done to determine which did well and those that were poorly done. Overall, there was improvement in nurses' knowledge and practices following structured education regarding discharge of patients with a stoma. The next chapter included a discussion of the findings, limitations, recommendations, areas for further study, and conclusion.

Discussion: Chapter Five

This chapter discussed the study findings. The study addressed the research question: What is effect of use of structured education regarding discharge of patients with a stoma on nurses' knowledge and practices in MNRH, Uganda? The chapter discussed the demographic findings followed by the two objectives: to identify effect of use of structured education regarding discharge of patients with a stoma on nurses' knowledge in MNRH, Uganda. The second objective was to describe the effect of use of structured education regarding discharge of patients with a stoma on nurses' practices in MNRH, Uganda. Also discussed were the limitations, recommendations, areas for further study and conclusion. Kurt Lewin's three-step theory, and how it guided the study discussed.

Demographic Findings

In this study majority (69 %) of respondents were above 45 years of age. The high age in this study may have been attributed to the high average age of nurses at MNRH. This contrasts with (Okuonzi, et al., 2023) who reported an average age of 35 years for nurses from 4 different regions of Uganda.

Findings of this study showed that 48% of respondents were degree nurses. Despite this reasonable magnitude of professional level in a national referral hospital, gaps in knowledge were evident, this emphasized the need for structured continuing education when preparing patients stoma for discharge. The magnitude of degree nurses in this study may be compared to (Okuonzi, et al., 2023) on challenges and priorities of nursing profession and services who in a survey carried out in 4 regions of Uganda, reported that degree nurses were just 7%, diploma 45%, and certificate 47%.

In this study respondents were predominantly female (96%). The female dominance in this study may reflect the gender composition of nurses' workforce in the country. This may be compared to (Lalam, & Oketcho, 2022) in a cross-sectional study on gender

inequality in the nursing profession carried out in northern Uganda where they reported 78.4% female, and 21.6% male nurses. Also (Okuonzi, et al., 2023) in a survey on challenges and priorities of nursing profession and services carried out in 4 districts located in four regions of Uganda, reported 80% female of nurses, and 20% male composition.

Effect of Structured Education for Patients with a Stoma on Nurses Knowledge

Ninety-six percent of respondents received training regarding discharge planning of patients with stoma for the first time. This finding highlighted the gap of not having a specialist nurse in ostomy care in MNRH. This implies that having a specialized nurse for stoma could have helped in training on use of standardized ostomy care in the setting. This study showed the need to identify and avail opportunities for nurses to train as specialized ostomy nurses, who would later mentor others.

There was improvement in nurses' knowledge, a statistically significant positive effect (p-value of <0.001) following intervention. This implies the importance and need for structured continuing education and support to improve and maintain knowledge and skills in discharge planning of patients with stoma. Findings of this study showed that mean knowledge improved by 23% following structured education. This implies that education using a discharge plan for stoma gives a structured approach to teaching nurses about physiological, social and psychological needs of a patient with stoma like skin care, isolation, and anxiety. Also, improvement in nurse's knowledge could result into reduction in ostomy related complications such as leakage, skin dermatitis, and dehydration. Findings were similar to (Shah, Nyamika, Kabita, Khushi, & Nilam, 2022) who reported improvement in nurses' knowledge following a teaching program on colostomy care in Nepal.

Overall, there was improvement in knowledge scores in the majority (85%) of items. Three items performed exceptionally well following intervention. The first was *the location, and nature of output of stoma*. The high performance on this item could have been attributed

to structured education on discharge planning. This finding is supported by (Eray, Hepşengil, Gündüz, & Akgül., 2024), who in a study carried out in Turkey, reported improvement in nurses knowledge regarding stoma evaluation following education intervention. This implies that nurses who are knowledgeable about patient's stoma and its function are more likely to manage and support them with confidence. The second was *advice on care of surrounding skin in ileostomy*. This is supported by (Eray et al., 2024) who reported improvement in knowledge of nurses regarding measuring and cutting right size of stoma appropriate preparation of the surrounding skin following education intervention. This showed that improved nurses' knowledge would likely result in proper management of surrounding skin subsequently reducing complications such as skin irritation, leakage and infections.

The third was *advice on precautions regarding medicine intake in ileostomy*. This is supported by (Berger et al., 2024) who in a prospective, interventional cohort study that was conducted in Germany highlighted drug absorption problems and the need to reconsider formulations in managing patients with ileostomy. Alternatively (Hua & Lye, 2022) in their review discussed gastro-retentive dosage forms that allow absorption of drugs in ileostomy patients. This implies that by improving nurses' knowledge on patients' medicine intake, ostomy related complications such poor pain management, dehydration, and constipation may be reduced.

However, it was noted that 3 items had no improvement in knowledge scores even after structured education on stoma. The first was *the lack of knowledge on duration of how often to empty bag in a patient with new ileostomy*. This gap in knowledge may have been due to inadequate time in using systematic approach to discharge for patients with stoma. This can be compared to (Ali, Sayyed Ali, & Taha, 2020) who reported that more than half of nurses had moderate knowledge in the immediate post education intervention conducted in Egypt. This showed the need for ongoing education to enhance and maintain knowledge in an

effort to improve nurses' confidence. This may be enhanced if specialized nurse in ostomy care is given an opportunity to train, and later on mentor others regularly.

Knowledge about factors related to lack of independence performed poorly in this study. Low knowledge regarding independence in our study may have been due to the need for more time for nurses in patients' adjustment to even beyond hospital stay. This is similar to (Kittscha, Fairbrother, Bliokas, & Wilson, 2022) who in a review on adjustment to ostomy, reported the need for increased contact time and interventions by nurses towards patients with stoma. In contrast Di Gesaro, 2016) in a review highlighted the importance of helping patients with stoma improve ability to self-care through psychological support. Nurses' lack of awareness in this regard may lead to gaps in patients' acquisition of skills and confidence in managing their ostomy independently at home. This highlighted the importance of continuing in-service education regarding discharge planning of patients with stoma.

Effect of Structured Education for Patients with a Stoma on Nurses' Practices

Overall, there was improvement in nurses' practices, a statistically significant positive effect (p-value of <0.001) on nurses' following intervention. There was improvement in nurses' mean practices from 2.59 (poor) before to 3.24 (good) after structured education on discharge for ostomy patients. Findings of this study could be compared to Elgazzar, Elkashif, Eltahry, Ibrahim, & Shahin, (2024) who reported improvement in nurses' skills such as pouch management, skin assessment and care following structured in-service training on colostomy care. This implies that nurses who receive adequate education and develop their skills are more likely to teach and manage their patients in this transition with confidence. This could ultimately improve patients' physical, psychological and social wellbeing.

Overall, there was improvement in mean practice item scores in all items. An improvement of more than 0.8 on Likert scale was noted in 4 practice areas. The first *discussing with patient concerns of body image.* Education and demonstrations and

discussions regarding discharge planning for stoma enhances nurses' skills in managing patients' physical, psychological and social well-being. Thus, improving overall quality of life. This is similar to (Bozkul, Celik, & Arslan, 2024), who in their review highlighted efforts nurses make to improve patient's self-efficacy as a way of managing and coping with life changes. This could be compared to (Angella forsman, 2024) who in a systematic review reported little literature on intervention on body image in patients with a stoma.

The second was *teaching patient about management of gas and odor*. Education and demonstrations regarding discharge planning for stoma enhances nurses' skills in managing patients' physical, psychological and social well-being. Thus, improving overall quality of life. Similarly (Alexandra Mitchell, 2021) highlighted nurses' practices regarding dietary advice as a way of managing gas and odor in a mixed method study. This could be compared to (Dunne, Doody, & Bradshaw, 2021) who in a review highlighted nurses' limited confidence in providing care to patients with a stoma.

Another that performed well was *discussing with patient appropriate ostomy appliance for their care.* The enhanced practices in choosing appropriate ostomy appliance may have been due to confidence gained following teaching on equipment when applying and advising patients on what to use. This underscores the role of nurses in selecting appropriate appliances then subsequently teach patients. This implies that peristomal skin complications could be reduced, quality of life could improve, and independence and self-care would be enhanced. Recalla, English, Nazarali, Mayo, Miller, & Gray, (2013), in their review highlighted ability to choose a pouch that addressed issues of adherence, wear time, flexibility, erosion, mechanical coupling as key to patients' skin health and overall quality of life.

The fourth was *educating patients on identification of ostomy complications*.

Performance on educating patients on identification of ostomy complications could have been enhanced by awareness on precaution regarding complications patients' having used a systematic approach following education intervention. This implies that improved skills in identification of complications would more likely lead to reduction in complications among patients, thus improving their quality of life. This is similar to (Bozkul et al., 2024), who in their review highlighted nursing interventions and resultant reduction in complications among patients with stoma. This is also compared to (Albulescu et al., 2024) who in their review highlighted the importance of meticulous skin care to prevent skin complications that could occur.

Two items, despite slight improvement, recorded low mean scores both before and after the intervention. The first was *discussing with patient concerns regarding resumption of intimate relationship*. These findings highlighted the importance of educating nurses about a discharge planning process to address patients' psycho-social concerns. This implies that continuing education, demonstrations, and support to nurses could be critical in improving psychological and social well-being of patients with stoma. Similarly (Lin, Yin, & Chen, 2023) in a meta-ethnography of qualitative research reported that there were fewer articles on discussing patients' sexuality. This was also supported by (García-Rodríguez, Barreiro-Trillo, Seijo-Bestilleiro, & González-Martin, 2021) who reported that very few articles on sexuality for stoma were encountered in their review.

The other item poorly performed was *discussing with patient possible isolation concerns.* These findings highlight the importance of educating nurses about discharge plan (Appendix A) to address patients concerns holistically. This implies that structured teaching using a structured teaching of nurses should be integrated into existing care for patients with a stoma for optimal efficiency. Also (Forsman, 2024) in a systematic review, highlighted the need for health care staff to address isolation regarding stoma care from a cultural

perspective. In comparison to (Rolls, et al, 2023) reported that half of SCNs viewed discussing with patient on how to engage in social activities as the most important topic.

Discussion of Results in Relation to Kurt Lewin's Three Step Theory

Lewin uses the analogy of a block of ice, where transforming a cube of ice into another shape, it has to be unfrozen first. Desired change is then done by solidifying the liquid into the desired shape. He acknowledges change by involvement of drivers and restraining forces in moving from status quo to reaching a new level called equilibrium. In this case nurses' knowledge and practices regarding discharge planning for stoma were transformed positively using the framework. This was supported by findings of a study carried out by (Hidayat, Purwarini, & Susilo, 2023), that used Kurt Lewin's change theory to transform leadership style, subsequently improving quality of nurse's electronic medical records in Indonesia. Similarly (Amina, Awatef, & Wafaa, 2022), in a quasi-experimental study used Lewin's change theory to improve patients discharge plan in oncology center in Mansoura university.

In application of the framework, the structured teaching on discharge planning for stoma promoted nurses' knowledge and practices, this ultimately improved patient's quality of life. Following education intervention on discharge planning, there was an increase in knowledge as evidenced by mean pre-intervention score of 34.1%, (SD=10.41) compared to the mean post-intervention score of 57.2%, (SD = 13.14). Similarly, there was a change in practices as shown by an increase from mean pre-intervention score was 2.59 on Likert scale (SD = 0.47), to the mean post-intervention score of 3.24 on Likert scale, (SD = 0.45).

Effect of structured education intervention on both nurses' knowledge and practices were statistically significant changes (P-value <0.001). This implies that use of Kurt Lewin's 3 step theory, was an effective approach to introducing change through education on D/C

planning. Nurses' knowledge and practice could be improved to confidently teach and guide patients with a stoma.

Limitations

In this study the setting allowed for purposing sampling with a limited number of respondents working on general surgical wards. Purposive sampling may have created some bias despite the relevance of respondents to the study. This may have impacted subsequent generalization to the population. This study could be viewed as a pilot of an education intervention.

The data collection instrument was developed by the researcher from literature in the developed and mid income countries and used for the first time in this study. There could have been some omissions or additions needed to clearly capture the phenomena being studied from the perspective of nurses in poor income countries.

Kurt Lewin's 3-step theory used in this study highlighted how the first two steps of unfreezing and change were used to introduce relative change in a shorter period of time. The third step was not included in a study because of limited time. The hospital had an impending surgical camp that were to cause temporary re-deployment of nurses away from general surgical units. The findings could be viewed as intermediate findings if several weeks to months were available for the study.

Recommendations

From findings of the study, structured education regarding patients with a stoma had an effect on nurses' knowledge and practices. A structured approach to educating nurses about physiological, social and psychological needs of a patient with stoma like skin care, isolation, and anxiety needs to be incorporated in their care. The need for continuing education and demonstrations to guide nurses in performing D/C planning for patients with a stoma is critical for better patients' outcomes.

While permission was sought and granted to researcher from WOCN to use the resource later on drafting a discharge plan for the study period, MNRH as an institution could seek the same for continuing use of the resource. The structured teaching using a discharge plan for patients with a stoma should be integrated into existing care for optimal efficiency. Periodic evaluation on effectiveness of structured teaching to identify areas for improvement would ensure its relevance. Nurses' confidence and skills could be enhanced and maintained through enrolment with the Wound Continence and Ostomy Nursing society. This would provide a platform for an opportunity for training in specialized ostomy care. One or two specialized nurses would then help mentor others.

Areas for further study

While interventional studies on nurses' knowledge and practices regarding discharge of patients are few, a lot is geared towards actual patients. It is important to note that the messengers (Nurses) have to be well equipped to deliver the message to patients. This study showed the importance of structured nursing education in preparing patients for discharge, further studies across several hospitals or institutions using the same approach may be useful for comparison of nurses' knowledge and practices on a much larger sample. Other areas to explore would be, different approaches to training on using the same guide. Practice gaps regarding psycho-social responsibility to patients in this study were noted and thus a need for further study. Studies that could allow much more time may explore the 3 steps of Kurt Lewin's theory in full with the introducing change in nurses knowledge and practices.

Conclusion

This study provided a timely response to needs of nurses preparing patients with stoma for discharge. Comparing before and after education intervention on nurses knowledge and practices about discharge planning, findings showed that nurses were better equipped with knowledge by the educational intervention on D/C of patients. Their practices regarding

D/C planning were also improved with structured education. The hospital should establish policies that are more directed to the health education process about the importance of discharge planning. That could be used as a guideline for nurses and other health professionals to improve patient readiness for discharge and subsequently provide self-care independently.

Lastly this study inspired future studies on gaps in knowledge and practices in the preparation of ostomy patients for discharge. It could be concluded that the structured education intervention on D/C plan improved nurses' knowledge and practices.

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Appendix A: Discharge plan for patients with a bowel stoma

Topic	Content	Remarks
Assessment for readiness	Learning needs-cognitive limitations, language barrier, pain, fatigue, care choices based on financial implications.	
How to empty a pouch	Convenience, tissue in bowl, back arched in standing or sitting in wash room or privacy, bottom edge of pouch cleaned.	
When to empty a pouch	1/3-1/2 full. Patient encouraged to learn to feel the level of fullness.	
Changing a pouch	2-3 times a week or change every 3-4 days, when leaking, skin irritation, prior to sexual relations, religious activity.	
Preparation for equipment	Assemble on shelf/ bag; pouching system, accessories (belt, paste, tape), measuring guide, adhesive remover for skin barrier, waste bag	
Assessing peristomal skin	Look around skin barrier if different from the rest of skin of abdomen (redness, rash, open?), inspect where adhesive tape attaches to barrier. Patient asked to inspect as well, abnormalities reported to Surgeon.	
Measuring stoma	Edema present? Re-size till stoma opening is stable (4-6 weeks). Use measuring guide giving allowance of 1/8 of an inch around stoma. if stoma not round, re-pattern to fit.	
Cleansing peristomal skin	Use warm water, toilet paper, non-oily soap, if cloth is used laundering is required, clean around the stoma and pat dry. Stoma itself is not cleaned, fecal matter is picked with tissue, hair around stoma removed using electric razor.	
Removal of pouch placement	In bath room, with non-oily soap and water. Adhesive remover wipes or sprays can be used. Removal of skin barrier is by push-pull method and from top to bottom.	
Placement of pouch	Standing to allow flat tummy, sitting if abdomen is flat and easy to see by patient. Jet (spurt) in 6 o'clock position, if belt is worn it is at 3 and 9 o'clock positions, patient preference considered too.	
Problem identification and when to seek assistance	-severe cramps > 2-3 hours -deep cut in stoma -excessive bleeding from stoma/ in pouch -continuous bleeding at junction of stoma -severe watery discharge from stoma for > 5-6 hours -severe skin irritation around stoma -unusual change in stoma size or appearance - continuous nausea/vomiting -No stoma output for 4-6 hours cramping and nausea -increase in frequency of emptying pouch.	
Living with a stoma	where to obtain or purchase supplies with specifications	

	advice on bathing and clothing Discuss sexual concerns with patient.	
Diet and trouble-shooting foods	From liquid to low fiber diet, no fasting, no skipping meals, thorough chewing of food, 6 small meals in 24 hours, no beverages, noting stool color changing foods, pills, gas producing foods, constipation forming and relieving foods, odor forming and odor control foods **Ileostomy-**chew fibers in small amounts and thoroughly with fluids to avoid blockage. Watch out for constant spurting liquid watery stools, bloating, cramping, swollen stoma, nausea, vomiting, no output. Output of > 1200 mls in 24 hours warrant admission **Colostomy**-gradual return to normal diet. In case of constipation, whole grain, vegetables, fruits, high fluid intake advised. For diarrhea, check foods, medication, chemotherapy or medical condition. Odor is common especially in transverse colostomy, normal flora, illness, meal, vitamins. Odor control -avoid odor forming foods, use odor control foods such as oranges, pouches have deodorizing agent, drugs i.e., chlorophyll and bismuth tablets	
Medication	NO laxatives in ileostomy and ascending colostomy patients, caution to patient on use of extended-release tablets depending on length of functional ileum, enteric coated tablets. Advice on medicine that may cause blockage of gut, diarrhea, fluid and electrolyte imbalance.	
Physical activities	Advise on abdominal exercises to lower risk of peristomal hernias.	
Follow-up care	May be long term problems to do with care, diet, stoma location, pouch concerns, activity limitations.	
Support groups.	Social (local stoma associations, peer groups), counseling on living with a stoma groups, therapists, financial support groups.	

Adapted with permission from Carmel, et al., (2022). *Wound, Ostomy and Continence Nurses Society Core Curriculum* (2nd ed.) pp 198-200.

Appendix B: Informed

Title of Research: Effect of using a discharge planning tool for patients with a stoma, on nurses' knowledge and practice in Mulago National Referral Hospital, Uganda **(UCUREC-2023-640).**

Principle Investigator: Muganga Jessica Damali. Tel. contact +256-782357410. Master of Nursing student at Uganda Christian University, Department of Nursing P.O Box 4, Mukono, Uganda.

Supervisors: Prof. Karen Drake & Dr Ketty Holt.

1. Introduction and Purpose of the Study

Muganga Jessica Damali is conducting a research study to determine the effect of a discharge (D/C) planning tool on nurse's knowledge and practices regarding patients with a stoma in Mulago National Referral Hospital, Uganda. The objective of the study is to identify the effect of introducing a discharge planning tool for patients with a stoma, on nurses' knowledge and describe nurses' practices before and after introduction of a D/C planning tool at Mulago National Referral Hospital, Uganda. The information you give us, will be confidential and only used for purposes of this study. In the process of report writing, your name will never be used and so everything you tell us will remain anonymous. Your participation will require that you fill a questionnaire on nurses' knowledge and practice regarding D/C planning, before and after introduction of the discharge planning tool. You will be required to participate in one-day training, during the process of which a D/C planning tool will be introduced. It is hoped that you will subsequently get involved in 2-3 discussion sessions for personal input, during introduction of the tool on the ward, at any time of your convenience. Participation in this study is voluntarily, and no penalty or loss of benefit will be attached if you choose not to participate or opt out of the study.

2. Description of the Research

A quantitative quasi-experimental design will be used in this study. It will be a pre-test posttest design. The intervention in this study will be the introduction of a D/C planning tool for patients with a stoma.

3. Subject Participation

Participants will be all nurses attending to patients with a bowel stoma and working on general surgical wards in Mu ago National Referral Hospital.

11. Whom to contact in case of ethical related concerns.

This study was Approved by Uganda Christian university Research Ethics Committee (UCU-REC) and cleared by Uganda national Council for Science and Technology (UNCST), In case of any Ethical related concerns or inquiries, you can contact UCU-REC chairperson; Prof. Peter Waiswa on 0772 405 357, pwaiswa@musph.ac.ug or UCU-REC Secretariat, Mr. Osborn Ahimbisibwe on 0775737627 or oahimbisibwe@ucu.ac.ug

I voluntarily agree to participate in this research program; to tick appropriately

Yes **No.**

I understand that I will be given a copy of this signed Consent Form.

Name of Participant (Optional): .....

Signature: ..... Date: .....

Name of Researcher: .....

Signature: ..... Date: .....

Appendix C: Questionnaire

Appendix F: Questionnaire

Effect of introduction of a Discharge planning tool on Nurses knowledge and practice regarding patients with a bowel stoma in Mulago National Referral Hospital, Uganda(UCUREC-2023-640)

Section A. Demographic questions **Serial No.....**

Instructions: please complete this section by ticking in, filling in where appropriate:

A1. What is gender?

☐ **Male**

☐ **Female**

A2. What is your **highest** level of qualification?

☐ Certificate in nursing
☐ Diploma in nursing
☐ Bachelor of Science in Nursing
☐ Masters of Science in Nursing

A3. For how long have you been working as a nurse?

..... years

A4. For how long have you been working on a general surgical unit?

.....years

A5. Have you had any training in the past 12 months on care of patients with stoma?

☐ Yes

☐ No

If yes in above, what kind of training was it and for how long?

.....

.....

A6. How old are you?

..... years

Section B. Nurses knowledge.

Instructions: **circle the appropriate answer,**

1. Nurse explains to a patient that an ileostomy represents the following **except** . ..
    a. Produces output that is always green.
    b. Produces output that is green initially.
    c. Produces output that contains enzymes.
    d. Is located in the right lower quadrant of the abdomen.
    e. Has the surrounding skin moist most of the time
2. A nurse explains to a patient with a sigmoid colostomy, that his bowel movement will mainly be .....
    a) Jelly- like
    b) Semi-solid.
    c) Solid.
    d) Liquid.
    e) None of the above
3. A nurse will advise patient that the stoma bag will be emptied when it is .....
    a) 1/3 to 1/2 full.
    b) 2/3 to 3/4 full.
    c) Slightly above ¾ full
    d) full.
    e) None of the above
4. **A patient with a new ileostomy is advised that, initially emptying of bag is expected to happen..... (choose one)**
    a) Every hour.
    b) Every 2 to 3 hours.
    c) Every 4 to 5 hours.
    d) Every 6 to 7 hours.
    e) none of the above
5. **Patient with an ileostomy is advised on medicine intake as follows except.... (choose one)**
    a) Use medications in fluid form only
    b) Take caution when using extended-release medications.
    c) Take caution on use of enteric coated medications.
    d) Watch out for diarrhea
    e) None of the above

6. A patient is instructed on how to care for the stomal area, by doing the following **except**;
    a) Use oils or ointments on the skin around your stoma.
    b) Use unsterile materials to cleanse this area.
    c) Use warm water to cleanse the area
    d) Pat the stomal area dry using a paper towel or cloth
    e) Trim body hair around the stomal area with blunt-end scissors or an electric razor

7. Nurse advises patient to seek medical advice, if stoma produces no gas for… **(choose one)**
    a) 1-2 hours.
    b) 4-6 hours.
    c) 7-10 hours.
    d) 10-12 hours
    e) None of the above.
8. Nurse advises patient with a stoma to do the following when travelling.. **except (choose one)**
    a) Carry bag for equipment disposal.
    b) Carry special clothing.
    c) Carry their medical supplies with them.
    d) Take twice the amount of equipment than they usually need.
    e) Carry medical documents.

9 Patient is advised to get involved in exercises or sport and can wear the following… **except (Choose one)**
    a) Wear oversized shirt.
    b) Wear shorts with lower waist band.
    c) Wear a special belt.
    d) Wear a stretch clothing
    e) Wear shorts with higher waist band.

10. Patient with bowel stoma is advised to control bad odor by using the following **except**:
    a) Garlic
    b) Yoghurt
    c) Orange juice
    d) Tomato juice
    e) None of the above

11 Patient with bowel stoma suffer from negative self-concept such as the following **except**
    a) Lack of sleep
    b) Loss of control
    c) Feel are a burden to others
    d) Feeling of helplessness
    e) Feel embarrassed

1 Patient with bowel stoma may feel lack of independence due to the following **except**....
    a) They use particular type of clothing.
    b) May be restricted in performing activities of daily living.

2. c) May not perform any activities by themselves.
    d) Their privacy is invaded.
    e) None of the above.

3 Patients may **Not** easily adapt to having a stoma if they .. .. **(Choose one)**
    a) Have persistent physical complications
    b) Can perform self-care.
    c) Are aware of steps for stoma care.
    d) Have social support.
    e) None of the above.

14. Patients with a stoma may experience the following psychological challenges **except** one
    a) Obsession about stoma noise
    b) Dehydration
    c) Bad odor
    d) Lack of privacy
    e) Feel embarrassed

15. Nurse describes a two-piece pouching system to a patient as below **(choose one)**
    a) It has a detachable skin barrier
    b) Always has an open end.
    c) Available in convex form only
    d) Always has a closed end.
    e) contains a more flexible ring.

16. Nurse explains to patient that prevention of fecal blockage is by .. .... **except; (choose one)**
    a) Avoiding dry foods
    b) Chewing food quickly
    c) Eat small amounts of food that are low in fiber
    d) Drinking 2-3 litres of fluid @ day
    e) None of the above

17. **Patient with ileostomy is advised to do the following when intestinal blockage is suspected except……..(choose one)**
    a) Take any laxatives or stool softeners.
    b) Seek medical care if pain is increased.
    c) Gently massage belly with palms of hands.
    d) Lie on the left side.
    e) Do not eat any solid food.

18. A patient with a colostomy is advised to change her bag in the following situation **except;**
    a) In the morning before eating or drinking
    b) One hour after any major meal
    c) When the body is less busy with digestion.
    d) In the evening before going to bed
    e) Before it develops a leak

19 Nurse advises patients to do the following regarding diet **except;**

    a) Chew food slowly and thoroughly
    b) Use a straw if they desire
    c) Take meals in 6 small meals in a day
    d) Consume a regular balanced diet with vitamins, minerals and calories.
    e) Initially take liquid gradually to low fiber diet as edema subsides

20. Nurse advises a female patient having a colostomy with sexual concerns using the following statements the **except (choose one)**
    a) That surgery may cause vaginal dryness
    b) Express specific concerns for nurse to explain
    c) Think about other ways of sexual intimacy
    d) She should commit time for good attitude towards her spouse
    e) Her spouse and herself should encourage and support each other

Section C. Practice questions

Instructions: Please **tick one** of the options; Always, frequently, sometimes, never

	Practice item	**Always**	**Frequently**	**Sometimes**	**Never**
C 1	Perform an ostomy assessment to provide appropriate care to my patient.				
C 2	Discuss with patient appropriate ostomy appliance for their care				
C 3	Guide patient on appropriate fitting for stoma.				
C 4	Educate patient with a new ostomy on appropriate diet.				
C 5	Teach about management of gas and odor				
C 6	Discuss with patient concerns of body image				
C 7	Discuss with patient self-management abilities				
C 8	Discuss possible isolation concerns				
C9	Discuss with patient concerns regarding resumption of intimate relationship				

C 10	Educate patients on identification of possible ostomy complications.				

Appendix D: Intervention

Class room session.

Topic: Discharge Planning of patients with bowel stoma.

Objectives.

- Defined bowel stomas, types
- Described indications for ileostomy and colostomy
- Patients' challenges, Nurses knowledge and Practices
- Discharge plan
- Explained assessment for learning needs of patients
- Described pouching
- Demonstrated application of a pouch
- Identified problems and seeking assistance
- Explained life with a stoma
- Described Diet and dietary concerns
- Explained precaution on medication use, physical activities, and Follow-up
- Support groups
- Methods.
- Power point presentation, lecture
- Brain storming done
- Role play done
- Illustration with videos and images done
- Demonstrated with models
- Reflected practice examples

Teaching Aids.

- Table showing classification, types, and indications for bowel stomas were discussed
- Diagrams and a mini lecture showed how to empty pouch
- A model of an adult bowel stoma
- Table showing foods that affected person with a bowel stoma
- Possible complications a patient could experience after discharge Lesson plan summarized in table A. below.

Table A

Lesson Plan.

Step Time	Content	Teacher activity	Participant activity	Remarks
Step 1 09-09:05 hours	Greeted	welcome nurses	Nurses registering themselves	done
Step 2 09:06-0935 hours	Defined bowel stomas, types, indications for ileostomy and colostomy	Define stoma, ostomy, ileostomy colostomy indications	view image of sites for creation of bowel stomas view table summarizing classification, types, and indications for stomas looked at image of stomas at various positions on the abdomen.	done
Step 3 09:36-09:45 hours	Described patients challenges and Nurses gaps and need for D/C planning tool, assessment for learning needs	Describe Patients challenges, Nursing gaps, need for a tool. Explain abilities, preferences and readiness, language barrier cultural or religious practice emotional barriers physical and mental limitations	2 participants share their experience of barriers in delivery of information.	done
Step 4 09: 46-10:30 hours	Described pouching	Principles of pouching - how and when to empty a pouch - process of emptying a pouch -equipment for pouching	Participants view image of steps in removal and application of a pouch and video on how to empty pouch, handle samples of various pouching systems	done
B	R	E	A	K
Step 5 11:00-11:40 hours	Demonstrated application of a pouch	assessment of peristomal area -peristomal cleansing	Participants are involved in use of a model in assessment of peristomal area, peristomal cleansing,	done

		-measuring stoma (allowance of 3 millimeters from stoma) -removing and placement of a pouch	measuring stoma, and removing and replacement of a pouch	
Step 6 1141-12MD	Identified problems and seeking assistance	Possible complications for patient with a stoma -physical complications and need to seek medical attention -psychological complications -social complications	show a list of possible physical	done
Step 7 12:01-12:15 hours	Explained life with a stoma	-where and when to obtain supplies bathing clothing sexual concerns	discussion	done
Step 8 12:16-12:35 hours	Described Diet and dietary concerns	prescribed mode of intake ileostomy diet colostomy diet	Shown table of foods that affect person with an ostomy	done
Step 9 12:36-12:45 hours	Explained precaution on medication use, physical activities	laxatives extended release -enteric coated blockage fluid and electrolyte imbalance	discussion on medicine and physical activities	done
Step 10 12:46-13:00 hours	Discussed Follow-up Support groups	follow-up duration, telephone contacts, list of clinics Psycho social support financial support peers, associations	Current practice, identify known local support groups and associations. and conclusion	done

Notes on discharge planning of patients with bowel stomas.

Definition of bowel stomas, classification, types, and indications.

A stoma is an artificial permanent or temporary opening, especially made in the abdominal wall in surgical procedures. An ostomy on the other hand is an operation to create an opening (a stoma) from an area inside the body to the outside. It may be created in various sites indicated in fig. A, below. There are 2 major types of bowel stomas; ileostomy and colostomy.

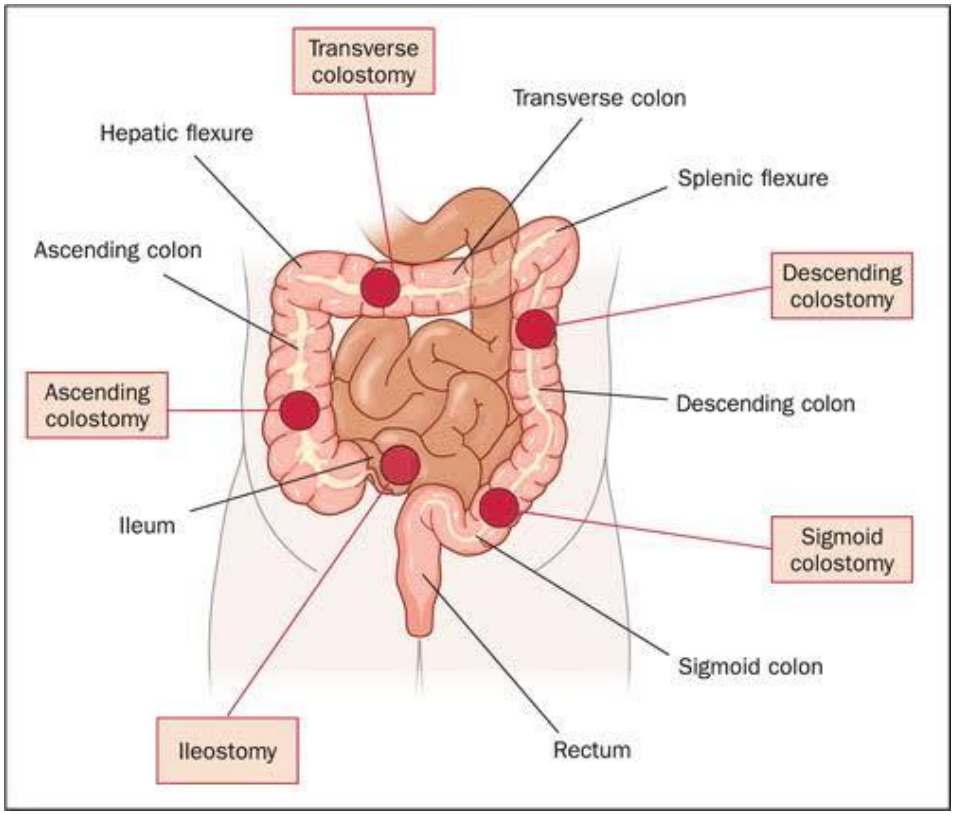

Fig A. showing sites where stoma can be created.

Ileostomy.

An ileostomy is an artificial opening created surgically, to connect the small gut to the exterior of the abdomen for elimination of fecal matter. Ileostomies and colostomies can be classified as temporary or permanent depending on whether reversal will be done or not.

Ileostomy may be created due to ulcerative colitis, Crohn's disease, familial polyposis, and bowel cancer. In some developing countries, bowel stomas have been created as a result of small gut rupture in enteric fever.

There are 3 types of ileostomies; standard or Brooke ileostomy, continent ileostomy (abdominal pouch), and ileo-anal reservoir (J-pouch).

Colostomy.

A colostomy is an artificial opening created surgically, to connect the large gut to the exterior of the abdomen for elimination of fecal matter.

Indications for colostomy may be due to a number of factors. The most common indication for colostomy creation is colorectal cancer. Diseases of the large bowel such as diverticulitis, inflammatory bowel disease, obstruction, injury, and birth defects are some of the other reasons for colostomy creation.

Sigmoid volvulus on the other hand is quite a common indication for creation of colostomy in the African race. Abdominal trauma is another factor contributing to creation of stoma in the sub-continent. Also, HIV, Tuberculosis in the sub-continent has led to increasing cases of abdominal tuberculosis with gut involvement.

Transverse colostomy is one of the most common colostomies. It is created at the right or middle part of upper abdomen. Stool exits before reaching the descending colon**.** Loop transverse colostomy, double barrel transverse colostomy, ascending colostomy is a rare type of colostomy created on the right side of the abdomen. Descending colostomy, and sigmoid colostomy is the most common.

Stoma type, indications and expected output described for proper management of stoma. This is summarized in table 2 below. Each type its indications and expected output described for proper management of stoma. This is summarized in table B below.

Table B

Classification, types and indications of bowel stomas

	Classification	Types	indication
Colostomy	May be permanent and Temporary	Transverse colostomy, Loop transverse colostomy, Double barrel transverse colostomy, Ascending colostomy, Descending colostomy, sigmoid colostomy	colorectal Diseases of the large bowel such as diverticulitis, inflammatory bowel disease, obstruction, injury, and birth defects, Sigmoid volvulus, enteric fever complicated with gut perforation, abdominal tuberculosis, and abdominal trauma
Ileostomy	May be permanent and Temporary	Standard or Brooke ileostomy, continent ileostomy, In ileo-anal reservoir,	ulcerative colitis, Crohn's disease, familial polyposis, and bowel cancer, small gut rupture in enteric fever, abdominal tuberculosis.

D/C planning of patient with a bowel stoma

Effective discharge planning for patients with stoma is performed by a nurse to help patients adjust to a new life and continues from admission until they go home. It involves assessment for readiness, methods used to teach patient, pouch management, peristomal skin care, problems to report, living with a stoma, diet, medication, physical activities, follow-up care and use of support groups. The above measures are described in detail below.

Assessment for readiness to learn.

Assessment for readiness to learn involves checking the patient for learning needs, abilities, preferences and readiness. Consideration is also put on cultural, religious practices, and emotional barriers such as anxiety, anger, and fear. The patient is assessed for desire, motivation to learn, physical symptoms (pain and fatigue). Cognitive limitations, physical limitations, mental status change, and chronicity of condition in an elderly patient may hinder learning. Language barrier, and financial implications of care choice are important considerations. A family member of patient's choice who can understand, support and accept patient's situation is involved in the sessions

Teaching Methods.

Teach-back method, demonstrations and return demonstrations, video, illustrations, pamphlets, use of images or models, and power point presentations with a session of not more than one hour are used to educate the patient with a stoma. An illiterate person may learn through verbal explanations, pictures with arrows and some of the above methods. Patient self-care is encouraged. Education may be delayed until the 4th post-operative day, while engagement with other general skills is done. Brochures regarding ostomy skills is another way of helping patients grasp the process of self-care.

Pouch management.

Pouch management is based on a number of principles and steps (Fig. B) below. Emptying of pouch is done in the toilet in the most convenient way for the patient. Toilet tissue is put into bowl to prevent splashing. The patient's back is arched in while seated on toilet, pouch end is cleaned but should not be rinsed. They are encouraged to learn to feel pouch level of fullness (1/3-1/2) full to avoid strain on seal.

The nurse advises patient that pouch change is 2-3 times a week, or every 3-4 days. It may also be changed when it leaks, and when there is skin irritation, in preparation for intimate relationship, or before bowing in prayer.

The patient is advised to have equipment and accessories assembled in a bag or on shelf for ease of access. Application of paste or barrier ring prior to removing pouch may be done. The nurse advises the patient that removal of pouching system can be done in shower with non-oily soap and water. Barrier is gently removed using a push-pull, from top to bottom method.

The nurse informs patient that initially there will be edema of stoma affecting its size. This shrinks with time thus the pouch is resized until stoma size is stable. Measuring guides may be patterned in case the stoma is not round, and patient guided on this. Patient is advised that skin barrier is applied while standing to give a flat surface or abdomen. It can also be applied when sitting, if abdomen is flat and stoma is easy to see.

Fig. B. showing pouch change by a patient.
https://www.ciamedical.com/new-image-two-piece-ostomy-system-44mm

Peristomal skin care.

The nurse informs the patient that skin around skin barrier must not be very different from the rest of the abdominal skin. It is assessed for redness, rashes, and broken skin, and any signs of irritation. Any abnormalities may be reported to specialist nurse and surgeon.

Peristomal skin cleansing using clean warm water and paper towel is demonstrated to the patient. Only the peristomal skin is washed and patted dry, the stoma should not be cleaned. Hair on peristomal skin may be removed using an electric razor.

Problems to report.

Carmel et al. (2020), provided the following list of complications that a patient should report to the health care provider. Severe cramps lasting for more than 2-3 hours, deep cut in stoma, excessive bleeding from the stoma opening (in pouch at several emptying), and continuous bleeding at junction between stoma and skin.

Severe skin irritation or deep ulcers, unusual change in stoma size and appearance, severe watery discharge lasting more than 5-6 hours are other situations to look out for. Also, continuous nausea and vomiting no stoma output for 4-6 hours plus cramping and nausea, and increase in frequency of stoma output, or the pouch requires emptying more often.

Living with a stoma.

The patient is advised on where to get supplies and specifically what to obtain. They should keep supplies together in a box or bag away from hot and cold temperatures. They are advised to have an extra pouching system, paper towel, disposal bag and accessories with them when leaving home.

Bathing may be done in a shower, swimming is possible if pouch is emptied first then barrier edge taped with water proof tape, and secured with a belt. A spacious bathroom for demonstrating to patients is helpful.

Patients may wear the same clothing as before. In case of stoma above waist line, an over blouse, or shirt may be used. Patients are cautioned that they may not be able to wear a belt or shirts tucked in, unless a shield for the attachment is worn.

A nurse may inquire about patient's sexual concerns regardless of age. Possible complications resulting from colostomy such as vaginal dryness, erection, and ejaculatory problems need to be explained. Support and encouragement for partners is crucial. For a prospective partner, patient is encouraged to inform them early before they discover it.

Dietary concerns.

The nurse advises patients to chew food (fibrous) well to prevent blockage, avoid use of a straw, and take meals in small amounts. Patients are encouraged to consume a regular balanced diet with vitamins, minerals and calories. They are advised to initially take a liquid to low fiber diet until edema resolves within 4-6 weeks. New foods are tried gradually while watching ostomy response. They are also cautioned on fasting or skipping meals.

Patient with ileostomy is advised to watch out for fecal blockage. Nurse advises them to chew fibers in small amounts and thoroughly along with fluid intake for prevention. An increase in fecal volume output in ileostomy may lead to dehydration, and acute renal problems.

A patient with colostomy is informed that they may experience constipation, thus whole grain, vegetables, fruits, high fluid intake are foods that may prevent it. Diarrhea may be as a result of consuming some foods, medicine, being on chemotherapy or a medical condition. Odor is a common feature in colostomy and even worse in transverse colostomy. It may be due to foods, normal bacteria in gut, illness, medicine and vitamins use. Foods and their effects on a patient with stoma are summarized in table C below.

Table C

Foods and their effects on a patient with stoma.

Effect	Foods that affect person with stoma
Color change	asparagus, beet, food coloring, iron pills, licorice, red gelatin, strawberries, tomato sauce, colored frosting
Constipation relief	coffee, warm/ hot, cooked fruits, cooked vegetables, fresh fruits, water, any warm or hot beverage.
Diarrhea control	apple sauce, bananas, boiled rice, creamy peanut butter, pectin supplements(fiber), tapioca, toast
Gas producing	alcoholic beverages, beans, soy, cabbage, carbonated beverages, cauliflower, chewing gum, cucumber, dairy products, milk, nuts, onions, radishes
Increased stools	alcohol beverages, whole grain, bran cereals, cooked cabbage, fresh fruits, leafy green, milk, prunes, raisins, raw vegetables, spices
Odor control	buttermilk, cranberry juice, orange juice, parsley, tomato juice, yoghurt
Odor producing	asparagus, baked beans, broccoli, cabbage, cod liver oil, eggs, fish, garlic, onions, peanut butter, some vitamins, strong cheese
Stoma obstructive	apple peels, cabbage raw, cereal, Chinese vegetables, whole kernel corn, coconuts, dried fruits, mushrooms, oranges, nuts, pineapple, popcorn, seeds, coleslaws, grapefruit, bamboo shoots.

Medications.

Nurse advises patients with ileostomy and ascending colostomy, never to take laxatives, it leads to dehydration. Patients are cautioned on extended-release medicines, depending on length of functional ileum. Enteric coated drugs may not be absorbed, patient advised to watch out for medicine related gut blockages, diarrhea, fluid and electrolyte imbalance.

Physical activities and Follow-up care.

Patients are advised to do abdominal exercises to prevent peristomal hernias. Nurse emphasizes importance of follow-up because daily care, diet, and other concerns may persist for a long time. Availability of proper pouching equipment helps a lot is preventing some of these complications (Maurício et al. 2020). Long term access to the specialist improves patients' quality of life. Patients may be given numbers to call and list of clinics to access when they need guidance or have complications. Patients are advised to come back for re-assessment after 2 weeks post-discharge. They are advised on where to get supplies.

Support groups.

Patients are made aware of support groups that may offer social support, psychological support, or financial support. Support groups may be such as local groups, national association, international associations, and peer groups.

Ward discussions and demonstration sessions

Ward discussion and demonstration sessions lasting one hour, for a duration of 3 weeks during introduction of D/C planning tool on the ward will be done. Group members for each session will be noted, each member is expected to be involved in 2-3 sessions)

Assess situation regarding D/C planning on the ward.

- Possible patients' complications, and dangers based on current nurses' knowledge and practice
- Data on gaps in educating patients.
- Patients experience before and after discharge with nurses.
- The general environment where D/C can be done on the general surgical wards
- Negative forces regarding the introduction of the D/C planning tool
- The roles and interactions of nurses handling of such patients

Create environment for change.

- D/C planning tool, as supported by literature will be discussed
- Strength of the D/C planning tool will be discussed
- Sharing information, skills and recognition

Increase drive for change.

- Increasing the driving forces that can sway current behavior
- Reduce the restraining forces that antagonize movement to the current equilibrium

- Encourage the nurses to perceive the introduction of the D/C planning tool as advancing their strengths in learning and discovery
- Address fears about use of the tool, such as time it might take, problems that may arise as a result, being overwhelmed.

Reduce resistance to change.

- Address nurses' internal environmental challenges for change such as supplies, expertise, interdisciplinary team support, nature of patients, and nurses' dependency on one another
- Reluctance for some to get started
- Inadequate knowledge, and poor practices

Change stage.

Taking action.

- Address nurses' concerns
- Encouraged to contribute any solutions or alternatives that may oppose predictable restraining forces.
- Sharing individual beliefs, experiences, skills, and competencies with the team. train nurses on how the tool can be used
- Provide education resources to nurses
- Ensure improvement in communication, documentation, commitment towards change.

Making changes.

- Continuously teach nurses about the discharge plan.
- Put a poster of the D/C plan (Appendix A) on the duty and procedure rooms
- give handouts
- Demonstrate teaching with real patients during discussions**.**

Involving nurses.

- Appeal for support departmental level share concerns.
- Build trust among the nurses during this transition

Allowing time for nurses to learn.

- Continuing support to the nurses during this time.
- Make an effort to see that the nurses do not to revert to their old behavior, by reminding and encouraging them.
- Ask group members what they are experiencing
- More and more inquiry from the nurses about any concerns regarding change
- Restraining forces once identified, will be addressed as a group

Appendix E: Approval to use Discharge planning content

Wolters Kluwer

Accept your approved request

Dear Miss. Jessica Damali Muganga,

Wolters Kluwer Health, Inc. has approved your recent request described below. Before you can use this content, **you must accept** the license fee and terms set by the publisher.

Use this link to accept (or decline) the publisher's fee and terms for this order.

Order Summary

Licensee:	Uganda Christian University, Mukono
Order Date:	Mar 18, 2023
Order Number:	501801307
Publication:	WK Health Book
Title:	Wound, Ostomy, and Continence Nurses Society Core Curriculum: Ostomy Management
Type of Use:	Dissertation/Thesis
Order Ref:	347953

View or print complete details of your request.

Sincerely,

Copyright Clearance Center

Appendix F: Permission from UCU REC

UGANDA CHRISTIAN UNIVERSITY
A Centre of Excellence in the Heart of Africa

06/10/2023

To: Jessica Damali Muganga

Uganda Christian University, Mukono
0782357410

Type: Initial Review

Re: UCUREC-2023-640: EFFECT OF INTRODUCING A DISCHARGE PLANNING TOOL FOR PATIENTS WITH A STOMA, ON NURSES' KNOWLEDGE AND PRACTICES AT MULAGO NATIONAL REFERRAL HOSPITAL, UGANDA

I am pleased to inform you that the Uganda Christian University REC, through expedited review held on **05/10/2023** approved the above referenced study.
Approval of the research is for the period of **06/10/2023** to **06/10/2024.**

As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the REC for re-review and approval **prior** to the activation of the changes.
3. Reports of unanticipated problems involving risks to participants or any new information which could change the risk benefit: ratio must be submitted to the REC.
4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by participants and/or witnesses should be retained on file. The REC may conduct audits of all study records, and consent documentation may be part of such audits.
5. Continuing review application must be submitted to the REC **eight weeks** prior to the expiration date of **06/10/2024** in order to continue the study beyond the approved period. Failure to submit a continuing review application in a timely fashion may result in suspension or termination of the study.
6. The REC application number assigned to the research should be cited in any correspondence with the REC of record.
7. You are required to register the research protocol with the Uganda National Council for Science and Technology (UNCST) for final clearance to undertake the study in Uganda.

The following is the list of all documents approved in this application by Uganda Christian University REC:

UGANDA CHRISTIAN UNIVERSITY
APPROVED
UNTIL
06 OCT 2024
RESEARCH ETHICS COMMITTEE

No.	Document Title	Language	Version Number	Version Date
1	HSP/GCP	English	English	2023-08-26
2	Anti-Plagiarism report/ Turnitin Report on Prosal	English	Open source	2023-08-24
3	Research Budget	English	developed by researcher	2023-08-23
4	Proposal	English	developed by resaercher	2023--20
5	Protocol	English	developed by resaercher	2023-02-11
6	Community Engagement plan if applicable to your study	English	Developed by researcher	2023-07-17
7	Informed Consent forms	English	Developed by researcher	2023-02-13
8	Data collection tools	English	Developed by researcher	2023-01-19

Yours Sincerely

Peter Waiswa
For: Uganda Christian University REC

UGANDA CHRISTIAN UNIVERSITY
APPROVED
UNTIL
06 OCT 2024
RESEARCH ETHICS COMMITTEE

Appendix G: Permission from REC Mulago NRH

TELEPHONE: +256-41554008/1
FAX: +256-414-5325591
E-mail: admin@mulago.or.ug
Website: www.mulago.or.ug

IN ANY CORRESPONDENCE ON THIS SUBJECT PLEASE QUOTES NO.....

MULAGO NATIONAL REFERRAL HOSPITAL
P. O. Box 7051
KAMPALA, UGANDA

A Wellcome study
No objection
Dr. Ruth
Ag. Head Surgery
16/11/23

13 November 2023.

Ms. Muganga Jessica Damali
Principal Investigator
Uganda Christian University.

Dear Muganga,

RE: RECOMMENDATION FOR ADMINISTRATIVE CLEARANCE TO CONDUCT A STUDY AT MULAGO NATIONAL REFERRAL HOSPITAL.

The Administration and Management of Mulago National Referral Hospital is pleased to inform you that you have been offered clearance to conduct the study titled **MHREC 2635: "Effect of Introducing a Discharge Planning Tool for Patients with A Stoma, on Nurses' Knowledge and Practices at Mulago National Referral Hospital, Uganda".**

The above clearance is granted to you on the following conditions;

- That you will follow the research ethical processes
- Agreed to comply with all institutional policies and regulations of Mulago National Referral Hospital
- Agreed to provide end of study report and acknowledge Mulago hospital in all publications

Administrative clearance is valid for one (1) year effective from 10 November 2023 to 9 November 2024.

By copy of this letter, we reiterate our commitment to support this study.

DR. BYANYIMA ROSEMARY
AG. EXECUTIVE DIRECTOR
MULAGO NATIONAL REFERRAL HOSPITAL.

Copied to;
1. **Ms. Muganga Jessica Damali- Principal Investigator**

Appendix H: Knowledge Score Before Intervention

SNO.	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Raw	%	Category
1	5	0	0	0	0	0	5	0	0	0	5	5	5	0	5	0	5	0		0	40	40	< 60
2	0	0	5	0	0	0	0	0	5	5	0	0	5	0	5	0	0	0	0	0	25	25	< 60
4	0	0	0	5	0	0	0	0	0	0	5	0	5	5	0	5	0	0	5	0	30	30	< 60
5	0	0	0	0	0	0	5	0	5	5	5	0	0	5	0	0	0	5	0	0	30	30	< 60
6	0	0	5	0	5	5	0	5	0	0	5	0	5	5	0	0	0	5	5	0	45	45	< 60
7	0	0	0	0	5	0	0	0	0	0	0	5	0	0	0	5	0	0	5	0	20	20	< 60
8	0	0	0	5	5	0	0	0	0	0	5	5	5	0	0	0	0	0	5	0	30	30	< 60
9	0	0	0	5	0	0	5	0	5	0	5	0	5	5	0	5	0	0	5	0	40	40	< 60
10	0	0	5	0	0	0	0	0	0	0	0	0	5	5	5	0	0	0	5	0	25	25	< 60
11	0	0	0	0	5	0	0	0	0	0	5	0	5	0	5	0	5	0	5	0	25	25	< 60
12	0	0	5	0	5	5	0	0	0	0	0	0	0	0	0	5	5	5	5	5	40	40	< 60
13	0	0	5	0	0	0	0	0	5	0	0	5	5	5	5	5	0	5	5	0	45	45	< 60
14	0	0	0	0	0	5	5	0	0	0	0	0	5	0	5	5	5	0	5	0	35	35	< 60
15	0	0	0	0	0	5	0	0	0	5	5	0	0	5	0	0	0	0	0	0	20	20	< 60
16	1	0	0	0	0	0	5	5	0	5	5	0	5	0	5	5	0	5	5	0	50	50	< 60
17	0	0	0	0	0	0	0	0	5	0	0	0	0	5	0	0	0	0	0	0	50	10	< 60
18	0	0	0	0	5	0	0	5	5	0	5	5	5	5	0	0	0	0	0	0	35	35	< 60
19	0	5	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0	0	5	5	25	25	< 60
20	0	0	0	5	0	5	0	5	5	0	5	0	5	5	5	0	0	0	5	0	45	45	< 60
21	5	0	0	5	0	0	0	5	0	0	5	5	5	5	5	5	0	5	0	0	50	50	< 60
24	5	0	0	0	5	0	0	5	0	0	0	0	5	5	0	5	0	0	5	0	35	35	< 60
28	0	0	0	5	5	0	0	0	0	5	0	5	5	5	0	5	0	0	0	0	35	35	< 60
30	0	0	0	0	0	5	5	0	0	0	5	0	5	5	5	0	5	5	0	5	45	45	< 60
Mean %																						34.13	
SD																						10.13	

Appendix I: Knowledge Scores After Intervention

SNO.	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Raw	%	Category
1	5	5	5	0	5	5	0	0	0	0	5	0	0	5	5	0	5	0	5	0	50	50	<60
2	5	0	5	0	5	5	0	5	0	5	5	0	5	0	5	5	0	5	5	5	65	65	60-79
4	5	0	5	0	0	5	5	0	5	0	5	0	5	5	5	5	0	0	5	0	55	55	<60
5	0	0	0	0	5	0	5	0	0	5	0	0	5	5	0	0	0	0	5	0	30	30	<60
6	5	0	5	0	5	5	0	0	0	0	5	5	5	5	5	0	0	0	5	0	50	50	<60
7	5	0	5	0	5	0	5	0	0	5	0	0	5	0	5	5	0	0	5	5	50	50	<60
8	5	0	5	5	5	0	5	5	5	0	5	5	5	5	5	0	5	0	5	0	70	70	60-79
9	0	0	5	5	5	0	5	5	5	0	5	5	5	5	5	5	0	5	5	5	75	75	60-79
10	0	0	5	0	5	5	0	5	5	0	5	0	5	5	5	0	0	0	0	0	45	45	<60
11	5	0	5	0	5	0	5	0	0	5	5	0	5	5	5	5	5	0	5	0	60	60	60-79
12	5	0	5	0	5	5	0	5	0	0	5	5	5	5	5	0	5	0	0	5	60	60	60-79
13	0	5	5	0	0	5	0	5	5	0	5	0	5	5	5	5	5	5	5	0	65	65	60-79
14	5	5	5	5	5	5	5	5	5	0	0	5	5	0	5	0	5	0	0	5	70	70	60-79
15	5	0	5	0	0	5	5	5	5	5	5	0	5	5	0	5	0	5	5	0	65	65	60-79
16	5	5	5	5	5	5	5	5	0	5	5	0	5	5	5	0	0	0	5	0	70	70	60-79
17	0	0	5	0	5	0	0	0	0	0	0	0	5	0	0	0	5	0	0	0	20	20	<60
18	0	0	5	0	5	5	5	0	0	5	5	0	5	5	0	5	5	5	5	0	60	60	60-79
19	5	0	5	0	5	5	0	0	0	0	0	0	5	5	0	5	5	5	5	0	50	50	<60
20	5	0	5	0	0	5	0	5	5	5	5	0	5	5	5	5	5	0	5	0	65	65	60-79
21	0	5	5	5	0	5	5	5	0	5	5	0	5	5	5	5	0	0	5	0	65	65	60-79
24	0	0	5	0	5	5	5	5	0	0	5	5	5	5	5	0	5	0	5	0	60	60	60-79
28	5	0	5	0	0	5	5	0	0	5	5	0	5	5	5	0	0	0	5	0	50	50	<60
30	0	0	5	0	5	5	0	5	0	0	5	5	5	5	5	5	5	5	0	5	65	65	60-79
Mean %																						57.17	
SD																						13.14	

Appendix J: Effect of Intervention on Knowledge of Nurses

S NO.	Pre-intervention		Post-intervention		Change in %
	Raw scores out of 20	%	Raw scores out of 20	%	
1	8	40	10	50	10
2	5	25	13	65	40
4	6	30	11	55	25
5	6	30	6	30	0
6	9	45	10	50	5
7	4	20	10	50	30
8	6	30	14	70	40
9	8	40	15	75	35
10	5	25	9	45	20
11	6	30	12	60	30
12	8	40	12	60	20
13	9	45	13	65	20
14	7	35	14	70	35
15	4	20	13	65	45
16	10	50	14	70	20
17	2	10	4	20	10
18	7	35	12	60	25
19	5	25	10	50	25
20	9	45	13	65	20
21	10	50	13	65	15
24	7	35	12	60	25
28	7	35	10	50	15
30	9	45	13	65	20
Mean%		34.13		57.17	23.04
SD		10.41		13.14	

Appendix K: Analysis of Questionnaire Items Performance on Knowledge.

Question No.	Statement of question	Pre-intervention		Post- intervention		Overall % knowledge change (+/-)Change
		Correct (%)	Wrong (%)	Correct (%)	Wrong (%)	
B 1	Nurse explains to a patient that an ileostomy represents the following except …….	17.4	82.6	60.9	39	+43.5
B 2	A nurse explains to a patient with a sigmoid colostomy, that his bowel movement will mainly be …….	4.3	95.7	21.7	78.3	+ 17.4
B 3	A nurse will advise patient that the stoma bag will be emptied when it is ……	21.7	78.8	95.7	4.3	+74
B 4	A patient with a new ileostomy is advised that, initially emptying of bag is expected to happen….. (choose one)	26.1	73.9	21.7	78.3	-4.4
B 5	Patient with an ileostomy is advised on medicine intake as follows except…. (choose one)	34.8	65.2	73.9	26.1	+39.1
B 6	A patient is instructed on how to care for the stomal area, by doing the following except;	26.1	73.9	73.9	26.1	+47.8
B 7	Nurse advises patient to seek medical advice, if stoma produces no gas for… (choose one)	26.1	73.9	56.5	43.5	+ 30.4
B 8	Nurse advises patient with a stoma to do the following when travelling…. except (choose one)	26.1	73.9	56.5	43.5	+ 30.4
B 9	Patient is advised to get involved in exercises or sport and can wear the following…… except (Choose one)	30.1	69.9	34.8	65.2	+ 4.7
B 10	Patient with bowel stoma is advised to control bad odor by using the following except:	21.7	78.3	43.5	56.5	+21.8
B 11	Patient with bowel stoma suffer from negative self-concept such as the following except	56.5	43.5	78.3	21.8	+21.8
B 12	Patient with bowel stoma may feel lack of independence due to the following except....	30.1	69.9	30.1	69.9	0
B 13	Patients may Not easily adapt to having a stoma if they …… (Choose one)	78.3	21.7	95.7	4.3	+17.4
B 14	Patients with a stoma may experience the following psychological challenges except one	65.2	34.8	82.6	17.4	+ 17.4
B 15	Nurse describes a two-piece pouching system to a patient as below (choose one)	43.5	56.5	78.3	21.7	+34.8
B 16	Nurse explains to patient that prevention of fecal blockage is by ……. except; (choose one)	43.5	56.5	52.2	47.8	+8.7
B 17	Patient with ileostomy is advised to do the following when intestinal blockage is suspected except……..(choose one)	21.7	78.3	52.3	47.8	+30.5
B 18	A patient with a colostomy is advised to change her bag in the following situation except;	30.4	69.6	30.4	69.6	0
B 19	Nurse advises patients to do the following regarding diet except;	65.2	34.8	78.3	21.7	+ 13.1
B 20	Nurse advises a female patient having a colostomy with sexual concerns using the following statements the except (choose one)	13	87	26.1	73.9	+ 13.1

Appendix L: Practices Score Before Intervention

SNO.	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Total score	Mean	Category
1	1	1	2	2	2	2	3	1	1	3	18	1.8	Poor
2	2	2	2	3	2	2	3	2	2	4	24	2.4	Poor
4	4	2	3	4	3	3	3	2	3	3	30	3.0	Good
5	2	3	4	4	2	4	4	2	2	1	28	2.8	Poor
6	4	4	4	3	4	4	1	1	1	3	29	2.9	Poor
7	2	4	4	4	2	2	3	1	2	2	26	2.6	Poor
8	4	2	4	4	3	2	4	4	2	4	33	3.3	Good
9	2	2	3	3	4	2	3	2	2	3	26	2.6	Poor
10	1	4	4	4	1	3	4	2	2	3	28	2.8	Poor
11	3	3	4	3	2	2	3	1	1	3	25	2.5	Poor
12	3	3	3	3	3	2	2	3	3	3	28	2.8	Poor
13	2	1	4	4	2	1	2	1	1	2	20	2.0	Poor
14	4	4	3	3	3	3	3	3	2	3	31	3.1	Good
15	3	2	4	4	4	3	3	3	2	4	32	3.2	Good
16	2	2	4	3	1	1	2	1	2	2	20	2.0	Poor
17	2	2	3	3	2	2	4	2	4	3	27	2.7	Poor
18	2	3	4	2	1	3	3	2	3	2	25	2.5	Poor
19	4	2	3	4	2	2	2	1	3	1	24	2.4	Poor
20	3	4	4	3	3	3	4	1	2	3	30	3.0	Good
21	2	2	3	3	2	1	3	2	2	3	23	2.3	Poor
24	3	4	3	4	3	2	4	3	2	4	32	3.2	Good
28	1	2	2	2	1	1	1	1	2	2	15	1.5	Poor
30	2	3	3	2	1	1	2	2	2	3	21	2.1	Poor
Total												59.5	
Mean practices												2.59	Poor
SD												0.47	

Appendix M: Practices Score After Intervention

SNO.	Q 1	Q 2	Q 3	Q 4	Q 5	Q6	Q7	Q8	Q9	Q10	Total	Mean	Category
1	4	3	3	3	2	4	4	1	3	4	31	3.1	Good
2	2	3	4	2	3	2	3	2	3	3	27	2.7	Poor
4	3	3	3	4	4	3	3	3	4	4	34	3.4	Good
5	4	4	4	4	4	4	4	4	4	4	40	4.0	V. Good
6	4	4	2	3	2	3	3	2	2	3	28	2.8	Poor
7	2	2	2	3	4	2	4	2	1	4	26	2.6	Poor
8	4	4	4	4	2	2	4	2	4	4	34	3.4	Good
9	2	3	4	4	4	4	4	2	4	4	35	3.5	V. Good
10	3	4	4	2	2	4	3	2	1	4	29	2.9	Poor
11	3	4	4	2	3	2	3	2	2	3	28	2.8	Poor
12	4	4	4	4	4	4	3	4	4	4	39	3.9	V. Good
13	4	3	4	4	4	4	4	3	3	4	37	3.7	V. Good
14	4	4	4	4	4	3	4	4	3	4	38	3.8	V. Good
15	4	4	3	4	3	3	3	4	2	4	34	3.4	Good
16	3	3	4	4	4	4	3	3	4	3	35	3.5	V. Good
17	3	3	4	4	4	4	4	2	4	4	36	3.6	V. Good
18	1	4	4	4	4	3	4	4	3	4	35	3.5	V. Good
19	2	3	4	3	3	3	3	1	1	3	26	2.6	Poor
20	3	3	4	4	2	4	4	3	2	3	32	3.2	Good
21	3	3	3	3	3	2	2	2	2	3	26	2.6	Poor
24	3	4	4	3	4	4	4	4	2	4	36	3.6	V. Good
28	2	3	4	3	2	2	3	2	2	3	26	2.6	Poor
30	3	4	4	3	3	3	4	3	3	4	34	3.4	Good
Total												74.6	
Mean Practices												3.24	Good
SD												0.45	

Appendix N: Effect of Intervention on Practices of Nurses

SNO	Pre-intervention		Post- intervention		Mean change
	Raw scores	mean	Raw scores	mean	
1	18	1.8	31	3.1	1.3
2	24	2.4	27	2.7	0.3
4	30	3.0	34	3.4	0.2
5	28	2.8	40	4.0	1.2
6	29	2.9	28	2.8	- 0.1
7	26	2.6	26	2.6	0.0
8	33	3.3	34	3.4	0.1
9	26	2.6	35	3.5	0.9
10	28	2.8	29	2.9	0.1
11	25	2.5	28	2.8	0.3
12	28	2.8	39	3.9	1.1
13	20	2.0	37	3.7	1.7
14	31	3.1	38	3.8	0.7
15	32	3.2	34	3.4	0.2
16	20	2.0	35	3.5	1.5
17	27	2.7	36	3.6	0.9
18	25	2.5	35	3.5	1.0
19	24	2.4	26	2.6	0.2
20	30	3.0	32	3.2	0.2
21	23	2.3	26	2.6	0.3
24	32	3.2	36	3.6	0.4
28	15	1.5	26	2.6	1.1
30	21	2.1	34	3.4	1.3
Total		59.5		74.6	
Mean		2.59		3.24	0.65
SD		0.47		0.45	

Appendix O: Analysis of Questionnaire Items Performance on Practices

Question	Statement of question on practices	Frequency for various scales before intervention (N=23)				Mean	SD	Frequency for various scales before intervention (N=23)				Mean	SD	change
		Always (4)	Frequently(3)	Sometimes(2)	Never (1)			Always (4)	Frequently (3)	Sometimes (2)	Never (1)			
C 1	Perform an ostomy assessment to provide appropriate care to my patient.	5	5	10	3	2.52	.994	8	9	5	1	3.04	.888	0.52
C 2	Discuss with patient appropriate ostomy appliance for their care	6	5	10	2	2.56	.982	11	11	1	0	3.43	.589	0.87
C 3	Guide patient on appropriate fitting for stoma.	11	9	3	0	3.35	.714	17	4	2	0	3.65	.647	0.30
C 4	Educate patient with a new ostomy on appropriate diet.	9	10	4	0	3.22	.736	12	8	3	0	3.39	.722	0.17
C 5	Teach about management of gas and odor	3	6	9	5	2.3	.974	11	6	6	0	3.22	.850	0.92
C 6	Discuss with patient concerns of body image	2	6	10	5	2.22	.902	10	7	6	0	3.17	.834	0.95
C 7	Discuss with patient self-management abilities	6	10	5	2	2.87	.920	12	10	1	0	3.48	.834	0.61
C 8	Discuss possible isolation concerns	1	4	9	9	1.87	.869	6	5	10	2	2.65	.982	0.78
C 9	Discuss with patient concerns regarding resumption of intimate relationship	1	4	14	4	2.09	.733	7	6	7	3	2.74	1.05	0.65
C 10	Educate patients on identification of possible ostomy	4	12	5	2	2.78	.850	15	8	0	0	3.65	.487	0.87

	complications.													