THE IMPACT OF AN OSTOMY TRAINING WORKSHOP ON OCCUPATIONAL THERAPY PRACTITIONERS' AND STUDENTS' CONFIDENCE IN CLIENT EDUCATION ON OSTOMY MANAGEMENT

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Abstract

The objective of this quality improvement study was to assess if an ostomy training workshop with a hands-on component would impact the confidence of occupational therapy practitioners and students in client education on ostomy management. The hypothesis is that the training workshop would improve the confidence of occupational therapy practitioners and students in client education on ostomy management. Participants were occupational therapists, occupational therapy assistants, or occupational therapy students in Henderson, Nevada; North Las Vegas, Nevada; or Las Vegas, Nevada. The study utilized a time-series design with a pre- and post-workshop survey that included a sample size of 30. Occupational therapy practitioner and student confidence were assessed on the pre-survey and post-survey using a 5-point Likert-scale (1=Strongly disagree, 6=Strongly Agree) adapted from Cross et al. (2014). The post-workshop survey also included questions about demographic data, clinical practice characteristics, and work characteristics adapted from Cross et al. (2014) and Alenezi et al. (2022). The post-workshop survey had questions about the experience of the workshop for quality improvement purposes. The pre- and post-workshop surveys were online through Qualtrics and accessed through a QR code given to participants to scan. The results of the study displayed statistically significant changes ($p<0.05$) between the confidence levels of the sample in the pre-workshop survey and post-workshop survey on all items with $p<0.001$. The confidence levels of occupational therapy practitioners and students regarding ostomy care & client education on ostomy management significantly increased following an ostomy workshop with a hands-on component. Occupational therapy practitioners with ostomy training are equipped to assist the ostomate population. Practitioners should seek continuing education opportunities to further their knowledge and skillset on ostomy. Occupational therapy programs should consider

implementing ostomy training into their curriculum. Further research should be performed on the topic of ostomy care and occupational therapy to better inform clinical practice.

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Dedication

I would like to dedicate this project to my father, Randal, my mother, Debbie, and my partner, Regan, for their continued love and support throughout the capstone process. I would also like to dedicate this project to my family, my friends, and my classmates for their words of encouragement to push me to finish this project.

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Introduction

An ostomy is a life-saving procedure that changes how exits the body (United Ostomy Association of America, n.d.-b). An ostomy can impact clients, also known as ostomates, participate in their meaningful occupations ingrained into their roles, routines, and rituals. With this in mind, it is imperative that ostomates receive the proper education to manage their ostomies to maintain their health and quality of life. Research indicates that the current education for ostomates from healthcare practitioners should be improved (Bonill-de las Nieves et al., 2017; Elshatarat et al., 2020; Gautaum et al., 2016; Jones et al., 2017; Lim et al., 2015; Miller, 2020; Shrestha et al., 2022). This education can be provided by occupational therapy practitioners as the management of ostomy falls under their scope of practice; however, there are limited resources regarding the role of occupational therapy and ostomy care (American Occupational Therapy Association [AOTA], 2020). Therefore, there is a need to address this area of research intervention to promote the function and wellness of ostomates as outlined by the American Occupational Therapy Association (AOTA) and the American Occupational Therapy Foundation research agenda (American Occupational Therapy Foundation & AOTA, 2011). Thus, the purpose of the study was to assess if an ostomy training workshop with a hands-on component impacted the confidence of occupational therapy (OT) practitioners and students in client education on ostomy management. This was assessed through a time-series design with a pre- and post-workshop survey for a single group of subjects.

Statement of Problem & Research Question

This section briefly reviews the perceived problem, the research question, the hypothesis, and operational definitions of the project.

Perceived Problem

The problem that the study aimed to address is the inadequate education and training being given to ostomates This may be due to shortened hospital stays which led to shorter times to receive the education needed (Krouse et al., 2016). Many families are trying their best to learn independently and ostomy specialists are only involved when there are severe problems with the ostomy (Krouse et al., 2016). In addition, there is a lower level of confidence in nursing staff with limited experience and training in ostomy care (Cross et al., 2014). As of 2016, the American College of Surgeons estimates that approximately 29% of new ostomates cannot independently empty a pouch, and 56% cannot apply a new pouch independently (Wasserman & McGee, 2017). As a result of issues with ostomy management, 47% of the ostomates who participated in the survey felt depressed & saddened and 44% developed anxiety about their stoma care (Wasserman & McGee, 2017).

Research Question

The guiding research question for this project was, “will an ostomy training workshop with a hands-on component impact the confidence of occupational therapy practitioners and students in client education on ostomy management?” The hypothesis for this research was that an ostomy training workshop with a hands-on component will improve the confidence of OT practitioners and students in client education on ostomy management.

Operational Definitions

Ostomy training workshop: A workshop that reviewed the management of an ostomy pouch which includes emptying & cleaning an ostomy pouch and changing & applying an ostomy pouch using a holistic occupational therapy lens (Cleveland Clinic, 2022). The workshop also reviewed the gastrointestinal system's anatomy and physiology, the procedure itself, lifestyle modifications, supplies, psychological preparation, pouching principles, living with a stoma, and dietary concerns (Carmel & Goldberg, 2022; Goldberg & Mahoney, 2022). This workshop also included education on the impact of an ostomy and various meaningful occupations to the client.

Hands-on: A learning method that provides direct practical experience in applying a pouch and crusting to treat irritated peristomal skin (Merriam-Webster, n.d.-b).

Confidence: Self-perceived feeling of one's power in their ability to apply knowledge and understanding of ostomy (Merriam-Webster, n.d.-a). This was measured through a pre- and post-workshop survey regarding confidence in ostomy care and client education about ostomy management.

Occupational therapy practitioners: Occupational therapists & occupational therapy assistants who work in Henderson, Nevada; Las Vegas, Nevada; and North Las Vegas, Nevada.

Occupational therapy students: Occupational therapy students who attend an occupational therapy school in Henderson, Nevada or Las Vegas, Nevada.

Client Education on Ostomy Management: Education relayed to a client regarding the management of an ostomy pouch which includes emptying & cleaning an ostomy pouch and changing & applying an ostomy pouch (Cleveland Clinic, 2022). This also includes education on the anatomy and physiology of the gastrointestinal system, the

procedure itself, lifestyle modifications, supplies, psychological preparation, pouching principles, living with a stoma, and dietary concerns (Carmel & Goldberg, 2022; Goldberg & Mahoney, 2022).

Literature Review

The research question for the project aims to assess if an ostomy workshop with a hands-on component will build occupational therapy practitioner knowledge and skillset in increasing their knowledge to convey education to clients. The literature search has revealed four overarching key findings. They are categorized into the importance of client education, nursing & ostomy care, effectiveness of training programs, and occupational therapy & ostomy care.

Importance of Client Education

There are approximately 725,000 to million ostomates living in the United States (United Ostomy Associations of America, n.d.-a). The United Ostomy Associations of America created the Ostomy & Continent Diversion Patient Bill of Rights to be used as a guide for clients and healthcare professionals that indicates what the best practices are regarding high quality ostomy care during the preoperative phase, operative phase, postoperative phase, and throughout the lifespan (Burgess-Stocks et al., 2021). However, these care practices are not always followed. A descriptive & quantitative study by Miller (2020) sought to assess if ostomates received appropriate ostomy care and education as indicated by the United Ostomy Associations of America and the Ostomy & Continent Diversion Patient Bill of Rights. The results indicated that inadequate education was being relayed to ostomates, with 40% of those surveyed indicating they were not supervised in changing their pouch before discharge, 42% indicating only hands-on instruction was given post-operatively, and 52% indicating that they did not receive support group information (Miller, 2020). Despite the lack of the recruitment of a representative population sample and the vulnerability of recall bias, the study was the first of its kind to evaluate the rights of clients in comparison to client experiences of care. It highlights the need for improvement in ostomy education.

The use of enhanced recovery after surgery (ERAS) programs also stresses the need for improved post-operative ostomy education. ERAS programs utilize specific evidence-based perioperative interventions to assist in recovery with decreased complications, shorter lengths of stay, and decreased re-admission rates (Jones et al., 2017). A study conducted in Canada aimed to determine satisfaction, discharge needs, and follow-up concerns for clients in an ERAS program following colorectal surgery (Jones et al., 2017). Of clients who had a new ostomy surgery, 73% indicated they had preoperative education, and 54% indicated they had postoperative education from an enterostomal therapy nurse (ETN) (Jones et al., 2017). Despite feeling satisfied with the education they received, some participants wanted more education regarding normal output, dehydration, more time with in-person teaching, or more information on supplies. Thirty percent also reported they did not feel confident with caring for their ostomy before discharge. The study was limited in that it needed to consider caregivers' experiences and that the sample was collected from a single facility, thus decreasing the generalizability of the results. Nevertheless, the results may provide value despite taking place in Canada as it emphasizes the need of more education for clients even after receiving some ostomy education.

Qualitative studies regarding ostomy education and subsequent negative factors also call attention to the need to improve ostomy education. A qualitative phenomenological study in Spain was conducted to gather ostomates' perceptions about the health care they received (Bonill-de las Nieves et al., 2017). The participants' responses echoed the sentiment of lack of resources and training with ostomates. Subsequently, clients reported feelings of fear, uncertainty, and helplessness (Bonill-de las Nieves et al., 2017). Participants also included suggestions for improvement such as accessibility to stoma care nurses throughout all healthcare stages, access to different types of information, focusing more on preoperative and postoperative

education, education of family and caregivers, and information regarding sexual activity. Most of the participants in this study had an ostomy due to cancer. The sample included ostomates with a temporary and permanent stoma; thus their experiences may not be generalized to the larger population. Although the findings of this study are centered towards an ostomate population in Spain, the finding that lack of education can result in negative outcomes for clients may be transferrable to the United States population.

Another descriptive qualitative study that took place in Singapore aimed to assess patients' experiences regarding self-care after the initial postoperative period (Lim et al., 2015). One of the themes that emerged from client experiences was the poor education received from healthcare professionals, which led to difficulties in their own self-care. One client reported that the short hospital stay limited their education, at the same time, another mentioned the insufficient education & lack of adapting to the client's learning abilities led the client to learn independently (Lim et al., 2015). The participants also suggested improvements that could be made, such as receiving educational booklets and a follow-up from a nurse or another training session after discharge to assist with adjustment (Lim et al., 2015). The sample of this study was accessed through one hospital facility. Thus, the client's experiences in his facility may not be transferable to the general population. In addition, 91% of the sample noted their spouse as their caregiver, but the study did not include caregivers' experiences. Although documented experiences represent a sample of ostomates in Singapore, the findings could translate to the United States where shortened hospital stays, inadequate education, and discard for client learning levels can impact a client's ability to perform self-care after discharge.

Although the Ostomy & Continent Diversion Patient Bill of Rights indicates the best practice for high quality ostomy care for ostomates, there is a need for improved client education

so that they may achieve optimal health and wellness. Limited ostomy education and training can lead to decreased independence in ostomy management, decreased confidence, increased negative feelings, and difficulties with self-care (Bonill-de las Nieves et al., 2017; Jones et al., 2017; Lim et al., 2015; & Miller, 2020). Furthermore, education may be restricted due to inadequate time to receive education or the absence of adjusting information to better suit the clients' learning needs (Jones et al., 2017 & Lim et al., 2015). To combat this, clients suggest more access to ostomy specialists, the use of multiple learning tools, more time for preoperative and postoperative education, providing education to family and caregivers, and more thorough information (Bonill-de las Nieves et al., 2017; Jones et al., 2017; & Lim et al., 2015). In addition, more up to date research regarding the outcomes of ostomates in the United States should be conducted.

Nursing & Ostomy Care

Wound, Ostomy, and Continence (WOC) nurses and Ostomy Management Specialists (OMS) are healthcare providers who are certified in the management and care of ostomies (Staebel & Burgess-Stocks, 2021). It is estimated that there are approximately 6,177 nurses certified in ostomy care (Staebel & Burgess-Stocks, 2021). OMSs can be registered nurses, licensed practical nurses, licensed vocational nurses, nurse practitioners, physician assistants, physical therapy assistants, physical therapists, occupational therapy assistants, occupational therapists, or physicians (National Alliance of Wound Care and Ostomy, n.d.). The current number of OMSs' in the United States is not currently known. If a WOC nurse or OMS is not present, a staff nurse manages the care of the ostomy. A descriptive cross-sectional study was conducted to assess the confidence and barriers of staff nurses in regard to ostomy care (Cross et al., 2014). The study found that higher confidence in ostomy care was related to those with more

training, more years of experience, providing ostomy care more frequently and knowledge of how to obtain and utilize supplies. The limitations to the study were that the nurses surveyed may have not been primarily bedside nurses, thus the results may not be generalized to the larger population.

Related to the confidence of staff nursing and experience, Zimnicki & Pieper (2018) conducted a study regarding the student nurses' knowledge of ostomy care. They evaluated students using a questionnaire they developed called the Zimnicki-Pieper Knowledge Test. The results of the study indicated that knowledge was at a beginner level and students had limited clinical experiences despite reporting high levels of confidence in ostomy care (Zimnicki & Pieper, 2018). Students for the study were recruited voluntarily and the researchers were their teachers. Thus, the student reporting could have been impacted by the fear that their grades may be affected if ostomy knowledge, skillset, and confidence were indicated as low. Additionally, the sample size was limited and the participants were evaluated at only one point in time.

Studies regarding client education and nursing highlight the need for more ostomy-related training and experience of nursing staff. Elshatarat et al. (2020) conducted a cross-sectional study to assess health problems and self-care abilities regarding ostomy with Jordanian ostomates. Participants in the study indicated limited previous education in ostomy care. Thirty-seven percent of the sample indicated they received education from nursing staff; however they were not satisfied with the education and training they had received and felt the training sessions were not helpful in building their knowledge (Elshatarat et al., 2020). This may be due to the lack of a WOC nurse at the facility, leaving ostomy care and client education to nurses without ample training and experience. In addition, the study lacked a design that could depict a cause-and-effect relationship between the factors studied. Although the study was conducted in Jordan,

the limited nursing exposure and training in ostomy care may also impact client satisfaction in the United States.

The studies indicated in the "Importance of Client Education" section also highlighted experiences or improvements that could be made with ostomy care and nursing. Participants indicated they had limited encounters with a stoma nurse, thus leading clients to have to learn independently (Lim et al. 2015). In addition, ostomates mentioned that the accessibility to stoma care nurses throughout all of the healthcare stages would be helpful (Bonill-de las Nieves et al., 2017). This was echoed in another study with clients reporting they would like more access to an ETN (Jones et al., 2017).

Within the United States, there is a limited number of WOC nurses compated to the number of ostomates. It is unknown how many OMSs are in the United States. When these specialists are not present, staff nurses take on the management of ostomies. With staff nurses, it was found that higher confidence in ostomy care is related to more experience and more training (Cross et al., 2014). With nursing students, it was indicated that they are at a beginner level with ostomy care and have limited clinical experience with ostomates (Zimnicki & Pieper, 2018). For nurses with less experience and training that administer ostomy education to clients, it may leave clients dissatisfied with the education and training they receive (Elshatarat et al., 2020). Another factor that may impact client education is limited exposure to ostomy care professionals (Bonill-de las Nieves et al., 2017; Elshatarat et al., 2020; & Lim et al., 2015). With these factors in mind, increased education for healthcare professionals is needed to address the gap in client education on ostomy care.

Effectiveness of Training Programs

Ostomy education interventions for clients can effectively improve their health and wellbeing. Nagle et al. (2012) evaluated using an educational pathway for clients with ileostomies to reduce readmission rates and improve patient education and well-being. Their study indicated that preoperative teaching, observed management, tracking intake & output, and standardized teaching materials was effective in reducing readmissions for complications following ileostomy surgery and decreased the length of stay by ~one day (Nagle et al., 2012). This study shows a positive outcome following client education and training. The limitations of the study included the small sample size and the lack of randomization between groups which increases the vulnerability to selection bias.

Ostomy training can also influence the quality of life and psychosocial factors. A randomized-controlled trial was conducted to examine the impact of ostomy training on quality of life and anxiety with ostomates with permanent ostomies (Ganjalikhani et al., 2019). The groups were divided into those who received routine ostomy care or the experimental group who received an ostomy educational booklet and oral and hands-on training with access to an ostomy nurse. The results of the study indicated that the experimental group had lower levels of anxiety and higher perceptions of quality of life as compared to the control group (Ganjalikhani et al., 2019). However, the small sample size of the study limits the generalizability of the results. In addition, the lack of blinding the participants may have affected how they reported their quality of life and anxiety levels.

Krouse et al. (2016) created a pilot study for an ostomy-self management program specific to chronic cancer patients. Their education consisted of hands-on pouching and equipment experiences, education about skin care, nutrition, and dressing. Their program also

included social well-being, caregiver support, lifestyle changes, and a review session. Their pilot study indicated that self-efficacy, quality of life, and well-being (social and physical) improved (Krouse et al., 2016). Due to the pilot study consisting of a small sample size and the lack of a diverse sample, it limits the generalizability to the larger population. In addition, the sample was subject to volunteer bias due to the recruitment methods used.

The implementation of an ostomy training program can be effective in improving client outcomes for ostomates. Training programs highlighted included the use of various learning methods such as hands-on training, oral education, visual materials, or reading materials (Ganjalikhani et al., 2019 & Krouse et al., 2016). In addition, the topics of education included education on the impact of other occupations, caregiver support, education on skin care, and information on how to track intake or output (Krouse et al., 2016 & Nagle et al., 2012). As a result, examples of positive improvements from education programs consist of improved self-efficacy, quality of life, well-being, decreased readmission rates, shorter length of stay, or lower levels of anxiety (Ganjalikhani et al., 2019; Krouse et al., 2016; & Nagle et al., 2012). In these studies, the administrators of ostomy education were nurses, however, there is a possibility that other health care professionals can help to bridge this gap in education for the ostomate population.

Occupational Therapy & Ostomy Care

There is currently limited research and resources on the topic of ostomy and occupational therapy although the "Occupational Therapy Practice and Framework (4th ed.)" indicates that colostomy care falls under the occupation of toileting and toileting hygiene (AOTA, 2020). Occupational therapy practitioners are well-suited to attend to the needs of ostomates as they have expertise that considers client factors, performance skills, occupations, performance

patterns, and contexts (AOTA, 2020). In addition, with their holistic approach, they consider factors that other healthcare professionals may not when working with ostomates, such as psychosocial, emotional, physical, and cognitive factors (Davis & Campbell, 2015; Morales & Rider, 2021). Some interventions that occupational therapy practitioners can employ for this population include education & training on ostomy management (changing an appliance, nutritional information, emptying an appliance, when to seek medical attention), activity modification, education on the use of adaptive devices, creation of toileting routines, education on coping strategies, and exercises to increase hand strength or fine motor coordination (Davis & Campbell, 2015; Morales & Rider, 2021).

Despite limited research on occupational therapy and ostomy, there may be an effectiveness to occupational therapy process for ostomates. A quasi-experimental study was conducted to assess an education program based on the nursing process and its impacts on ostomate self-care knowledge and performance in the elderly population (Momeni Pour et al., 2023). The nursing process consists of (1) assessing the client's educational needs, (2) nursing diagnoses where they determined patient knowledge related to ostomy, (3) planning in creating goals and education to achieve their goals, (4) implementation of the client education, and (5) evaluation of the outcomes of clients (Momeni Pour et al., 2023). In this model, the nursing process can be compared to the occupational therapy process of (1) the initial evaluation that would determine the client's current occupational profile and occupational performance related to ostomy care, (2) the planning and creation of goals to address deficits found, (3) the implementation of the intervention and (4) the utilization of outcome measures to assess the client's progress to determine the direction of intervention (AOTA, 2020). The implementation of the nursing process with the population in the study led to statistically significant

improvements in ostomy self-care knowledge and performance when compared to the control group who received routine training (Momeni Pour et al., 2023). The transferability of this study to the larger population may be limited as it utilized a sample of elderly clients in Iran. However, the finding that a nursing process similar to the OT process is effective in improving client knowledge and performance may indicate that occupational therapy services could work well in improving the health outcomes of ostomates.

Research regarding the impact of an ostomy on other occupations may also highlight how OT practitioners can address a gap in education for this population. Gautam et al. (2016) performed a descriptive cross-sectional study to assess psychosocial adjustment and predictors for ostomates in Nepal. Ostomates indicated that as a result of the ostomy, only 25% of participants strongly agreed that they could sleep well without concern for the stoma (Gautam et al., 2016). In addition, respondents indicated that the stoma impacted their ability to participate in bathing with ease, and engage in society. Thirty-three percent of ostomates also felt they did not have control of their lives, and 46.9% strongly agreed that they had to restrict their activities (Gautam et al., 2016). The sample was collected from a stoma clinic; therefore their experiences may not be generalized to the larger population. Participants may have also received counseling at the clinic, which may have impacted the data collected. The data was collected from a sample in Nepal, but despite this, these issues may also influence ostomates in the United States.

In a descriptive exploratory study by Shrestha et al. (2022), the aim was to assess quality of life, anxiety, and depression in ostomates in Nepal. The results indicated that 69.8% of the population sampled did not receive preoperative information. The sample also reported sexual dissatisfaction (31.3%) and clothing problems (89%) after surgery (Shrestha et al., 2022). About 82% of the sample also indicated it took more than a year to feel comfortable with daily ostomy

care (Shrestha et al., 2022). With their quality of life, the most affected psychological item was control of things in their life and the most affected social item was difficulty meeting new people, which may lead to social isolation. This sample was also gathered exclusively from a stoma clinic, so it does not consider experiences of those without access to a stoma clinic and may not be generalized to the larger population. Despite this, the research provides insight into the impact of an ostomy on occupations and quality of life.

Research and resources regarding ostomy care and occupational therapy are currently limited. However, there are indications in research that exhibit how occupational therapy services may benefit the ostomate population. The effectiveness of an educational program based on the nursing process improved client outcomes concerning self-care knowledge and performance (Momeni Pour et al., 2023). The nursing process highlighted in this study is comparable to the OT process, thus demonstrating that OT services may be feasible in improving client health outcomes for ostomates. In addition, other occupations besides toileting are impacted due to ostomies. Occupational therapy practitioners are well-suited to address these problems in other occupations through a holistic lens to improve occupational performance. Furthermore, there is a need for increased research and resources regarding ostomy care and occupational therapy services.

Summary

Ostomates in the United States have a right to high quality care and education in the United States (Burgess-Stocks et al., 2021). However, clients may receive limited education and training which may cause consequences that negatively impact the client's overall health and wellbeing. However, the implementation of training programs with the ostomate population is associated with positive health outcomes in clients (Ganjalikhani et al., 2019; Krouse et al.,

2016; & Nagle et al., 2012). Optimally, ostomy care is addressed via ostomy specialists, but there is a disproportionate amount of ostomates to ostomy specialists in the United States. Thus, care may be managed through a staff nurse. Research indicates that more experience and training are associated with higher confidence in nursing staff regarding the management of ostomies (Cross et al., 2014). Nurses with less experience and training in ostomy or limited time with an ostomy specialist may leave clients feeling dissatisfied with their education (Elshatarat et al., 2020 & Lim et al., 2015). Although there is limited research and resources on ostomy care and occupational therapy, OT practitioners may be well suited to address the educational needs of the ostomate population in the United States. The OT process can be compared to that of the nursing process and there is effectiveness in improving client outcomes through an educational program based on the nursing process (Momeni Pour et al., 2023). In addition, ostomates report that an ostomy affects other occupations in their lives, which OT practitioners can address through their expertise in occupation and their holistic approach (AOTA, 2020; Gautam et al., 2016; & Shrestha et al., 2022)

Statement of Purpose

The purpose of this project was to create an ostomy care and education lecture with a hands-on component for occupational therapy practitioners and students in Henderson, Nevada; North Las Vegas, Nevada; & Las Vegas, Nevada, to improve their confidence in conveying ostomy education to clients as measured by a pre-workshop survey and post-workshop survey.

Objectives for Project

An objective of this project was to create an educational lecture and hands-on training regarding ostomy care using a holistic occupational therapy lens. After creating these educational materials, the second objective was to administer this training workshop to occupational therapy practitioners and students in Las Vegas Valley. The results of the project were meant to increase the knowledge and skill set of ostomy management for occupational therapy practitioners and students. Furthermore, it was intended to improve the confidence of occupational therapy practitioners and students to relay ostomy education and training to their clients. It is hoped that with increased knowledge and confidence in ostomy care, practitioners and students can also relay this information to other members of the interdisciplinary team, such as nursing, so that more comprehensive and unified care may be given to ostomates in various health care settings in Las Vegas Valley. Another objective of the project was to assess the need for ostomy education for practitioners and students in Las Vegas.

Theoretical Frameworks

The theoretical frameworks that were used to develop and implement the project are the Person-Environment-Occupation (PEO) model and Cognitive Learning Theory.

Person-Environment-Occupation Model

The PEO model accounts for the relationship between factors relating to the person, environment, and occupation. The person is viewed holistically and comprises three components: the mind, body, and spiritual qualities (Law et al., 1996). Factors related to the person include their life experiences, attributes, self-concept, personality type, cultural background, personal competencies, and their performance as it relates to motor, sensory, cognitive, and health components (Law et al., 1996). The environment accounts for the cultural, socio-economic, institutional, physical, and social aspects of the environment (Law et al., 2016). Finally, the occupation is composed of both activities & tasks and the person engages in it for self-maintenance, expression, and fulfillment (Law et al., 1996). A Venn diagram consisting of three circles representing the person, occupation, and environment are used to depict this model. The overlap between these three concepts represents occupational performance (Law et al., 2016). In this model, occupational performance changes across the lifespan depending on the dynamic relationship between the three components.

This theory was relevant to the project as it takes a holistic approach to various factors that may affect occupational performance with ostomy management. As applied to this project, the PEO model as applied to this project accounted for the person as it relates to their skills, life experiences, autonomy, interest, motivation and relevance to ostomy care. In regard to the environment, it aimed to factor in considerations of the physical classroom environment, the social environment with fellow practitioners and students, cultural contexts within the classroom,

and socio-economic or institutional factors that may affect occupational performance in this setting. The occupation was learning about ostomy management. The overlap between these three factors indicated occupational performance. The project aimed to optimize their occupational performance and positively affect their confidence in conveying ostomy care to their clients.

Cognitive Learning Theory

Cognitive learning theory focuses on the learner's internal factors, such as mental or psychological aspects, to associate meaning through insight, information processing, perceptions, reflection, metacognition, and memory to enable learning (Mukhalalati & Taylor, 2019). This theory indicates that learning happens through verbal or written instructions and demonstration (Mukhalalati & Taylor, 2019). The educator's role in this learning theory is to create these meaningful learning opportunities that connect concepts together to enhance the experience for learners (Torre et al., 2006). This theory was used to influence the individual's learning regarding ostomy care. The first area of focus was comprehension as it relates to the importance of ostomy management through an occupational therapy lens. Then, memory was addressed by deepening the learner's knowledge and allowing the learner to refer back to the provided resources and content. The last area of focus in applying this learning theory to the project was the application of the content using a hands-on component to solidify the concepts taught in the lecture. The materials and methods used to influence learning included: PowerPoint presentation that contained pictures, videos & resources; handouts; visual demonstrations; opportunities for questions; and a table display of ostomy products.

Methodology

Study Design

The quality improvement study utilized a time-series design using a pre-and post-workshop survey to evaluate any changes that occurred in confidence after completing the workshop within a single group. Randomization was not utilized as there was no comparison group. The pre-workshop survey was given prior to the start of the workshop and assessed self-perceived confidence regarding knowledge and skills related to ostomy care and their self-perceived confidence in educating clients on these topics. The post-workshop survey was given at the end of the workshop and included the same questions, along with demographic information, clinical practice characteristics, and work environment characteristics. The post-workshop survey also included a component regarding the experience of the workshop.

Considering the combinations of quasi-experimental designs using one to two groups and a pretest-posttest or post-test only design, this type was selected to directly compare the change within the single group following the educational lecture to avoid maturation and attrition, thus enhancing internal validity. Although a two-group pretest-posttest design is more rigorous, there was a time constraint during the capstone experience, and thus it was not feasible to create materials for another method of intervention. In addition, it was thought it might be difficult to recruit an adequate number of individuals in both groups. Therefore, this design was appropriate for the project due to the issue of time constraints as well as the ability for the group to be compared to itself. The advantages of this type of design were that the group could be compared to itself by using two measurements to indicate if any change was made after the intervention. This type of design also more easily allows ethical concerns to be addressed (Taylor, 2017). The disadvantages to this type of design are that it utilized convenience sampling and the results may

not be generalized to the larger population (Taylor, 2017). Furthermore, this type of design also limited causal inferences between the intervention and outcome due to the lack of randomization (Schweizer et al., 2016).

Participant Recruitment

The project utilized convenience sampling as participants were recruited on a voluntary basis. Participants were required to be an occupational therapist, occupational therapy assistant, or occupational therapy student. The workshop was free to participants, and offered continuing education contact hours (see Appendix A), and light refreshments to incentivize participation. To recruit participants, the student contacted in-patient facilities (acute care hospitals, acute rehabilitation facilities, & skilled nursing facilities) with occupational therapy services in Las Vegas, Nevada; North Las Vegas, Nevada; and Henderson, Nevada via email or phone. The student requested that the point of contact (rehabilitation director, therapy lead, or therapy staff member) notify the OT staff about the workshop by posting and sharing a flyer sent via email that advertised the workshop (see Appendix B). Ten acute care hospitals, six acute rehabilitation facilities, and 25 skilled nursing facilities were emailed the flyer. The student also contacted faculty from the three OT programs in Las Vegas and Henderson to advertise the learning opportunity using the same flyer. Furthermore, the Nevada Occupational Therapy Association was contacted and agreed to advertise the workshop using the flyer via email, on their website, on their official Facebook page, and their official Instagram page. Interested participants were required to RSVP using a QR code on the flyer, which was linked to a Google form. Due to classroom space limitations, the maximum number of participants for the workshop was 32 people. The RSVP form was open for 19 days.

Workshop Intervention

The student completed a 14-week capstone experience at Valley Hospital Medical Center under supervision of her site mentor who is an occupational therapist and certified OMS. The intention of the capstone experience was to gain more experience in working with ostomates which in turn would inform the student's workshop about content to include. In the first 12 weeks of the capstone experience, the student worked with ostomates and carried ~40% of the mentor's caseload for 3-4 days per week. During this time, the student also developed her educational materials for the workshop lecture. The lecture was reviewed and approved by the site mentor prior to the presentation. The lecture took place in week 12 of the capstone experience at Valley Hospital Medical Center where the student delivered a 2-hour ostomy management lecture with a hands-on component that included application of a pouch, closing the tail of a pouch, and the crusting procedure to treat red & irritated skin. The learning objectives for the workshop and the lecture presentation for the workshop are in Appendix C. The remaining two weeks of the experience were dedicated to data analysis for the project.

Workshop Environment & Supplies

The workshop took place at the Valley Hospital Shadow Lane Conference Room, which was equipped with an overhead projector that displayed the PowerPoint presentation in the front of the classroom. The room also had two televisions located on the right and left side of the classroom. The room was furnished with tables and chairs, and the space could accommodate 32 participants. The lecture portion of the workshop utilized a PowerPoint presentation. The participants were given a copy of the lecture outline to take notes by hand. Participants were also given a handout from the United Ostomy Associations of America that included information on types of foods to consider with an ostomy. For the hands-on portion, participants were given a

stoma card to practice the application of a pouch. Stoma cards are clear plastic cards with an indentation similar to a stoma. This tool is used as a learning aid when teaching ostomates how to apply a pouch. The student painted the stomas on each card red to improve visual contrast. Participants were given either a one-piece cut-to-fit system or a two-piece moldable system. Due to time & supply constraints, participants were given one system to practice on and were asked to follow along with their partner when working on the opposite system type. Supplies for the workshop were donated by Valley Hospital Medical Center and by the ostomy brand, Convatec. Appendix D outlines supplies used for the hands-on portion. A table of ostomy systems, ostomy skin protection products, and ostomy accessories were put on display to aid in visual learning. These items were borrowed from Valley Hospital Medical Center to showcase the variety of supplies available on the market. These items were returned.

Instrument

The pre- post-workshop surveys were created using Qualtrics to assess OT practitioner and student confidence regarding ostomy care and giving ostomy education to clients (see appendices E & F for the pre-workshop and post-workshop survey, respectively). The questions regarding confidence gave a statement and asked participants how much they agreed with the statement using a 5-point Likert scale. The Likert scale questions were adapted from a survey created by Cross et al. (2014) that examines self-perceived confidence related to ostomy care for nurses. The questionnaire created by Cross et al. (2014) underwent content validation and was reviewed by skin care resource and research nurses for readability and comprehension. In the study, the questionnaire was also reviewed by a Wound Ostomy Continence nurse panel and was edited based on the recommendations made by all groups until agreement that it met it purpose had been made.

Following the Likert scale confidence questions on the post-workshop survey were questions regarding demographics, clinical practice characteristics, work environment characteristics, and quality improvement questions. Questions pertaining to demographics and clinical practice characteristics were adapted from Cross et al.'s (2014) survey. Questions pertaining to work environment characteristics were adapted from Alenezi et al.'s (2022) survey. Due to the presence of students, this section prefaced "If you are not a practitioner, select "N/A" for questions in this section". The questions regarding the workshop experience were given to improve the lecture if the student was to give the presentation again. The student created these questions.

Data Collection & Analysis

An RSVP form was utilized to receive a head count of participants in the workshop due to space limitations. The RSVP form asked for name, place of work and/or school, phone number, and email. This information was collected to contact participants about details and reminders about the presentation date.

Data collected on the date of the workshop utilized a Qualtrics pre-workshop survey and post-workshop survey format. Responses were anonymous. Furthermore, the data collected did not utilize identifiers in order to maintain participants' confidentiality. The pre-survey was collected prior to the start of the workshop, and post-survey data was collected after the conclusion of the workshop. Participants scanned a QR code to access both surveys using a device that had internet access capabilities. After the data collection process, the Statistical Package for the Social Sciences (SPSS) was used to analyze the descriptive statistics of the demographics, clinical practice characteristics, and workplace characteristics collected on the post-workshop survey. These were measured in frequencies and percentages. Post-workshop

survey experience of the workshop data were reviewed, and responses were coded into concepts. If responses had multiple concepts in one response, they were divided into multiple concepts. The frequencies and percentages of each concept were recorded.

SPSS was also used to obtain descriptive and inferential Likert-scale data statistics. The mean, standard deviation, median, and interquartile range were obtained from the data. Due to the nonparametric nature of the ordinal data and the lack of paired samples, a one-sample Wilcoxon Signed Rank Test was utilized for inferential statistics. This test compares the hypothesized median of a sample to the actual median. In this case, the hypothesized median would be the group median of the pre-workshop survey Likert scale questions, and the actual median would be that of the post-workshop survey. The null hypothesis is the post-workshop median (actual median) will be less than or equal to the pre-workshop median (hypothesized median). The alternate hypothesis is the post-workshop median (actual median) will be greater than the pre-workshop median (hypothesized median). When comparing the pre-workshop and post-workshop medians, a $p<0.05$ would signify a statistically significant change and indicate if the null hypothesis is rejected.

Data Management

The data collected from the RSVP form is to be destroyed following the submission of the final manuscript of the project. The survey data was collected without any identifying information. Data was stored on the student's personal laptop device and is to be destroyed following the completion of this project.

Ethical and Legal Considerations

Participants were notified on the initial RSVP form or via email that the project was part of an occupational therapy doctorate capstone project and stated that participants have a right to withdraw from the workshop at any time. Personal information from the RSVP form was not shared with any other individual or group. The information is stored in the student's Google account and on the student's personal laptop. Survey data collected from participants were anonymous, without any identifying information. The manuscript's submission signifies the project's conclusion and any identifying information and survey data will be destroyed.

The photos used in the PowerPoint lecture were a supplement to the content. Photos of ostomates and stomas were stock images collected from the student's Shutterstock subscription. Other photos in the presentation used were from Pixabay which offers royalty-free images for public use. Finally, photos and videos that do not fall into the previous categories were taken by the student to supplement the hands-on portion or showcase supplies that are commonly utilized with ostomates. No consents were required for photography and videography purposes.

Results

Participants

Twenty-eight participants RSVP'd their attendance for the workshop. After the RSVP form closed, ten interested OT practitioners and students emailed the student to inquire if there was availability left for the workshop. Thus, the maximum of 32 participants enrolled for the workshop, and a waitlist was developed for participants interested in the course. Three individuals withdrew due to other time commitments allowing three individuals to join the workshop. In total, four people remained on the waitlist. On the day of the presentation, 32 filled seats were expected, and 30 participants attended. Twenty-nine individuals completed the pre-workshop survey, and 30 individuals completed the post-workshop survey.

Characteristics of the Sample

Table 1 showcases the characteristics of the sample collected during the post-survey. More than half of the participants identified as OT students. Practitioners varied in levels of experience with most being practitioners for 1-5 years. Fifteen people answered this question, despite a reported number of 14 practitioners. Eighty percent of the participants reported that they did not receive or will not receive education on ostomy care in occupational therapy school. Of the practitioners who answered the settings they work in, 13 of 13 reported working in at least one in-patient setting (acute care, acute rehab, assisted living facility, skilled nursing facility, sub-acute rehab) (see Table 2). One practitioner refrained from answering. Of the students who responded, 9 of 13 reported fieldwork experiences in an in-patient setting (acute care, acute rehab, assisted living facility, skilled nursing facility, sub-acute rehab) (see Table 3). Three participants who identified as students did not answer this question

Although the question identifying participants as an occupational therapist, occupational therapy assistant, and occupational therapy student indicated 16 students and 14 practitioners, there were discrepancies in reporting workplace characteristics (see table 4). Regarding the presence of a certified ostomy specialist, of 18 respondents, 55.6% indicated that they did not have a certified ostomy specialist in the workplace. Seventeen respondents were recorded for the frequency of ostomy clients on caseload. Zero of the respondents reported "never" having any ostomates on caseload. Seventeen responses were also recorded for how frequently the person delivers ostomy training and education to clients in the workplace. Almost 60% of participants stated that they never deliver ostomy training. Six respondents have delivered ostomy training at least once per year or more.

Likert-Scale Confidence Questions

The descriptive statistics (mean, median, SD) for the pre and post 5-point Likert-scale questions are indicated in Table 5. The hypothesized median for the pre-workshop data questions ranged from "1" to "2". The sample median from the post-workshop data questions ranged from "4" to "5". The results of the Likert-scale confidence data were deemed statistically significant with a $p<0.05$ for ten out of ten questions.

Experience of the Workshop

Responses about the strengths of the workshop were grouped into five concepts: the hands-on training, the informative presentation, the presenter, the organization, and the resources. Six participants thought that the resources provided and the organization were a strength. Questions about improvements that could be made to the workshop included four main concepts: execution of the material, including other topic areas, no improvements, and the survey. Fourteen responses regarding execution included adding more hands-on practice,

reviewing the hands-on portion more slowly and thoroughly, use of an Elmo for demonstration, more discussion time, more details on slides, more pictures of stomas, and more help during the hands-on portion. Regarding the presenter and the classroom environment, it was suggested that the presenter speak louder and suggested better seating so those in the back of the classroom could visualize the presenter better. Eight responses about topic areas requested information about hands on pouch removal/emptying, case studies regarding infected stomas, examples of OT interventions, cultural considerations, Q & A with ostomy patients, and considerations for clients who utilize wheelchairs. Finally, two participants commented on the format of the survey and the way in which survey questions were written.

Attendees were asked why they chose to attend the presentation and responses were grouped into seven concepts: to learn more about ostomy, to help others, interest, relevant to OT, lack of knowledge, incentive, and support of the presenter. Most respondents indicated they wanted to attend to increase their understanding and learn more about ostomy management. Seven respondents also indicated they wanted to attend to improve the care for their client population or increase knowledge for a loved one. Four indicated they attended for their interest in ostomy. Five respondents thought that ostomy care was relevant to OT practice. Five respondents indicated a lack of prior knowledge of ostomy care motivated them to attend the workshop. Other feedback and comments were grouped into three categories: for the presentation, presenter, or the participants themselves. Participants commented positive feedback or comments in all three concepts. Participants thought the material was well executed by the presenter. Participants also appreciated the content and execution of the presentation. Five participants commented on their own perceived changes such as improved confidence in relaying ostomy education to clients.

Discussion

The literature surrounding the care of ostomates indicates that their education should improve for better health and wellness outcomes (Bonill-de las Nieves et al., 2017; Elshatarat et al., 2020; Gautaum et al., 2016; Jones et al., 2017; Lim et al., 2015; Miller, 2020; Shrestha et al., 2022). In addition, there is evidence that ostomy training programs can be effective in improving health and wellness outcomes for clients (Ganjalikhani et al., 2019; Krouse et al., 2016; & Nagle et al., 2012). Occupational therapy practitioners are well-suited to help address this gap in education for ostomates; however, there is limited research and limited resources on the role of occupational therapy and ostomy care. This quality improvement study was conducted to add to the research goals and priorities under the category of intervention research set by AOTF & AOTA (AOTF & AOTA, 2011). The study aimed to assess if an ostomy training workshop with a hands-on component impacts the confidence of occupational therapy practitioners and students in client education on ostomy management. In addition, the study collected information regarding whether ostomy care was reviewed during occupational therapy school, the workplace characteristics of practitioners, and quality improvement data for the workshop.

A total of 14 practitioners and 16 students attended the workshop, with 29 pre-workshop surveys completed and 30 post-workshop surveys completed. However, when asked about years of experience, 15 respondents indicated it was not applicable, and 15 respondents reported years as a practitioner. This may have occurred because some students may have also identified as practitioners, for example, an occupational therapy assistant attending an occupational therapy doctorate program. Regarding the settings of practice that practitioners currently work in, 13 respondents indicated working in at least one in-patient care facility (acute care, acute rehab, assisted living facility, skilled nursing facility/long-term care, or sub-acute rehab). When

students were asked what settings of practice they have had Level II fieldwork experiences, 9 of 13 responses indicated experiences in at least one in-patient care facility. Although it was indicated that16 students were present, three students did not answer. This may be because they responded to the question regarding practitioner setting instead or because the participants still needed to go to Level II fieldwork experiences. These findings may indicate that ostomy care is more relevant to in-patient occupational therapy settings.

The workshop reviewed basic knowledge required to manage ostomy care and train ostomates. The number of students and practitioners with one to five years of experience was 21 participants (70.0%). The frequency of practitioners with six to ten years of experience included five participants (16.7%) and those with 11 or more years of experience included 4 participants (13.3%). Although the recruitment for the study was volunteer-based and included incentives, this may be consistent with the finding in Cross et al. (2014), where more experience and training with ostomy was associated with higher confidence in staff nurses surveyed. Other practitioners with 11 or more years of experience may have refrained from attending due to the experience and training gained while working with ostomates in their respective settings. This may also explain the high recruitment numbers of students and newer practitioners. In addition, only four participants of the sample of 30 indicated they received or will receive training on ostomy care in OT school which may also explain the high recruitment of students and newer practitioners. Furthermore, a workplace characteristic question asked the frequency with practitioners delivering ostomy training and education to clients in their workplace. Almost 60% of the sample indicated they never deliver ostomy education to clients. This may be due to their lack of ostomy education in OT school or their limited experience with ostomates.

The workplace characteristics of practitioners received more responses than the practitioners identified. This may be because some students may have also identified as a practitioner. Participants were only allowed to choose one option to identify as from the following: an occupational therapist, occupational therapy assistant, or occupational therapy student. In addition, although the workplace characteristics section of the survey was prefaced with "select N/A if not a practitioner", some students may have answered this question if they misread or misinterpreted the instruction, thus providing inconsistent results. In the workplace characteristics section, six responses (33.3%) identified that they did have an ostomy specialist in their workplace, ten responses (55.6%) stated they did not have an ostomy specialist, and two responses (11.1%) were unsure. It is important to also note that multiple practitioners from a single workplace may have been present in the study. The findings of this question may suggest that there is an absence of ostomy specialists in some facilities, which may lead staff nurses to manage ostomy care. However, staff nurses may have less confidence in ostomy care with limited experience and training (Cross et al., 2014). If a facility does not have an ostomy specialist or staff nurses have limited ostomy education, this can lead to client dissatisfaction with ostomy education and training (Elshatarat et al., 2020 & Lim et al., 2015). Regarding the frequency of ostomy clients on caseload, all responses indicated having an ostomate on caseload at least once or twice a year. Of the responses collected, the highest frequency of ostomates on caseload was either once or twice a year (29.4%) or every month or two (29.4%). Four participants indicated having ostomates on caseload a couple of times a month (23.5%), and one participant indicated an ostomate on caseload on a weekly or daily basis (5.9%). Thus, occupational therapy practitioners knowledgeable in ostomy care can help address this gap in

care if there are ostomates on caseload, or if there is a lack of an ostomy specialist or experienced staff nurse at their facility.

The findings of the pre-workshop and post-workshop data indicated that the workshop improved OT practitioner and OT student confidence in ostomy management and their confidence in client education on ostomy management regarding emptying an ostomy appliance, measuring the stoma, changing an ostomy appliance, and treating red and irritated peristomal skin. This was evidenced by a statistically significant change ($p<0.05$) in comparing the group pre-workshop median of scores to the post-workshop median of scores. Furthermore, it was found that the participants confidence in knowing the differences between a colostomy & ileostomy, and their confidence in knowing the role of occupational therapy with ostomy care demonstrated a statistically significant change ($p<0.05$) following the workshop. The data collected regarding self-perceived confidence in OT practitioners and OT students suggests that a workshop with a hands-on component is an effective method for improving the confidence of OT practitioners and students in client education on ostomy management. In addition, the experience of the workshop section indicated strengths of the workshop were the hands-on training, the information presented, the presenter, the organization of the workshop, and the resources provided. Attendees also mentioned in the additional comment section that they felt as if they learned a significant amount, that they now know what to do when treating ostomates, and feel more confident in providing care to this population. These factors may have also contributed in attributing to the participants self-perceived confidence.

The experience of the workshop section asked participants why they chose to attend the workshop. The concepts extracted from the responses indicated that attendees wanted to learn more about ostomy, wanted to help others, were interested in ostomy, stated ostomy was relevant

to OT and mentioned their lack of knowledge about ostomy. This highlights the applicability of ostomy to OT and the general interest of students and practitioners. The quality improvement section regarding the improvements for the workshop also stressed the interests of the sample, with eight participants requesting to include other topics related to ostomy, such as cultural considerations, body types, or OT intervention ideas. This stresses the need for more research and resources on ostomy care related to occupational therapy. Despite this, connections between nursing research may be applied to OT. An example of this is indicated through an ostomy education program based on the nursing process that was found to be effective in improving client self-care knowledge and performance (Momeni Pour et al., 2023). In addition, the nursing process utilized in the study can be compared to that of the OT process as it shares similarities (AOTA, 2020).

The project was developed and implemented using the PEO model and the cognitive learning theory; however, the execution of the workshop may have impeded participants' learning. Suggestions for improvement for the workshop included demonstrating the hands-on portion more slowly and thoroughly, allowing more time for discussion, including photos of different stomas, providing more detail in explanations or on slides, and improving environmental considerations to optimize learning. The hands-on portion aimed to assist with the application of learning; however, a more thorough hands-on portion in the future may increase comprehension and occupational performance. In addition, allowing more time for discussion, providing more details and including more photos could assist the learner in comprehension and memory as it relates to cognitive learning theory. Furthermore, improved environmental adaptions could be made so that attendees could better hear and see the presenter to improve occupational performance and comprehension, such as the reconfiguration of the environment.

Limitations

Methodological Limitations

The sample size for the research was limited due to the capacity limitations of the classroom space. The sample size was 30 people total, with 29 people completing the presurvey and 30 completing the post-survey. Due to the size limitation of the sample, it may be difficult to generalize the results to the larger population. However, recruiting a sufficient sample size may have also been difficult since participants were obtained voluntarily.

Response bias may also be present through extreme responding through the Likert-scale type questions. Participants may have also been subject to response bias by answering how they think the student may have wanted or if they figured the study's hypothesis. Furthermore, some participants entered the workshop after it had started. This may be due to the poor weather conditions on the day of the presentation, or finishing work late. Regardless, there was an absence of one pre-workshop survey in comparison to the post-workshop survey. Because pre-workshop and post-workshop data were not paired and no identifying information was present in the format of the surveys, it was impossible to remove the single post-data set, thus leaving the pre-workshop surveys at 29 and post-workshop surveys at 30. Within the surveys themselves, there were some questions that participants left unanswered. However, the student decided to keep all data for analysis, even if some questions were not fully completed.

Measurement bias is also present as the demographic, workplace conditions, and clinical practice characteristics as questions could have been posed more concisely or more information should have been asked. For example, demographic information should have included an option to choose both practitioner and student for those identifying as both. Participants could only choose one, which may have skewed the data. In addition, the method of asking what setting the

practitioner or student should be changed. It should ask for the primary setting type, as it was difficult to display this data. Furthermore, workplace condition questions should have only been answered by practitioners. The questions should have been written more clearly for students to refrain from answering, or should have been removed from the student's view.

Limitations of Resources

The access to the sample population for the project was limited as it was difficult for the student to contact therapy staff, therapy lead, or rehabilitation director at sites. In addition, the sample was recruited using convenience sampling, as participation was on a voluntary basis. Participants may have also been motivated to participate due to the incentives or support the student's project. The study utilized a time series design on one group only, which limited the ability to randomize the sample. These factors leave the data vulnerable to selection bias; thus, the sample may not be representative of the larger population and inferences may not be applied to the larger population.

In addition, the project was limited by the time constraints of the 14-week capstone experience and the anticipated due date of the final manuscript. If a longer time were allotted, there could be sufficient time to include a follow up survey or ask questions about how the workshop influenced their practice. There may have also been enough time for the workshop to be given multiple times to improve the workshop and collect data. Researcher bias may have been present in how some questions were posed to participants. For example, the question that asks the participant to identify if they are a practitioner or student could have had a fourth category available where practitioners who are also current students could answer correctly. In addition, another question asked students to state what level II experiences they have had. Three students did not respond to this question, this may be because they still needed to complete a

level II fieldwork experience. Adapted questions for the surveys were only evaluated by the mentor. Bias might have been decreased if questions were trialed by other individuals, but the project was limited due to time constraints.

In regard to environmental considerations, it was difficult to access a venue for the workshop due to extenuating circumstances. The venue that was secured had a maximum capacity of 32 participants, thus limiting the sample size. Participants also mentioned in the improvement section of the survey that it was difficult to visualize or hear the presenter. Related to photo visuals in the PowerPoint, a participant in the study also indicated that an improvement would be to include more photos of various sized stomas. The photos of stomas in the presentation were collected from a Shutterstock subscription and the variety of stoma photos was limited.

Conclusion

The quality of care and education given to ostomates is integral in promoting their participation in occupations for optimal health and well-being. However, the current state of education being given to ostomates needs to be improved as research demonstrates substandard ostomy education leads to negative health outcomes. Insufficient client education may stem from limited access to ostomy specialists, limited experience and training of staff nurses, shortened hospital stays, or not adapting to a client's educational needs (Cross et al., 2015; Jones et al., 2017; & Lim et al., 2015). Occupational therapists are well-suited to address this gap; however, there are limited resources and research regarding ostomy care and occupational therapy. Thus, this quality improvement study aimed to assess if an ostomy training workshop with a hands-on component would impact the confidence of OT practitioners and students in client education on ostomy management as measured through a pre-workshop survey and post-workshop survey. The results of the study indicated that an ostomy training workshop was effective in improving self-perceived confidence in ostomy care and delivering client education on ostomy management as evidenced by a statistically significant change in each item asked. Results also revealed the limited amount of training on ostomy care received in OT school, the prevalence of ostomy care in in-patient settings, the lack of an ostomy specialist at some participant's place of work, the presence of ostomates on caseload at least once a year amongst participants, and the limited training given to ostomates from practitioners. Participants highlighted the relevance of ostomy care to OT practice and their interest in learning more. In addition, participants gave quality improvement feedback regarding the strengths of the presentation and improvements for future lectures. Overall, the study emphasized the effectiveness of an ostomy training workshop for OT

practitioners and students to improve their confidence in administering client education, which is hoped to improve ostomate education and training.

In regard to implications for practice, occupational therapy practitioners are equipped to promote participation in meaningful participation with ostomates through their holistic approach in the occupation of toileting and other occupations that are impacted as a result of an ostomy. To further their knowledge and skillet, OT practitioners should seek out continuing education opportunities related to ostomy care. In addition, it may be beneficial to include ostomy care education within occupational therapy academic programs so practitioners may better serve the needs of ostomates.

Further studies should be performed regarding ostomy care and occupational therapy as there are limited resources on this topic area for practitioners to reference. This would help the profession be more well-prepared in working with ostomates and promote evidenced-based practice to help meet society's occupational needs as indicated by the AOTA Centennial Vision (AOTA, 2007). In regard to this study specifically, it may be beneficial to repeat the study with OT practitioners and OT students separately. The sampling method used was convenience sampling of participants in Henderson, NV; North Las Vegas, NV; and Las Vegas, Nevada. Studies conducted on practitioners in other states should be assessed. In addition, creating the workshop in an online format would improve the accessibility to reach more people.

Appendix A: Tables

Table 1: Characteristics of the Sample Taken at Post-Survey

Characteristic	Frequency n (%)
Are you an	
Occupational Therapist	10 (33.3%)
Occupational Therapy Assistant	4 (13.3%)
Occupational Therapy Student	16 (53.3%)
Years of experience as a practitioner [a]	
1-5	6 (20.0%)
6-10	5 (16.7%)
11-15	1 (3.3%)
Over 20 years	3 (10.0%)
Not applicable	15 (50.0%)
Received or will receive training on ostomy care in OT school	
Yes	4 (13.3%)
No	24 (80.0%)
Not sure	2 (6.7%)

Note. n=30 for each characteristic.

[a] Some participants may have self-identified as an OT student, but also identify as an OT practitioner.

Table 2: Settings of Practice that Practitioners Currently Work In

Practitioner Participant	Settings Chosen	Number of Settings Chosen
1	Acute Care	1
2	Acute Care	1
3	Acute Rehab	1
4	Acute Rehab	1
5	Acute Care; Home Health; Sub-Acute Rehab	3
6	Acute Care	1
7	Acute Care	1
8	Acute Care	1
9	Skilled Nursing Facility/ Long Term Care	1
10	Acute Rehab	1
11	Acute Rehab	1
12	Skilled Nursing Facility/ Long Term Care	1
13	Acute Care; Assisted Living Facility	2

Note. n=13. Although 14 self-identified practitioners were present, one participant did not answer.

Table 3: Settings of Practice that Students Have Had Level II Fieldwork Experiences

Student Participant	Settings Chosen	Number of Settings Chosen
1	Acute Care; Acute Rehab	2
2	Other Innovative or Emerging Settings	1
3	Outpatient Clinic; Sub-Acute Rehab	2
4	Acute Care; Outpatient Clinic; Sub-Acute Rehab	3
5	Acute Care; Home Health; Outpatient Clinic; Sub-Acute Rehab	4
6	Outpatient Clinic; Schools, Early Intervention & Community Education Settings	2
7	Acute Rehab; Mental/ Behavioral Health; Outpatient Clinic; Schools, Early Intervention & Community Education Settings	4
8	Community; Outpatient Clinic; Schools, Early Intervention & Community Education Settings	3
9	Acute Care; Schools, Early Intervention & Community Education Settings	2
10	Outpatient Clinic; Other Innovative or Emerging Settings	2
11	Acute Rehab; Assisted Living Facility; Home Health; Skilled Nursing Facility/ Long Term Care; Sub-Acute Rehab	5
12	Acute Rehab	1
13	Home Health; Sub-Acute Rehab	2

Note. N=13. Although 16 self-identified students were present, three did not answer. This may be because they have not gone to level II fieldwork experiences yet.

Table 4: Workplace Characteristics Taken at Post-Survey

Characteristic	Frequency n (%)
Is there a certified ostomy specialist (Wound Ostomy Continence Nurse or Ostomy Management Specialist or other) at your workplace?	
Yes	6 (33.3%)
No	10 (55.6%)
Not sure	2 (11.1%)
How frequently do you have ostomy clients on your caseload?	
Never	0 (0.0%)
Rarely (once or twice a year)	5 (29.4%)
Sometimes (every month or two)	5 (29.4%)
Frequently (a couple times a month)	4 (23.5%)
Always (on a weekly or daily basis)	1 (5.9%)
Not sure	2 (11.8%)
How frequently do you deliver ostomy training/education to clients in your workplace?	
Never	10 (58.8%)
Rarely (once or twice a year)	2 (11.8%)
Sometimes (every month or two)	3 (17.6%)
Frequently (a couple times a month)	1 (5.9%)
Always (on a weekly or daily basis)	1 (5.9%)
Not sure	1 (5.9%)

Note. n= 18 for presence of ostomy specialist question. n=17 for frequency questions. Although there were 14 self-identified practitioners present, the n value may be higher as some OT students may identify as practitioners and because some OT students may have answered the question.

Table 5: Confidence Statements Pre-and Post-Survey

Statement I feel confident…	Pre-Test Mean (SD[a]) Median (IQR[b])	Post-Test Mean (SD[a]) Median (IQR[b])	Statistical Significance (p[c])
knowing the difference between colostomy and ileostomy.	2.52 (1.33) 2.00 (3.00)	4.70 (0.54) 5.00 (1.00)	<.001
in knowing the role of occupational therapy with ostomy care.	2.83 (1.23) 2.00 (2.00)	4.83 (0.38) 5.00 (0.00)	<.001
in emptying an ostomy appliance.	2.21 (1.50) 1.00 (3.00)	4.37 (0.49) 4.00 (1.00)	<.001
in educating clients about emptying an ostomy appliance.	2.10 (1.47) 1.00 (2.50)	4.40 (0.56) 4.00 (1.00)	<.001
in measuring the stoma.	1.69 (1.11) 1.00 (1.00)	4.53 (0.57) 5.00 (1.00)	0.000
in educating clients about measuring the stoma.	1.45 (0.99) 1.00 (0.50)	4.47 (0.57) 4.50 (1.00)	<.001
in changing an ostomy appliance.	1.62 (1.08) 1.00 (1.00)	4.30 (0.47) 4.00 (1.00)	<.001
in educating clients about changing an ostomy appliance.	1.41 (0.95) 1.00 (0.50)	4.33 (0.55) 4.00 (1.00)	<.001
in treating red and irritated peristomal skin.	1.45 (0.87) 1.00 (1.00)	4.47 (0.63) 5.00 (1.00)	<.001
in educating clients about treating red and irritated peristomal skin. [d]	1.54 (0.88) 1.00 (1.00)	4.43 (0.68) 5.00 (1.00)	<.001

Note. The pre-survey n=29 and the post survey n=30. The Mean, SD, Median, and IQR are based on the Likert scale of 1-5.

[a] SD is Standard Deviation

[b] IQR is Interquartile Range

[c] The p-value was calculated using the Wilcoxon Signed Rank Test.

[d] The pre-workshop survey n for this question was n=28.

Table 6: Strengths of the Presentation

Concept	Example Quotes	Frequency, n
Hands-on training	"The hands on component was great."	18
	"…I liked the hands on activity."	
Informative Presentation	"Very comprehensive and lots of mediums of learning"	11
	"The workshop was very informative, easy to understand…"	
Presenter	"The student and her strong knowledge and confidence in the topic"	7
	"Great presentation and excitement in presenting the topic"	
Organization	"Very good outline and agenda"	6
	"It was very well organized and timed well."	
Resources	"…links with information"	6
	"…handout, external resources"	

Note. N=30. Participants may have had responses where multiple components fit into different concepts. Thus, the response was divided into concepts and grouped accordingly.

Table 7: Improvements for the Workshop

Concept	Example Quotes	Frequency, n
Execution of Material	"Maybe slower step by step demonstration of putting on the two kinds of pouches."	14
	"More time to apply and discuss! I feel like it was a bit rushed at the end"	
	"More pictures of stomas or various sized stoma"	
	"Better seating so those in the back can see the presenter up front"	
	"Maybe more hands on practice."	
Including Other Topic Areas	"Would like to learn more on cultural considerations and different body types"	8
	"…more examples of what OT interventions could look like"	
	"Bring in ostomy patients for q and a"	
No Improvements	"I really like the hands on portion, no adjustments"	7
	"None"	
Survey	"Written pre and post survey"	2
	"Clearer pre-survey questions"	

Note. N=30. Participants may have had responses where multiple components fit into different concepts. Thus, the response was divided into concepts and grouped accordingly.

Table 8: Why Participants Chose to Attend the Workshop

Concept	Example Quotes	Frequency, n
To Learn More About Ostomy	"I wanted to learn more about ostomy care"	10
	"To increase understanding"	
To Help Others	"I want to learn more about toileting for possible populations that I may have on my caseload"	7
	"…my grandfather is an ostomate (I want to know how to help him when he can't do it on his own anymore)"	
Interest	"Interested in doing ostomy"	5
	"Interested in improving my ostomy skills and knowledge"	
Relevant to OT	"The information seemed to be helpful for our career field"	5
	"…I think OT's play an important role in this subject area."	
	"More education on ostomy care. Former workplace only allowed nurses to do application"	
Lack of Knowledge	"I was very interested in learning about ostomy care since they did not teach us in OT school…"	4
	"I've never had training in Ostomy and have had to learn from nursing collaboration"	
Incentive	"For CEU for license"	3
	"… it was free"	
Support of the Presenter	"Amanda is my classmate…"	3
	"…I support Amanda"	

Note. N=30. Participants may have had responses where multiple components fit into different concepts. Thus, the response was divided into multiple concepts and grouped accordingly.

Appendix B: Certificate of Attendance

Participant Name:

Presenters: Amanda Shimabukuro, BS, OTD/S

Pamela Morales, MS, OTR/L, OMS

Date: March 30, 2023

Time: 5:00PM-7:00PM

Length of Presentation/Contact Hours: 2.0

Location: Valley Hospital Medical Center (Las Vegas, NV)

Title of Presentation: Ostomy Care and Occupational Therapy

Brief Description of Course: This workshop is a visual lecture with a hands-on component regarding the basics of ostomy care and the role of occupational therapy practitioners when working with ostomates.

Learning Objectives:

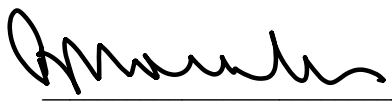
- Describe the role of occupational therapy with ostomy care
- Define the differences between a colostomy and ileostomy
- Identify the steps to changing an ostomy system
- Identify the steps to emptying an ostomy system
- Identify the steps for crusting to manage irritated peristomal skin

Presenter's Background:

Amanda Shimabukuro is a 3rd year student at the University of Nevada, Las Vegas (UNLV) Entry-level Occupational Therapy Doctorate Program. Amanda has had level II fieldwork experiences in the SNF/Post-Acute/LTAC setting and the acute hospital setting where she trained under an occupational therapist who is also a certified ostomy management specialist to increase her knowledge on ostomy care.

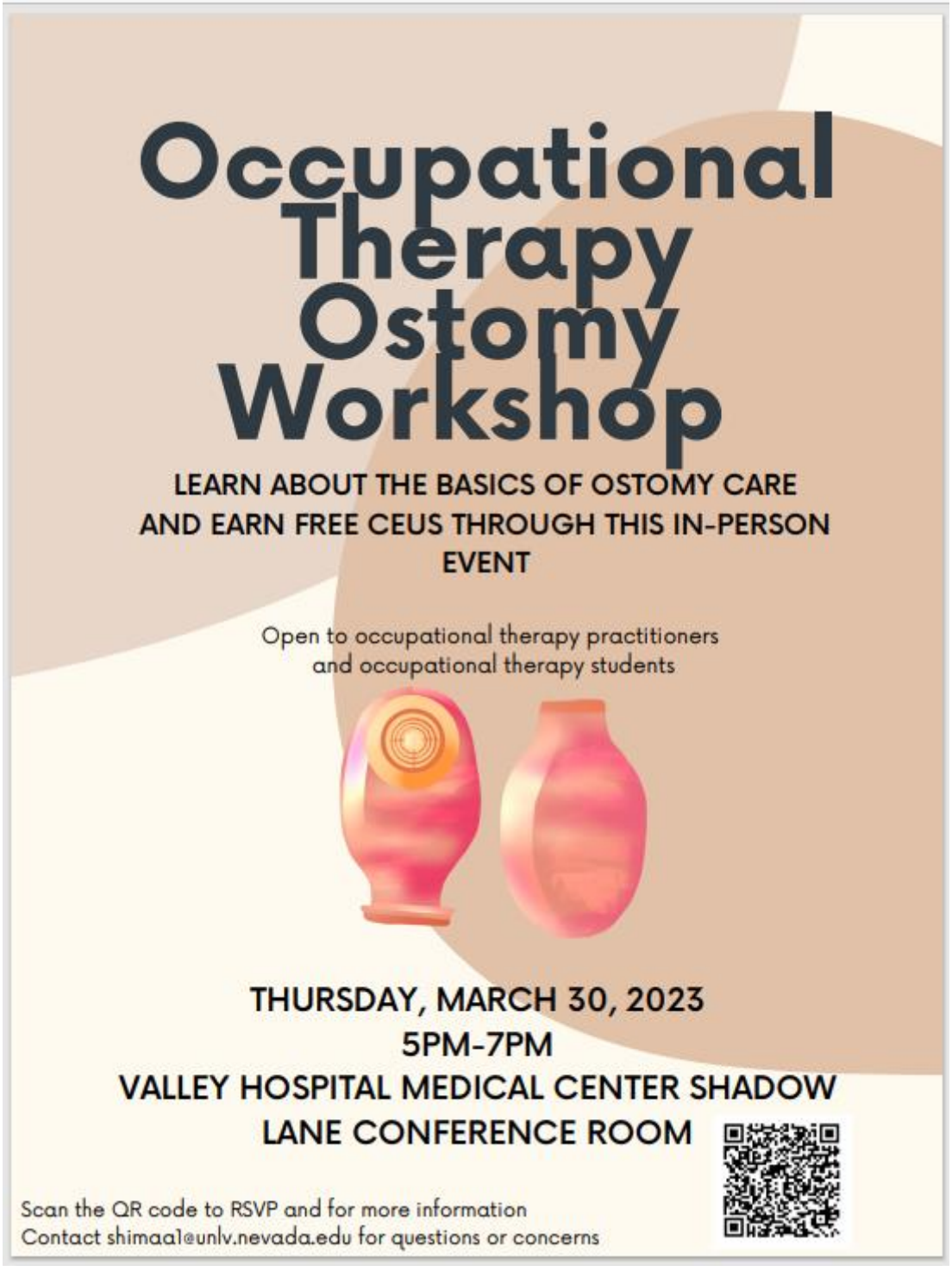
Pamela Morales has been an occupational therapist since 1999. She has practiced occupational therapy in pediatrics, skilled nursing, home health, acute rehab, and acute hospital care. She recently received her certification as an ostomy management specialist. She manages the ostomy care and training for all ostomy patients at Valley Hospital in Las Vegas.

Amanda Shimabukuro, BS, OTD/S



Pamela Morales, MS, OTR/L, OMS

Appendix C: Flyer to Advertise the Workshop



Appendix D: Learning Objectives & Lecture PowerPoint

Learning Objectives

- Describe the role of occupational therapy with ostomy care
- Define the differences between a colostomy and ileostomy
- Identify the steps to changing an ostomy system
- Identify the steps to emptying an ostomy system
- Identify the steps for crusting to manage irritated peristomal skin

Ostomy Care and Occupational Therapy

Amanda Shimabukuro OTD/S
Pamela Morales MS, OTR/L, OMS
Faculty Mentor: Christina Bustanoby OTD, OTR/L, CSRS

March 30, 2023
Valley Hospital Medical Center

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Learning Objectives

- Describe the role of occupational therapy with ostomy care
- Define the differences between a colostomy and ileostomy
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- Identify the steps to emptying an ostomy system
- Identify the steps for crusting to manage irritated peristomal skin

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Table of Contents

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Overview of Ostomies

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Definitions

- Ostomy – "an operation (as a colostomy, ileostomy, or urostomy) to create an artificial passage for bodily elimination" (Merriam-Webster, n.d.-b)
- Stoma – "an artificial permanent opening especially in the abdominal wall made in surgical procedures" (Merriam-Webster, n.d.-c)
- Ostomate – "an individual who has undergone an ostomy" (Merriam-Webster, n.d.-a)

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Background

- ~725,000-1 million ostomates in the U.S. (United Ostomy Associations of America [UOAA], n.d.-b)
- Ostomy education is not always adequately addressed to clients post-operatively (Krouse et al., 2016)
  - Due to shortened hospital stays → shortened time to receive education
- Ostomy specialists are only involved with severe problems (Krouse et al. 2016)
- Decreased client education → decreased independence → poorer outcomes for clients (Wasserman & McGee, 2017)

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Occupational Therapy Practice Framework (4th ed.)

- Toileting & toilet hygiene
  - "Obtaining and using toileting supplies, managing clothing, maintaining toileting position, transferring to and from toileting position, cleaning body, caring for menstrual and continence needs (including catheter, colostomy, and suppository management" (American Occupational Therapy Association [AOTA], 2020, p.30)

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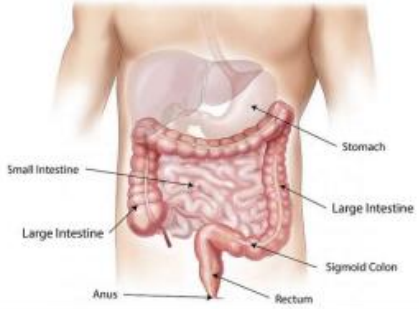
Anatomy & Physiology Related to Ostomy



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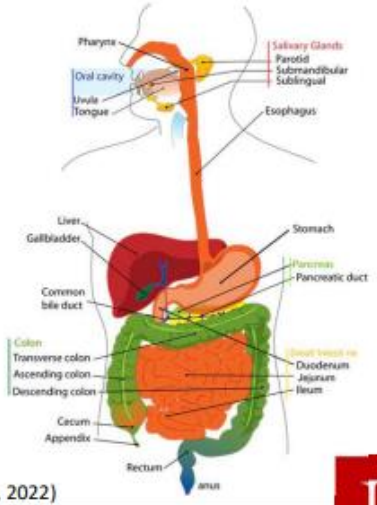
Anatomy of the Gastrointestinal Tract (Alimentary Canal)

- Mouth
- Esophagus
- Stomach
- Small Intestine
  - Duodenum, jejunum, ileum
- Large Intestine (Colon)
- Rectum
- Anal Canal



(Netsch, 2022)

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Conditions That Warrant an Ostomy

- Colorectal Cancer (Livestrong, n.d.)
- Inflammatory Bowel Diseases (IBD)
  - Crohn's Disease
    (National Institute of Diabetes and Digestive and Kidney Diseases [NIDDK], n.d.-a)
  - Ulcerative Colitis (NIDDK, n.d.-c)
- Diverticular Disease (NIDDK, n.d.-b)

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Conditions That Warrant an Ostomy

- Abdominal or Pelvic Trauma (Steele, 2006)
  - Blunt force trauma
  - Penetrating
- Bowel obstruction (Sawai, 2012)
  - Adhesions
  - Hernia
  - Tumors
  - Volvulus
  - Stool impactions
  - Polyps (Shussman & Wexner, 2013)

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Things to Be Aware of with Ostomies

- Effluent – output from stoma (feces, mucous)
  (Doyle & McCutcheon, 2015)
- Ostomates are considered incontinent
  (Doyle & McCutcheon, 2015)
  - Exceptions – colostomy irrigation, training
    (John Hopkins Medicine, n.d.)
- Temporary vs. permanent ostomies
  (Doyle & McCutcheon, 2015)

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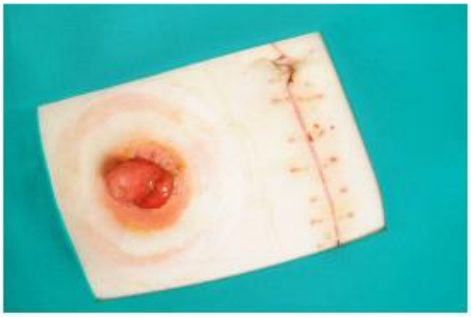
Ileostomy



- Occurs in ileum of small intestine
- Stoma usually located in RLQ
- Effluent consistency – liquid to mushy
  - Digestive enzymes present in stool
- Hydration concerns
  - Large intestine not in use – less water reabsorption
  - Normal output range 800-1200 mL per day

(Stricker et al., 2022)

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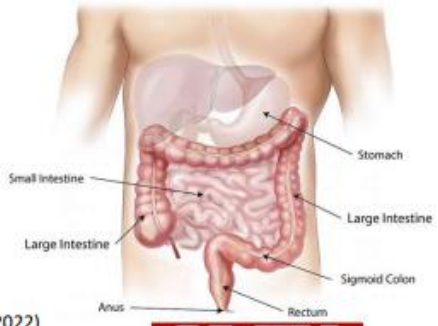
Colostomy

- Occur in the large intestine (colon)
- Stool is more formed the farther along the ostomy is in the colon
  - Less digestive enzymes as it goes through
- Ascending colostomy
  - Stoma - located R abdomen
  - Effluent consistency – liquid to semi-liquid
  - Rare to have
- Transverse colostomy
  - Stoma located – RUQ, LUQ or midabdomen
  - Effluent consistency – semi-liquid to pasty



(Stricker et al., 2022)

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Colostomy

- Descending & sigmoid colostomy
  (Stricker et al., 2022)
  - Stoma located in LLQ
  - Effluent consistency - pasty to formed
  - Most common type of colostomy
- Controlled bowel movements
  (John Hopkins Medicine, n.d.)
  - Scheduling/training
  - Irrigation

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Types of Stomas

- End stoma
  - One stoma with one opening discharges effluent
- Double-barrel stoma
  - Two end stomas
    - Proximal opening – stool
    - Distal opening– mucous
- Loop Stoma
  - One stoma with two openings
    - Proximal opening – stool
    - Distal opening – mucous
    - May have a bridge/rod

(Stricker et al., 2022)

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Occupational Therapy Domain

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Impact on Occupations

- The client can still participate in their meaningful occupations after an ostomy!
- Precautions
  - Abdominal precautions (post-operatively)
  - Recommend from refraining from high contact sports (Convatec, n.d.)
- Bathing/Showering (Carmel & Goldberg, 2022)
  - Water is not harmful to the stoma – can bathe/shower without a pouch on
  - Pouches are also water resistant – can bathe/shower with a pouch on

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Impact on Occupations

- Nutrition/Diet (Eating, Feeding, Meal Preparation)
  - Hydration – 8-10 cups of fluids per day
  - Chewing food well to prevent blockages
  - Foods high in fiber, that cause gas, cause odor
  - Foods to thicken stool
  - Foods to loosen stool
  - Medication – teaching client to ask about medications prescribed to assess if they will be dissolved quickly or absorbed with an ileostomy
    - Consult with Doctor before taking laxatives/stool softeners, diarrheal medication

(Burgess-Stocks, 2022)

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Impact on Occupations

- Dressing (Carmel & Goldberg, 2022)
  - Pouching systems fit close to the body – most are unnoticeable
  - Waistband of pants – Under the stoma or over the stoma
  - Accessories – pouch covers, undergarments
- Sexual Activity (Ory et al., 2018)
  - Communication
  - Emptying pouch before sexual activity
  - Ensuring pouch is secure

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Impact on Occupations

- Traveling (UOAA, n.d.-b)
  - Pack supplies in both check-in bags and carry-on bags
  - Domestic – scissors w/ <4inch cutting edge allowed in carry-on
  - Liquid, aerosol, cream, paste larger than 3oz allowed if medical condition requires it, must be declared at TSA
  - Communication cards

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Considerations in OT Domain

- Client factors
  - Mental functions
    - Cognition, attention, memory, emotional, psychosocial
  - Sensory functions
    - Visual, vestibular, touch, pain, sensitivity to temperature/pressure
  - Neuromusculoskeletal & movement-related functions
    - Joint function, muscle function, movement function
- Contexts
  - Physical environment, support and relationships

(AOTA, 2020)

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Occupational Therapy Process

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OT Goals

- Client will independently **empty pouch and cleanse tail** with 100% accuracy by discharge.
- Client will independently **remove pouch, cleanse skin, and apply pouch** with 100% accuracy by discharge.
- Client will independently **verbalize when to seek medical attention** like with 100% accuracy by discharge.
- Client will **verbalize how to manage skin irritation** independently with 100% accuracy by discharge.

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Stoma Assessment

- A healthy stoma is **red/pink & moist**.
- All stomas look different in appearance
  - **Structure/Protrusion** (Bud/spout, retracted)
  - **Shape** (round, oval, irregular)
  - **Size** (mm or in)
  - **Lumen/Os** – opening where stool/mucous exits
  - **Mucocutaneous Junction (MCJ)** – where the peristomal skin and bowel mucosa meet
- Peristomal skin – 3-4 inches of skin around the stoma
- Documentation – clock method

(Colwell & Hudson, 2022; Hooper & Strilko, 2021)

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Ostomy Supplies – Pouching Systems

- Wafer/skin barrier/faceplate/flange – adheres to and protects the peristomal skin, attaches to pouch
  - Cut to fit, pre-sized, moldable, stretchable
  - Flat or Convex
- Pouch – collects effluent
  - Drainable
    - Clamp, integrated closure, Velcro, tap
  - Closed End
- 1 piece vs. 2 piece

(Colwell & Hudson, 2022b)

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Ostomy Supplies

- Skin Protection (Colwell & Hudson, 2022b)
  - Liquid skin barrier film (wipe, spray, wand) - protect skin, provide dry surface
  - Stoma Powder – absorbs moisture
  - Barrier Ring – improve seal
  - Paste – protects skin, used to fill creases, **Not an adhesive**
- Accessories
  - Adhesive remover (wipe, spray)
  - Barrier strips, ostomy belt, odor prevention (Colwell & Hudson, 2022b)

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How to Change a System

- Wear time – 3-4 days (Carmel & Goldberg, 2022)
  - Change if there are signs of leaks, or itching/burning sensations underneath
- Removal – using adhesive remover
- Skin Cleansing
  - Wound cleanser or soap without oils
  - Gauze, paper towel, washcloths
- Stoma and peristomal skin assessment
  - Skin protection (if needed)
- Measure stoma (6-8 weeks after operation)
- Application of barrier ring
- Application of system

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Hands-on Measurement of Stoma

- Measure the stoma using measuring guide to circle closest in size

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Hands-on Application of Ring

- Warm cohesive ring with hands
- Stretch ring to fit around stoma
- Apply ring onto stoma, no peristomal skin should be seen in center of ring

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Hands-On Application of a System

Moldable System 2-piece

- Roll back wafer to fit stoma
- Do not crease the outer tape border (white)

Cut to Fit 1-piece

- Cut system to ~3mm larger than stoma
- Do not cut the opposite side of pouch

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Hands-On Application of a System

Moldable System 2-piece

- Peel clear plastic film on back of wafer
- Apply onto stoma card

Cut to Fit 1-piece

- Smooth edges of opening w/ finger
- Peel back plastic film on back of wafer
- Apply onto stoma card

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Hands-On Application of a System

Moldable System 2-piece

- Press on border between wafer and ring for maximal adhesion
- Peel tape border and adhere to stoma card
- Snap pouch onto wafer

Cut to Fit 1-piece

- Press on border between wafer and ring for maximal adhesion

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Hands-On Integrated Tail Closure

- Roll the tail three times toward the stoma
- Connect the white integrated closure pieces together
- Press tightly – you should feel a snap

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Emptying Drainable Pouches

- With proper tail cleansing, odor should only be present when emptying the pouch or changing the system. (Carmel & Goldberg, 2022)
- Systems should be emptied when one-third to one-half full (Carmel & Goldberg, 2022)
- Emptying positions for clients/caregivers
  - Sitting all the way back on the toilet, emptying between legs
  - Sitting backwards on toilet
  - Standing over toilet
  - Emptied into graduated cylinder/other container then into toilet

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How to Empty a Drainable Pouch

- Get into position
- Undo closure of tail
- (If utilizing toilet) Place 1-2 squares of toilet tissue into toilet to prevent splash back
- Empty contents by gently pushing stool out of pouch
- Use paper-towel/tissue to cleanse outside of tail
- Open the tail – wipe ~2 inches into tail
- Re-do closure of tail

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Gas and Documenting Output

- Gas accumulates in pouch – tail should also be opened to release gas
- Documenting output
  - Measuring in CCs/mL using graduated cylinder
  - Consistency (soft, clotted, hard, liquid, loose, mucous, pasty, seedy, semi formed, tarry, watery)
  - Color

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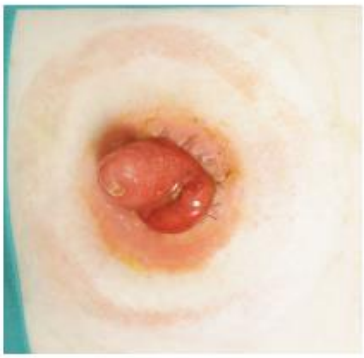
Skin Protection – Crusting

- Used to protect red and/or irritated skin
  1. Apply stoma powder onto red areas
  2. Spread stoma powder evenly onto red areas
  3. Dust away excess powder with tissue
  4. Apply skin barrier onto powder (may be wipe, wand, or spray)
  5. Repeat steps 1-4 (one or two more times)
  6. Skin barrier should be the very last layer on top
  7. Allow crust to dry for 1 minute for optimal barrier adhesion
  8. Apply system



(UOAA, 2020)

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Medical Attention

- Rash/open areas around peristomal skin
  - Unable to keep system on, crusting not working
- Severe bleeding from stoma
- Watery stool lasting more than a day
- Stoma becomes dry, grey, or black
- Continuous nausea or vomiting
- Severe abdominal pain, fever, bloating
- No output for 4-6 hours with cramping and nausea
- If there is fluid leaking from around the stoma, not through it

(American Cancer Society, 2019; Healthwise, 2021; UOAA, 2019)

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Ostomy Education Resources

- United Ostomy Associations of America (UOAA) - https://www.ostomy.org/
- Diet/Nutrition (UOAA) - https://www.ostomy.org/diet-nutrition/
- Sexuality (UOAA) - https://www.ostomy.org/sexuality/
- New Ostomy Patient Guide (UOAA) - https://www.ostomy.org/new-ostomy-patient-guide/
- Hollister Ostomy Videos (English) - https://www.hollister.com/en/OstomyCare/Ostomy%20Clinical%20Education/Patient%20Education/Ostomy%20Educational%20Theatre%20Videos
- Hollister Ostomy Videos (Spanish) - https://www.hollister.com/en/ostomycare/ostomy-clinical-education/patient-education/resursos-en-espanol
- Wound, Ostomy, and Continence Nurses Society (WOCN) Peristomal Skin Guide for Consumer or Clinicians - https://psag.wocn.org/

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Ostomy Applications

- Education - Clients
  - MyOstomyLife by Coloplast Care
  - Secure Start
  - Ostomy 101
- Tracking - Clients
  - OstoBuddy: Ostomy Companion
  - My Ostomy Journey
- Healthcare Provider Resources
  - Stoma Care
  - Hollister Fit Indicator Tool
  - Ostomy Nurse Solutions

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References

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Appendix E: Supplies Used in Workshop

One-piece Supply Kit	Two-piece Supply Kit
Stoma Card	Stoma Card
Cohesive Ring	Cohesive Ring
Stoma Measuring Guide	Stoma Measuring Guide
One-piece Cut-to-Fit System	Two-piece Moldable System
Gloves	Gloves
Stoma Powder	Stoma Powder
Barrier Wand	Barrier Wand
Curved Ostomy Scissors	

Appendix F: Pre-Workshop Survey

Thank you for participating in this Capstone project.

You must be an occupational therapist, occupational therapy assistant, or occupational therapy student to participate.

This capstone project aims to examine the impact of an ostomy training workshop on OT practitioners' and students' confidence in client education on ostomy management.

This pre-survey is to be taken prior to the workshop. A post-survey will be given at the conclusion of the workshop.

Responses will be anonymous.

The survey should take ~5 minutes to complete.

For any questions, email Amanda Shimabukuro at shimaa1@unlv.nevada.edu.

The following questions are adapted from Cross et al.'s (2014) survey regarding confidence for knowledge and skills related to ostomy care. The questions will give a statement and ask you to choose how much you agree with the statement.

I feel confident knowing the difference between colostomy and ileostomy.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I feel confident in knowing the role of occupational therapy with ostomy care.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I feel confident in emptying an ostomy appliance.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I feel confident in educating clients about emptying an ostomy appliance.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I feel confident in measuring the stoma.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I feel confident in educating clients about measuring the stoma.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I feel confident in changing an ostomy appliance.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I feel confident in educating clients about changing an ostomy appliance.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I feel confident in treating red and irritated peristomal skin.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I feel confident in educating clients about treating red and irritated peristomal skin.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

Appendix G: Post-Workshop Survey

Thank you for participating in this Capstone project.

You must be an occupational therapist, occupational therapy assistant, or occupational therapy student to participate.

This capstone project aims to examine the impact of an ostomy training workshop on OT practitioners' and students' confidence in client education on ostomy management.

A pre-survey was given at the beginning of the workshop. This is the post-survey.
Following the post survey are questions regarding your background, work environment, and feedback for the workshop.

Responses will be anonymous.

The survey should take ~10-15 minutes to complete.

For any questions, email Amanda Shimabukuro at shimaa1@unlv.nevada.edu.

The following questions are adapted from Cross et al.'s (2014) survey regarding confidence for knowledge and skills related to ostomy care. The questions will give a statement and ask you to choose how much you agree with the statement.

I feel confident knowing the difference between colostomy and ileostomy.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I feel confident in knowing the role of occupational therapy with ostomy care.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I feel confident in emptying an ostomy appliance.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I feel confident in educating clients about emptying an ostomy appliance.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I feel confident in measuring the stoma.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I feel confident in educating clients about measuring the stoma.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I feel confident in changing an ostomy appliance.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I feel confident in educating clients about changing an ostomy appliance.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I feel confident in treating red and irritated peristomal skin.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I feel confident in educating clients about treating red and irritated peristomal skin.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

The following questions are adapted from Cross et al.'s (2014) survey regarding demographics and clinical practice characteristics.

Are you an

- ○ Occupational therapist
- ○ Occupational therapy assistant
- ○ Occupational therapy student

How many years of experience do you have as a practitioner?

- ○ 1-5
- ○ 6-10
- ○ 11-15
- ○ 16-20
- ○ Over 20 years
- ○ Not applicable

If you are a practitioner, what setting(s) of practice do you currently work in?

If you are a student, what setting(s) of practice have you had level II experiences in?

- ☐ Academia & Research
- ☐ Acute Care
- ☐ Acute Rehab
- ☐ Assisted Living Facility
- ☐ Community
- ☐ Early Intervention
- ☐ Home Health
- ☐ Mental/Behavioral Health
- ☐ Outpatient Clinic
- ☐ Schools, Early Intervention, and Community Education Settings
- ☐ Skilled Nursing Facility/ Long Term Care
- ☐ Sub-Acute Rehab
- ☐ Other innovative or emerging settings

_____

Did you receive training (or will you receive training) on ostomy care in occupational therapy school?

- ○ Yes
- ○ No
- ○ Not sure

The following questions are adapted from Alenezi et al.'s (2022) survey regarding work characteristics related to ostomy care. This section asks about your work environment. If you are a not a practitioner, select "N/A" for questions in this section.

Is there a certified ostomy specialist (Wound Ostomy Continence Nurse or Ostomy Management Specialist or other) at your workplace?

- ○ Yes
- ○ No
- ○ Not sure
- ○ N/A

How frequently do you have ostomy clients on your caseload?

- ○ Never
- ○ Rarely (once or twice a year)
- ○ Sometimes (every month or two)
- ○ Frequently (a couple times a month)
- ○ Always (on a weekly or daily basis)
- ○ Not sure
- ○ N/A

How frequently do you deliver ostomy training/education to clients in your workplace?

- ○ Never
- ○ Rarely (once or twice a year)
- ○ Sometimes (every month or two)
- ○ Frequently (a couple times a month)
- ○ Always (on a weekly or daily basis)
- ○ Not sure
- ○ N/A

This section asks about your experience of the workshop.

What were some strengths of the workshop?

_____

What were some improvements that can be made to the workshop?

_____

Why did you choose to attend today's workshop?

_____

Any other comments or feedback regarding the workshop

_____

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Curriculum Vitae

Amanda R.S. Shimabukuro
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EDUCATION

Occupational Therapy Doctorate **June 2020-Present**
University of Nevada, Las Vegas **Expected Graduation May 2023**

Bachelor of Science, Kinesiology **May 2019**
University of Nevada, Las Vegas

EXPERIENCE

Legislative, Leadership, & Advocacy Intern **Oct 2022-Present**
Nevada Occupational Therapy Association, Las Vegas, NV

- Assisted in planning Nevada OT Hill day
- Attended events that engaged members in building relationships with representatives
- Assisted with educating others about the legislative process

Treasurer **Dec 2021-Dec 2022**
UNLV Student Occupational Therapy Association, Las Vegas, NV

- Maintained organization financial records
- Collected organization's acquired funds
- Collaborated with executive board members to meet fundraising quota
- Partnered with executive board members for organization's budget
- Assisted with event planning and execution

Level II Fieldwork Student **May 2022-Aug 2022**
Montecito Post-Acute Care & Rehabilitation, Mesa, AZ

- Completed daily documentation for each client interaction
- Evaluated clients on their functional abilities
- Executed therapeutic treatment interventions to enable client functioning
- Educated clients on compensatory and adaptive techniques

Level II Fieldwork Student **May 2021-Aug 2021**
Valley Hospital Medical Center, Las Vegas, NV

- Educated clients on how to use adaptive equipment
- Trained client's on how to manage their ostomy
- Completed daily documentation for each client interaction
- Evaluated clients on their functional abilities
- Executed therapeutic treatment interventions to enable client functioning

AWARDS

- **Dean's Honor List**, Spring 2016- Spring 2019
- **Resident Assistant of the Month**, August 2019

PRESENTATIONS

- **Ostomy Care and Occupational Therapy**, 2023
  Valley Hospital Medical Center, Las Vegas, NV
- **Ostomy Care and the Role of the Occupational Therapist**, 2023
  Western Regional OT Spring Symposium, Las Vegas, NV

PROFESSIONAL MEMBERSHIPS

- **American Occupational Therapy Association**, 2020-Present
- **Nevada Occupational Therapy Association**, 2022-Present
- **Honor Society of Phi Kappa Phi**, 2022-Present

MEMBERSHIPS

- **UNLV Student Occupational Therapy Association**, 2020-Present
- **UNLV Coalition of Occupational Therapy Advocates for Diversity**, 2020-Present
- **UNLV Kinesiology Club**, 2018-2019

GRANTS AND SCHOLARSHIPS

- **UNLV OTD General Program Scholarship**, 2023
- **UNLV Advanced Doctoral Graduate Assistantship Completion Program**, 2023
- **UNLV OTD General Program Scholarship**, 2022
- **UNLV Graduate College Summer Session Scholarship**, 2022
- **UNLV OTD General Program Scholarship**, 2021

CERTIFICATIONS

- **Basic Life Support (CPR & AED)**, American Heart Association – 2022-2024
- **CarFit Technician**, AOTA, AAA, AARP Driver Safety - 2021
- **Montreal Cognitive Assessment Certification**, MoCA Cognitive Assessment – 2021-2023