

**Educational Advances Increasing Perceived Self-Efficacy in Short Bowel Syndrome
Utilizing Social Media**

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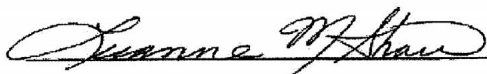
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Executive Summary

Short bowel syndrome is complicated and requires complex treatment with a multidisciplinary team. The project *Educational Advances to Increase Self-Efficacy in Short Bowel Syndrome Utilizing Social Media* incorporates an established Facebook short bowel syndrome support group and the development of a web-based site in assisting caregivers who are having challenges providing care for their child with the diagnosis. The evidence suggests many patients and parents may feel overwhelmed with the responsibilities and medical requirements for this specific diagnosis as most patients require medical devices such as a central line, gastric tube, and/or surgical interventions consequently requiring an ostomy. Key terms include central line, social media, parenteral nutrition, absorptive capacity, short bowel syndrome, infection, Facebook, gastric tube, intestinal resection, ostomy, and self-efficacy. The goal of this evidence-based project was to improve perceived self-efficacy through patient and parent/caregiver education. The project accomplished the goal in assisting parents and patients in transitioning home by creating a web resource providing evidence-based practices for common concerns and issues faced by the population with short bowel syndrome. An additional goal was to increase the caregiver knowledge base in caring for the patient with short bowel syndrome by the use of educational resources on the website. The Facebook support group hosted the website for an allotted time. Participants who used the website were asked to complete a pre-and post-General Self-Efficacy Scale (Appendix D) survey regarding perceived self-efficacy, usefulness, helpfulness, and the website's benefit. The survey results were utilized to evaluate the website's efficacy. The budget encompassed the cost of designing the website, survey, and maintaining the website. As the evidence has shown, the objectives were met, although budget changes were made. The feasibility of implementing the project was reasonable and completed without difficulty. Key findings include an increase in perceived self-efficacy after utilization of the website based on data analyzed from the pre and post-test.

Acknowledgment

First and foremost, I would like to thank God for the opportunity of further study into my gift, calling, and passion for my life. I look to him in utilizing my talent in giving him glory.

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To my youngest son, Kody, you are my inspiration for the project. God has taken us on a detour that has led to the development of a web resource for others with short bowel syndrome. To God be the Glory. To my oldest son Ethan, your integrity and commitment to learning encouraged me throughout the program to finish the race started. To my mother, Lynn Hathorn, who taught me persistence, commitment, and dedication to the Lord. To my sister Keyanna Willis, thank you for teaching me to never settle for less. To my husband Khalani Carr, your unwavering support knows no end. Thank you for your unconditional love and support throughout my entire nursing education. What a journey!

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Educational Advances Increasing Perceived Self-Efficacy in Short Bowel Syndrome Utilizing Social Media

Short bowel syndrome (SBS) is a medical illness where intestinal resection reduces absorptive capacity requiring parenteral nutrition dependence and mineral supplementation (Modi et al., 2008). The pediatric patient with SBS requires a greater effort in ensuring physical and nutritional needs are met to ensure adequate growth (Afolabi & Fairman, 2019). Although there are many requirements of SBS, most pediatric patients are discharged home with a central line, ostomy, and gastric feeding tube to assist with nutritional supplementation (O’Keefe et al., 2005). The treatment is rigorous and requires diligence in caring for the line to prevent central-line blood-associated infections, liver failure, skin breakdown, and failure to thrive (Modi et al., 2008).

Parents and/or caretakers are responsible for learning and caring for the child’s needs. Many intestinal rehabilitation hospitals offer training before discharge to ensure parents can connect and disconnect parenteral nutrition, change the dressing over the central line insertion site, change ostomy appliances, and connect/disconnect gastric tube (g-tube) feedings (Raphael et al., 2018). Emphasis is placed on educating parents in being properly prepared and knowledgeable in caring for the child. However, many parents feel an overwhelming sense of being ill-prepared once discharged home. Due to the caretakers’ inability to contact their health care team or experiencing a lapse of memory of procedures, a home-based resource is a necessity in providing correct protocol in caring for the pediatric patient (Raphael et al., 2018). This DNP student has implemented a home-based resource as a website regarding specific procedures and instructions from peer-reviewed reputable journals and sites on proper methods for dressing changes, central line cap changes, g-tube feedings, and quick tips on caring for an ostomy appliance. Social media and online educational resources have been examined and electronic educational resources have been suggested as beneficial for patients (Pizzuti et al., 2020). Appendix A presents the key terms for this clinical problem and Doctor of Nurse Practice (DNP) project.

Background and Significance

SBS is a medical condition or diagnosis where removal or dysfunction of the small and/or large intestine causes malabsorption, malnutrition, intestinal failure, micronutrient deficiencies, and other conditions sometimes even leading to death. The mortality rate for SBS can reach a

maximum of 30% (O’Keefe et al., 2005). Although there are many causes of SBS, pediatric in-utero conditions such as necrotizing enterocolitis, intestinal atresia, gastroschisis, malrotation, and volvulus needing surgical resection account for the majority of cases in newborn infants (Cuffari, 2019). Patients are typically treated with surgical interventions along with central line placement for total parenteral nutrition, ostomy, colostomy, and g-tube placement to assist in increasing the infant’s caloric intake (Cuffari, 2019). A multidisciplinary team approach is used with the patient including a gastroenterologist, surgeon, dietician, pharmacist, nephrologist, and an endocrinologist due to certain comorbidities that align with the disease such as malnutrition, diabetes Type 1, kidney disease, and/or liver disease (Abi Nader et al., 2016). In addition, many central nervous system conditions along with SBS require a neurology consult due to the complex metabolic process and neurological complexities such as D-lactic acidosis (Kowlgi & Chhabra, 2015). Acidosis occurs when lactic acid converts to D-lactic acid passing into the bloodstream, leading to symptoms such as slurred speech, fatigue, malaise, and to more severe neurologic issues such as ataxia, unstable gait, and encephalopathy.

Due to the viscous nature of parenteral nutrition, a larger vein and catheter is required for home administration (O’Keefe et al., 2005). Most pediatric patients receive parenteral nutrition through a central venous catheter to protect smaller veins from collapse and damage. However, the central lines have a high risk for infections, leading to numerous episodes of line infections and sepsis in the short bowel population (Modi et al., 2008). Careful monitoring of patients with central lines is essential to rule out febrile status and prevent line infection. Many hospital organizations have requirements where a temperature of 38 degrees Celsius invokes automatic admission to rule out infection for the population who has a central venous catheter (Abi Nader et al., 2016). Other organizations base the temperature barometer on age and higher temperatures. This is one of many facets of the complexity of care short bowel patients and parents manage daily.

Due to the complex nature of the diagnosis, parents and/or caregivers struggle with the expert-related care needed. Many patients are discharged from the hospital with a variety of new equipment, pumps, and medical devices, which can overwhelm parents (Raphael et al., 2018). In addition, the complexity of care for the pediatric patient with SBS causes increased emergency department visits and hospital admissions (Vallabh et al., 2017).

Cuffari (2019) described quality of life being impacted psychosocially and emotionally due to the complex nature of SBS. Additionally, low acuity and avoidable emergency department assessments can save approximately 16–47% of hospital costs per visit (Melo et al., 2016). The goal of this DNP project is to increase the primary caregiver's self-efficacy by creating a web-based educational platform regarding SBS to assist in managing the child's care. In addition, utilizing the social media platform Facebook to direct parents and caregivers to the web-based resource will provide a convenient method to reach a large national patient population (Corniati et al., 2019).

Problem Statement/Clinical Question

SBS is a medical diagnosis where removal of the intestine due to surgical resection or underlying pathologies results in a myriad of conditions. Though the disease can affect patients throughout the lifespan, the focus is on the pediatric patient's adaptation after transitioning home. The complexity of care for the short bowel patient is rigorous. Many caregivers are discharged home, feeling overwhelmed and unprepared in managing care for the child with the aforementioned diagnosis. Many caregivers default to the emergency department for avoidable visits due to lack of self-efficacy, knowledge, and education surrounding SBS (Vallabh et al., 2017). The frequent visits are disruptive and disallow continuity of care in the home setting. Many intestinal rehabilitation centers offer caregiver training before discharge (Raphael et al., 2018). However, once home, caregivers are overwhelmed with the responsibilities of caring for the child. The goal of this project was to increase perceived self-efficacy for caregivers by utilizing the educational-based website intervention delivered through the Facebook support group.

The clinical question of this work is as follows: For pediatric short bowel caregivers, does utilizing a web-based resource tool kit increase perceived self-efficacy relating to SBS in comparison to not utilizing a resource when at home? The patient population refers to caregivers of pediatric patients with SBS. Patient admissions severely impact parents and/or caregivers due to other responsibilities such as work, home life, and children (Cuffari, 2019). Parents typically spend an enormous amount of time with the patient during hospitalization and emergency department visits. In addition, costs are created through transportation, food, medical bills, and childcare for other children. Employed parents have the responsibility of both economic and health demands, requiring a higher degree of self-efficacy.

The intervention utilized a web-based resource for SBS providing information to assist caregivers in managing many aspects of care and other methods to increase perceived self-efficacy and decrease avoidable emergency department visits (Vallabh et al., 2017). The website hosted a variety of solutions to common questions regarding the SBS diagnosis. The resource included links to research articles; reputable hospital-created videos, which are validated for accuracy; and information on best practices for patients. The website posted to the Facebook social media platform within the SBS support group. Facebook is a growing site to exchange information as social media gives access to a larger group of patients and information (Corniati et al., 2019). The Facebook support group allows for larger access to the population of interest.

The comparison involved patients who accessed and utilized the created web-based resource versus patients who did not participate in using the web-based resource for solutions to an at-home problem. The ideal outcome would be a caregiver increasing perceived self-efficacy by finding solutions using the web-based resource, eliminating unnecessary emergency department visits and hospital readmissions. By problem-solving a care issue for the child using the web-based resource, the caregiver increases perceived self-efficacy, remains home with family, reduces costs, and improves continuity of care (Huyer et al., 2018).

Review of the Literature

Search terms/phrases used for the literature review included the following: short bowel syndrome in the pediatric population; pediatric parenteral nutrition; intestinal failure rehabilitation clinics; social media and health care; social media health care; healthcare support groups Facebook; short bowel syndrome and perceived self-efficacy; avoidable emergency department visits and quality of life in short bowel patients. The following databases were searched: CINAHL, Google Scholar, EBSCO, PubMed, and ProQuest. Key evidence and findings of the review are discussed by major elements of the project. Articles were reduced by parameters of publication in the last 5 years, peer-reviewed, and scientific medical journals.

SBS in the pediatric population is a grueling disease that requires energy, time, and training in caring for the patient. Many patients have medical devices and equipment such as central venous catheters, gastric feeding tubes, and colostomies (Vallabh et al., 2017; Cuffari, 2019). In addition, diet requirements vary including oral, enteral, and parenteral nutrition requiring sterile procedures in dressing changes and monitoring the patient's temperature to avoid central line infections (O'Keefe et al., 2005; Modi et al., 2008). In summary, parents have

a difficult time adapting to the child's new medical requirements, leading to avoidable emergency department visits and readmissions (Vallabh et al., 2017). The literature review supports the proposed interventions to address the problem.

Social Media

Social media is defined as an electronic-based technology facilitating the sharing of ideas, images, and information using the convenience of the internet. Facebook is a social media platform where some groups of individuals use the source to ask for advice and share information (Corniati et al., 2019; Partridge et al., 2018). In addition, individuals feel more comfortable in speaking freely regarding topics some patients or caregivers may consider embarrassing (Chung, 2014; Partridge et al., 2018). With technological advances, healthcare organizations are incorporating more social media platforms in their professional agenda to educate the masses while controlling costs (Mendoza-Herrera et al., 2020). Chung's (2014) findings suggest social media and online resources are essential in healthcare education. Partridge et al. (2018) provide evidence supporting the use of reputable health information and education using social media support-group platforms.

Corniati et al. (2019) described social media as having the capacity to increase optimal outcomes by fostering a transparent and convenient method of communication. Facilitating educational paths and reducing response time inadvertently saves time, energy, and money, thus avoiding hospital and patient in-person visits. Partridge et al. (2018) describe substantial evidence to support the benefit and need for support groups providing self-management, behavior change, and education. Corniati et al. (2019) suggest Facebook is a productive online social media platform that is appropriate for healthcare use by nurses in educating patients and the public regarding best healthcare practices. Pizzuti et al. (2020) examine the use of social media as an educational tool in healthcare. This study is another example of healthcare's necessity to incorporate social media and educational pathways in hospital organizations.

As social media has the capability of reaching many people, electronic resources combine the convenience of and ease in providing education applicable to SBS, as shown in other medical studies (Pizzuti et al., 2020; Corniati et al., 2019). The state of evidence currently includes educational resources for SBS such as description, prognosis, and treatment (Pizzuti et al., 2020). However, there are very few electronic sources where there are frequently managed issues providing a practical application for the caregiver once home. This DNP project linked an

electronic resource to an SBS support group on Facebook, providing a resource for parents and caregivers looking for methods and strategies to unexplained or misunderstood areas of care.

Central Line Complications

Abi Nader et al. (2016) and Modi et al. (2008) concluded that central line infections were a major cause of hospital admissions in this patient population. Both studies demonstrated the need for additional education for the caregiver along with recommendations for an expert care center providing a multidisciplinary team approach when caring for a child with SBS. As the use of parenteral nutrition increases central line infections, the intervention provided reputable research on managing central lines and parenteral nutrition.

Gastric-Tube Complications

In addition to the central line, many patients utilize tube feeds such as a g-tube to increase nutritional intake and absorptive capacity of the intestine (Modi et al., 2008). Complications arise with g-tube feedings such as pump malfunction, granulation tissue formation, g-tube dislodgement or displacement in the abdominal wall, bacterial overgrowth, and lack of appetite (Modi et al., 2008; Kowlgi, Chhabra, 2015). The website provided a video regarding best practices for g-tube maintenance to fill the gap for care providers when at home. Providing caregivers with the education needed assists in managing the child's care and avoiding preventable complications.

Hospital Readmissions

Hospital readmissions can have an astounding effect on patients, parents, and hospital organizations. Afolabi and Fairman (2019) and Vallabh et al. (2017) found pediatric patients with SBS and a central line were more susceptible to frequent trips to the emergency department due to central line infections and dehydration. More trips to the emergency department are disruptive to the normalcy of life for all involved. In addition, the increasing cost of visits for both patients and hospitals is another factor that decreases quality of life as unnecessary money is spent on hospital expenditures and bills. Both studies demonstrate the need for the intervention, which provided evidence-based best practice procedures and reputable videos to assist caregivers in managing the central line and avoid complications requiring emergency visits.

Vallabh et al. (2017) and Huyer et al. (2018) discussed the need for education and resources to prevent low acuity emergency visits due to the rate of high readmissions for

patients, specifically due to parenteral nutrition. As sterile procedures are typically taught to parents and caregivers for central line dressing changes, cap changes, and parenteral nutrition connection, an emphasis on caretaker education for emphasizing the central line area is necessary in preventing avoidable hospital visits and improving perceived self-efficacy and quality of life. Both studies agreed regarding the necessity of educating caregivers and that caregiver and parent education is essential in reducing avoidable hospital visits.

Self-Efficacy

Self-efficacy is defined as one's perceived belief in their ability to complete tasks successfully (Liu et al., 2021; Lopez-Garrido, 2020). Bandura discussed an increase of self-efficacy leads to better outcomes in caregiver roles providing a sense of accomplishment and well-being (Lopez-Garrido, 2020). Additionally, self-efficacy is linked to mastery, educational achievement, and improved performance (Lopez-Garrido, 2020). Gieger et al. (2016) conducted a study concluding self-efficacy can successfully impact outcomes. The General Self-Efficacy (GSE) Scale (Appendix D) is a self-reported measure of perceived self-efficacy or confidence for a caregiver (Schwarzer & Jerusalem, 1995). The purpose of the project was to increase perceived self-efficacy through use of an educational website, thereby improving the management of care for patients with SBS (Liu et al., 2021).

Gap in Practice

Raphael et al. (2018) described the use of predischarge training in families of SBS patients using parenteral nutrition. A nonrandomized control study was conducted utilizing 21 pediatric patients with SBS on home parenteral nutrition. The intervention included an in-hospital training teaching parents and/or caregivers how to manage central line access and home parenteral nutrition. The study used descriptive statistics resulting in no significant difference found in the group who had in-hospital training measuring central line infections and hospital readmissions. The study's result is suggestive of providing more time and at-home learning opportunities to increase educational understanding of the processes.

The literature review suggests needed additional educational resources in caring for patients with SBS. The high risk of complications suggests resources are necessary when at home caring for this population. Additionally, evidence supporting the use of social media and education aligns with the project's purpose. The website is available to the Facebook group, an essential component to increase perceived self-efficacy and educational understanding of SBS.

Organizational Assessment

The setting was a private support group page for SBS parents on Facebook (Short Gut Syndrome Families' Support Group, 2011). The group seeks information and guidance regarding managing care in the pediatric SBS population. The group uses Facebook to share and discuss issues, ideas, and information. Three moderators who are caregivers for children with SBS control the group's page. The moderators form a consensus on decisions as to what is appropriate for the page. The private support group has approximately 4,000 members who can currently access the website intervention to receive answers regarding managing care. The social media group's culture provides an open and transparent place where caregivers can ask any question regarding the care of a child with SBS. Participants are very responsive in sharing ideas, solutions, and experiences with other caregivers regarding best practices for central line care, diet, appliance care, and frequently asked questions regarding SBS. The page previously did not provide evidence-based resources for members. The existing support group supplied a large convenient sample of participants who could feasibly benefit from the proposed intervention.

Purpose of the Project

The purpose of this project was to increase perceived self-efficacy by creating an educational-based website for the caregiver in managing SBS. In addition, the website provided educational resources related to caring for patients with SBS in filling a gap in practice after discharge when transitioning home and the parent becomes the primary caregiver. The desired outcome of the project was for participants to report an increase in perceived self-efficacy after use of the website.

Conceptual and Theoretical Framework

The theoretical framework provides the blueprint for guiding, implementing, and evaluating the relationship between theory and practice. The self-efficacy theory by Bandura, Health belief model, and Orem's self-care deficit theory are three frameworks that support the project's design and necessity for educational intervention in the patient population with SBS (Fazeli et al., 2018). The health belief model relies on behavioral and psychological theory describing the lack of adaptation to certain disease processes based on personal beliefs, biases, and attitudes toward the disease process (Fazeli et al., 2018). In essence, an individual's course of action depends on their perception relative to the disease. Bandura's self-efficacy theory discussed increasing self-efficacy when similar situations present where others are successful

(Lopez-Garrido, 2020). The health belief model provides constructs that relate to caregivers for SBS where the website should increase perceived self-efficacy and improve actions and outcomes for the child (Fazeli et al., 2018). Orem's self-care deficit theory identifies five methods for helping provide efficient care for oneself and family members (Gonzalo, 2021). The combination of the health belief model's self-efficacy constructs along with Orem's self-deficit theory both rely on a perception of one's ability, which can be achieved through assistance and educational confidence.

The Health Belief model (see Appendix E) contains six constructs of the theory related to a person's perception and reaction to the underlying disease. The constructs include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cue to action, and self-efficacy (Guilford et al., 2017). Each construct relates to a caretaker's or patient's ability to adapt and adopt healthy behaviors and changes necessary in managing the disease process. Essentially, if a patient can adapt, their outcomes are improved. The purpose of the website was to equip caregivers with the tools and education needed in managing SBS, thereby increasing self-efficacy, which was measured through the GSE Scale (Schwarzer & Jerusalem, 1995).

Bandura's self-efficacy theory (Appendix F) describes high self-efficacy as being linked to optimal outcomes related to the caregiver managing the patient's care (Lopez-Garrido, 2020). Self-efficacy is pertinent to the proposed intervention and refers to a patient's or caretaker's beliefs and behaviors in their personal ability to care for themselves or others, producing an optimal outcome. In relationship to SBS, the goal is to perceive the disease process as a serious disease that requires extraordinary energy and care. Additionally, Lopez-Garrido (2020) discussed how an awareness of success in a similar stressful situation can increase perceived self-efficacy. The perception of self-efficacy in managing SBS is essential to adapt to the complex medical needs of this specific patient diagnosis. The intervention in the support group is an avenue where many people in a similar situation can be successful. Adaptation requires knowledge, confidence, and the ability to care for a child with extraordinary medical needs, devices, and procedures typically not taught in a hospital setting.

Orem's self-care deficit theory (see Appendix G) is a foundational framework where nursing assistance is initiated when there is a need for care outside of self-provided care (Hartweg & Pickens, 2016). Orem's self-care deficit theory provides ample detail in the health deviation self-care requisite. Health deviation refers to situation-specific circumstances requiring

seeking medical assistance, caring for the disease process, treating the diagnosis, increasing awareness of the need for healthcare, and incorporating health effects of the pathologic condition and treatment (Hartweg & Pickens, 2016). The process of Orem's theory consists of creating a system where the nurse and patient use a variety of methods in identifying challenges and creating solutions in meeting the patient's care needs. The five methods used in the self-care deficit theory include teaching, acting, doing for others, guiding others, supporting others, and providing an environment of promotional personal development for meeting future needs (Hartweg & Pickens, 2016). Orem's self-care deficit theory applies to this SBS project as it incorporates the use of the health-deviation requisites in providing resources optimizing patient outcomes from the website for SBS.

This DNP student aimed to educate patients and/or caregivers on best practices, symptoms, and treatments for the home patient with SBS. The intervention of a web-based resource allows for basic self-care within the patient population, education, and direction to seek medical treatment. The initial components of Orem's self-care deficit theory, supporting, seeking, and securing appropriate medical assistance, underpin the interventions of this project. The website provides a source of medical assistance leading to contacting the medical team when necessary. In addition, awareness and attending to the effects of the disease are applicable as the project provides education to assist the parent in managing the patient's disease process. Additional components of the deficit theory require executing medical procedures where the website will provide information and reputable videos on applicable topics such as central line dressing changes, enteral feedings, and ostomy care. The sources of the videos are routine procedures modeled by hospital organizations on YouTube and accredited by the Center for Improvement in Healthcare Quality and Accreditation Association for Ambulatory Health Care (Youtube, 2021). The last theoretical component refers to learning to live with the effect of the underlying disease. The website provides resources needed in managing the chronic illness and was developed based on the theoretical and conceptual frameworks of health beliefs, self-efficacy and self-care deficit.

Methodology

The setting of the intervention was the SBS support group for families on Facebook. Parents were encouraged to voluntarily participate in the pre and post-survey when using the education intervention website for assistance with a home-based problem due to SBS.

Participation was voluntary, and by completing the survey, consent and responses were implicit and anonymous, which was stated on the survey and site. The participants were parents and/or caregivers responsible for caring for a child with SBS. Additionally, participants were already members of the Facebook SBS page as the page is private and not accessible to the public. The Facebook group is a closed private group consisting of approximately 4,000 members who can access posts and comments. Only members of the SBS group had access to the website and survey. Members of the page could anonymously and voluntarily use the website as needed within a 60-day period. Caregivers and/or parents who utilized the resource were asked to complete the GSE survey with questions regarding the perceived benefit of the website. The GSE Scale questions were used pre and post-intervention to evaluate the website's effectiveness (Schwarzer & Jerusalem, 1995).

The initial budget increased by a few hundred dollars and was adjusted due to technological needs for the website, statistics, and instrument necessities. The total was approximately 1200 dollars including the additional fee for survey and technology costs.

Legal and Ethical Considerations

Chism (2019) discussed the use of "A Nurse Guide to Social Media" mandating the protections and ethics behind the pertinence of privacy and confidentiality as well as the application to any information shared on the internet or through Facebook groups, pages, or private messages. Ethical principles serve as a guide in protecting human research participants ensuring fairness and justice (Chism, 2019). The project has a health emphasis on the pediatric population, which is considered a vulnerable population group in the health research field and collected survey responses from parents/caregivers who voluntarily and anonymously participated (Keteian, 2015). The ethical goal was to protect all participants by providing confidentiality and anonymity of any identifying aspects of the caregiver or child. A statement regarding informed consent was assumed by completion of the survey and posted to both surveys and the website (Franz et al., 2019). In addition, the Facebook group linked the website to the page where survey questions were answered anonymously. The page's moderators provided permission to use the private support group. Additionally, the Spring Arbor IRB reviewed and approved the project (See Appendix K). The project posed minimal risk to voluntary participants and provided reasonable benefits.

Project Timeline

Project initiation began with approval from the faculty advisor and after determination from the IRB of this author's university. The project's premise was approved on November 30, 2020. Approval for using the established Facebook group was received December 7, 2020 from the support group's moderators. Website configuration and development was completed by Simple Web Setup and commenced in the fall of 2021 with a time allotment of 2 weeks (Simple Web Setup, 2021). The survey questionnaire and resource website posted to the Facebook support group's page in October 2021 for implementation. Data collection from the survey responses were quantified using descriptive analysis in November and December of 2021. Evaluation and dissemination occurred in the winter of 2022 (Appendix C). Evaluation relied on the number of participants who utilized the website and completed both surveys. Barriers and limitations arose from the number of participants who used the website, completed both the pre and postsurvey and the quality and completeness of responses.

Implementation of the website www.Shortcutforshortgut.org (Willis-Carr, 2021) began on October 1, 2021 in the Facebook Parents SBS support group where caregivers had access to the website and surveys for evaluation for approximately 60 days (Short Gut Syndrome Families' Support Group, 2011). Parents/caretakers were instructed to complete the presurvey regarding caring for their child. After utilization, parents/caretakers were instructed to complete the post-survey regarding managing care for their child with SBS. The results are reflected in scores of perceived self-efficacy ratings based on personal opinion and belief. The resulting data was used to evaluate effectiveness and significance of the intervention.

Sample

The approximate population size at the time of implementation was 4,100 members ($N = 4100$) in the setting of the Facebook parent support group for SBS. During the project's planning, a power analysis was conducted and concluded a sample size of 34 participants at 80% power (Appendix I) was needed for results to show a significant difference between pre and postsurvey scores. However, only 21 unidentified participants in the Facebook support group engaged in the implementation of the website and surveys. Due to five participants not completing both the pre and postsurvey, data were drawn from the responses of 16 total participants ($n = 16$). The elimination of those five participants' scores was necessary due to statistical testing using pre and post-scores to analyze the mean and significant differences. The

utilization of a 1-tailed t-test required two scores to look for the relationship between an increase in perceived self-efficacy and the use of the website.

Instruments

The GSE scale (Appendix D) was utilized in creating the pre and post-surveys regarding care management in SBS and self-efficacy in the parent and/or caregiver (Schwarzer, 1995). The scale provides a measurement in self-efficacy, coping and adapting to daily challenges. The instructions for the GSE survey included answering questions regarding self-efficacy and managing care for SBS. The scale is self-administered based on personal beliefs of abilities to handle activities and stressful events (Schwarzer, 2001). Permissions were granted for utilization of the scale and original work is cited and referenced (Appendix D). The scale has been deemed reliable and valid through numerous uses and previous studies (Schwarzer, 2001). The GSE survey measures responses using a Likert scale based on numbers 1 to 4 where 1 is 25% and 4 is 100%. Due to the requirements in managing care for SBS, this scale was appropriate as a true measure of perceived self-efficacy while caring for a child with SBS.

Data Analysis

The pre and posttest survey scores of the GSE scale provided data for analysis using descriptive statistics and a 1-tailed t-test. The alternative hypothesis (H_a) was that post scores would improve after utilization of the website, thereby increasing perceived self-efficacy measured by the GSE. The pretest scores represented participants who took the survey before utilizing and reading the website. The null hypothesis (H_o) was pre and post-scores would be the same. Posttest scores represent the user using the website and scoring after use of the website. Each survey score produced a combined result and was presented as one cumulative score. Results from implementation are as follows: In the pretest survey, a mean of 78.56 resulted for 16 participants (Appendix H, Table H1). The mean represents the average total score of all 16 participants. The post-test survey mean resulted at 86.94. The same scale was used for both pre and post-test in comparing scores reporting an increase in mean scores. Two respondents scored lower on their posttest, but overall scores increased. Using the same scale for both pre-and post-test surveys resulted in an increase in the mean score from 78.56 (pre) to 86.94 (post), $p = 0.0034$, 95% confidence level. Therefore, the null hypothesis is rejected, and this author concludes there was a significant difference in survey postscores. Additionally, conducting a

power analysis of 16 participants (Appendix J) concluded a power of 60%, meaning the sample provided enough evidence to reject the null.

Evaluation

The results indicate a significant difference in the sample of persons who used the intervention and completed the surveys. The implementation can positively affect the management of care for feeding tubes, ostomies, and central line care in the SBS pediatric population. Additionally, the time and convenience of the online tool are priceless in allowing parents and families to stay home, thus avoiding hospital visits. Emergency department visits require many parents to spend time away from other family and work duties. Most importantly, caregivers' self-reported self-efficacy increased as a result of using the website resource as evidenced through the survey score data. Parents felt more confident in their ability to provide care for the child with SBS after using the website.

Barriers and Lessons

Time was a major barrier to the implementation of the website. As the website was live for only 60 days, more time would allow for a larger number of participants and results. A lesson learned was time management and schedule utilization to increase the project's efficiency. Another barrier was the visibility of the initial post to the Facebook page. As many group members post on the Facebook's group page regularly, the initial post sharing the resource was not always viewable by some members. A method to overcome the barrier would be to create an event or invite for the website resource which would be beneficial in increasing the sample size. Another method in overcoming this barrier would be to repost the invitation/initial post frequently to move the website and instructions to the top post improving visibility and likelihood of accessing resources.

Discussion

Results indicated implementation was successful in achieving the goal to increase perceived self-efficacy in caring for a child with SBS. The comments and written feedback through Facebook were plentiful and provided helpful information in improving the site and increasing awareness for others who do not have access to intestinal rehabilitation centers.

Similar studies have examined technology use in increasing perceived self-efficacy to improve patient outcomes. Farley (2019) discussed promoting self-efficacy in chronic diseases through the use of technology and mobile web resources. Farley (2019) also mentioned

enhancing educational forums and increasing self-efficacy can decrease costs and improve patient outcomes. Eustache et al. (2021) examined whether the use of technology would improve quality of life and patient outcomes. A mobile phone app was developed to provide resources and a chat function post-surgery. The results included a decrease in preventable emergency department visits and management of conditions at home. Badawy et al. (2018) provided evidence that eHealth initiatives assisted caregivers in managing the care of children when at home, showing home interventions are needed for the care of chronic illnesses and web resources are useful in managing care.

Website resources can provide a convenient source for the most common procedures completed in managing care of complex medical problems combined in one useful site. This convenience allows the caregiver to access a location in receiving evidence-based care and best practices through validated health information. Utilization of a smartphone and bookmarking the website combines technology and healthcare in managing the patient's care.

Alignment and Program Outcomes

In aligning this DNP quality improvement project with the SAU (Spring Arbor University) nursing program outcomes and DNP essentials, the project demonstrates relevance. The first outcome reflects how the implementation of the project demonstrates advancing nursing practice for diverse populations across the lifespan concerning the Christian faith and worldview concepts (SAU, 2020). The project and its theoretical framework reflect this outcome by catering to the pediatric population regarding SBS, which is relatively an unfamiliar condition. Due to the rarity of the disease, along with the population focus of pediatrics and adult caregivers, the project demonstrates using advanced-practice nursing across the lifespan in a diverse group of patients. Maxwell (2018) discussed serving the lesser and most vulnerable group of people through compassion, understanding, and utilization of gifts.

The second program outcome involves integrating evidence through a variety of healthcare disciplines and is demonstrated through the multidisciplinary team in the short bowel patient population. The patient with SBS receives health advice and recommendations from the gastroenterologist, surgeon, pharmacist, dietician, nurse practitioner, and other specialties, which are patient-specific (Modi, 2012).

The project meets the requirement for the third outcome through focusing on quality improvement designs and methodologies promoting safe, effective care to diverse patients. The

project was designed to improve the quality of life by increasing perceived self-efficacy in caregivers and decreasing avoidable hospital visits in the short bowel patient community. In addition, the project is equitable and efficient in utilizing evidence-based research and is available to diverse population groups as it provides techniques and tips useful to the specific diagnosis.

The project also aligns with SAU Outcome 4 as it evaluates healthcare strategies to improve patient outcomes (SAU, 2020). The aforementioned evidence demonstrates the gap in practice and need for a transitional tool when at home to decrease the incidence of avoidable hospital admissions (Raphael et al., 2018). The strategies used to improve outcomes were supported in the literature and the results of the survey responses demonstrated improved GSE.

The evidence also synthesizes data and statistics in demonstrating a causal effect for health promotion and prevention (SAU, 2020) in the short bowel community, meeting the goal of the fifth outcome (Raphael et al., 2018). An advanced level of clinical judgment is demonstrated in the design and implementation of evidence-based practices through research and application to the short bowel patient population.

Outcome 6 (SAU, 2020) describes the utilization of clinical judgement, analytics, implementing, and evaluating patient outcomes. The project demonstrates this through design built on evidence-based practice and research regarding a need in the short bowel community to improve outcomes by providing an educational resource to fill the gap in practice (Hiren et al., 2017).

Outcome 7 (SAU, 2020) is demonstrated by utilizing the social media platform and connecting the patient population needs to improve health outcomes in the short bowel community. The utilization of information systems provides a convenient platform that has far-reaching capabilities. Additionally, the educational website is a technological resource where equitable access to knowledge, practices, and procedures is available (Corniati et al., 2019).

As outcome 8 (SAU, 2020) describes educating and guiding patients and family members, the project's focus is on education and quality improvement. The website resource provided a guide to best practices within the specific patient population. In addition, parents, caregivers, and healthcare team members could utilize the website as a source of evidence-based practice and research by guiding patients to use it as a home resource (Chung, 2014).

Outcome 9 (SAU, 2020) is demonstrated through the evaluation of health delivery models such as the health belief model and Orem's self-care deficit model (Hartweg & Pickens, 2016). Both models incorporate determinants of health such as perceived ability and self-efficacy along with health status and diagnosis (Guilford et al., 2017). Outcome 10 (SAU, 2020) is demonstrated throughout the planning and research for the project as every concept is built on evidence-based research that applies to the SBS community, advanced nursing practices, and professional development.

Implications for Practice

The project meets the requirement of the DNP essentials (Chism, 2019) to create a project to improve the quality of life by increasing education and empowering the short bowel patient community through increased self-efficacy. In addition, the project is equitable and efficient in utilizing evidence-based research to provide techniques and tips useful to the population of interest which demonstrates essential V. Essential I is demonstrated by identifying evidence of the gap in practice and need for a transitional tool when at home to decrease the incidents of avoidable hospital admissions (Raphael et al., 2018). The evidence also synthesizes data and statistics in demonstrating a causal effect for health promotion and prevention in the short bowel community (Raphael et al., 2018). An advanced level of clinical judgment is demonstrated in the design and implementation of evidence-based practices through research and application to the short bowel patient population culminating essential III. Essential IV was demonstrated with the utilization of information systems providing a convenient platform that has far-reaching capabilities. Additionally, the educational website is a technological resource where equitable and efficient knowledge, practices, and procedures are available (Corniati et al., 2019).

As the project's focus is on education and self-efficacy, essential III is identified as the website resource provided a guide to best practices within the specific patient population. In addition, parents, caregivers, and healthcare team members can utilize the website as a source of evidence-based practice and research for home use to prevent or reduce hospital visits and admissions (Chung, 2014). Furthermore, outcomes suggest a web-based resource tailored to specific patient diagnosis may be of added benefit to other caregivers.

Finally, there are implications for followers of Christ related to practice and service within the Christian community. Maxwell (2018) discussed serving the lesser and most

vulnerable group of people through compassion, understanding, and utilizing gifts. The educational website intervention purposes to serve a vulnerable group in providing resources to meet the needs of the SBS population and their caregivers. Maxwell (2018) described in Romans to care for those who are ill or weak. As Christian nurse leaders, we have a duty to utilize our gifts from the Lord in effecting change and improving health outcomes for all for God's glory.

Sustainability Plan

The project's sustainability relies on several factors. The website's availability, evidence-based resources, and cost to continue hosting the website after dissemination (see Appendix B) will impact whether this intervention is sustainable. The website will need updating as evidence-based best practices are advancing in the SBS population. The remaining cost would consist of yearly hosting of the website to the Internet. Determining how the website would continue to be funded, and if successful, the sharing of the website with intestinal rehabilitation clinics and the SBS multidisciplinary team could be considered.

Dissemination of Findings

Due to the project's focus on pediatrics and gastroenterology, dissemination is focused on sharing results to benefit the central population. As the website is posted to an SBS support page, the first avenue of dissemination is the support group on Facebook (Short Gut Syndrome Families' Support Group, 2011). The website will also post to other SBS support group pages as the benefit from social media was reflected in the results of the project. As the procedures from the website apply to both adult and pediatric patients, posting to adult SBS support groups on social media is an additional avenue of dissemination. Additionally, Boston Children's Hospital (BCH) Advanced Intestinal Rehabilitation team providers complete multidisciplinary care for pediatric patients with SBS (BCH, 2021). This program ranks top 3 in the nation and provides parents with education and information in providing care for children with SBS (BCH, 2021). The project has been made known to Boston's team and will be shared with them virtually Spring 2022.

The next point of dissemination was the doctoral defense at SAU during the winter semester of 2022. Additionally, the project was shared via poster presentation in the spring of 2022 to provide an opportunity to display the project and answer questions.

The National Association of Pediatric Nurse Practitioners (NAPNAP) offers poster and publishing opportunities to disseminate information relevant to family and pediatric nurse

practitioners. The organization's research agenda is to increase research and poster submissions, providing publishing opportunities for the timeframe between 2021–2026 (NAPNAP, 2021). As this project focused on the pediatric patient, the aforementioned organization is a relevant venue of dissemination. As NAPNAP (2021) is looking to identify gaps in practice, dissemination through this avenue can increase optimal outcomes in the specific patient population by sharing web-based resources.

Finally, the National Practitioners Association for Continuing Education (2020) offers virtual conferences where e-posters are submitted for dissemination in sharing results and information with other professionals. As the deadline for 2021 has passed, the goal is to submit findings in a poster form to the National Practitioners Association for Continuing Education for submission and dissemination to share results where the website can be shared to improve outcomes for many people. Additionally, as many nurses seek the site for continuing education hours, the poster will remain exhibited on the website for further education, thus reaching more care providers.

Maxwell (2018) described a big opportunity in the church of Philadelphia in persevering and finishing the race God has called us to complete. Dissemination is the completion of the project in sharing the information with applicable groups in service of and to help many people. As the project implementation has ended, the thought of serving and assisting many people in filling a gap in practice for parents and caregivers of this special population provides a sense of peace as well as accomplishment in sharing best practices to increase self-efficacy and improve outcomes in the SBS population.

Conclusion

In reflecting on the purpose of the project in meeting the goal to increase perceived self-efficacy in caregivers of children with SBS, the data suggest the web-based resource was instrumental in increasing perceived self-efficacy. Increasing self-efficacy may provide numerous benefits such as improving patient outcomes, decreasing emergency department visits, and hospital admissions, and improving quality of life in the family of the pediatric short bowel patient. This project utilized social media in providing evidence-based practices to many caregivers who would benefit from the information. The results indicated a significant difference in perceived self-efficacy with the added intervention for participants.

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Appendix A

Key Terms

Central line- larger catheter placed in a large vein to allow for intravenous fluid and blood draws

Facebook- social media website hosting personal, professional, and group page in networking and sharing ideas and information

Gastric tube- a tube inserted through the stomach to deliver nutrition

Intestinal absorptive capacity- the capability of the intestines to absorb nutrients, minerals, and vitamins

Intestinal resection- surgical procedure removing parts of the intestine due to disease

Ostomy- surgery creating an opening from inside to the outside of the body

Parenteral nutrition- an intravenous form of nutrition containing glucose, vitamins, minerals, and nutrients typically heavily concentrated where peripheral veins are not conducive to the solution

Self-efficacy- perceived ability or confidence in performing specific behaviors

Short bowel syndrome- chronic disease occurring due to the loss or resection of intestine requiring complex care and a multidisciplinary team approach in managing illness

(National Organization for Rare Disorders, 2021)

Appendix B
Project Budget

Website development	\$400	One-time fee
Website maintenance	\$168	Monthly fee of \$14
Statistician consult	\$85	
Internet service	\$240	Monthly rent of \$20
Survey service	\$340	Survey monkey (free service)
Total Project Cost	\$1233	

The entire project was funded by the student author.

Appendix C

Project Timeline

Project Phase	Milestone	June-Aug 2021	Sept 2021	Oct 2021	Nov 2021	Dec 2021	Jan 2022	Feb 2022	March 2022
Initiation	Project approved	x							
Planning & IRB approval process	Plan approved	x							
	Website developer consulted	x							
	IRB exempt		x						
Implement	Live on FB				x				
Monitoring	Monitoring participant numbers				x				
Closing & Dissemination	Completion meeting						x	x	x

(Moran et. al., 2020)

Appendix D

General Self-Efficacy Scale (GSE)

About: This scale is a self-report measure of self-efficacy.

Age: Adult
Duration: < 5 minutes
Reading Level: 6th-8th grade
Number of items: 10

Instructions: Please answer survey questions as a caregiver who manages care related to a child with short bowel syndrome.

The 4-point scale:

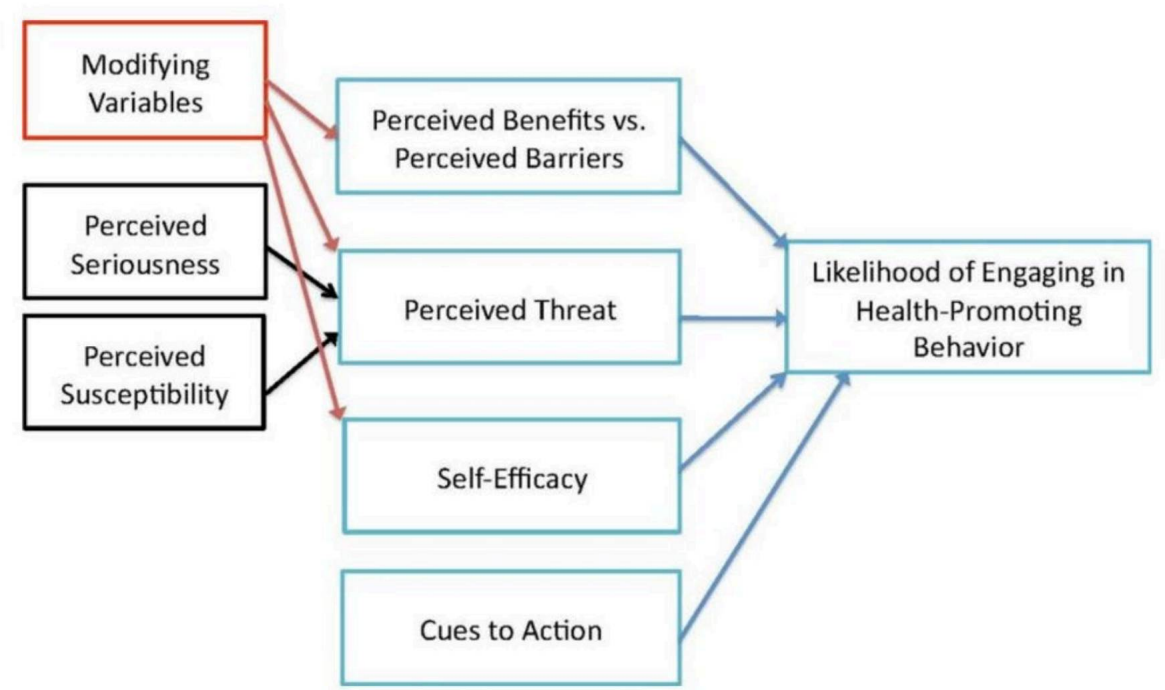
1	2	3	4
Not at all true	Hardly true	Moderately true	Exactly true

No.	Item	Not at all true	Hardly true	Moderately true	Exactly true
1	I can always manage to solve difficult problems if I try hard enough.				
2	If someone opposes me, I can find the means and ways to get what I want.				
3	It is easy for me to stick to my aims and accomplish my goals.				
4	I am confident that I could deal efficiently with unexpected events.				
5	Thanks to my resourcefulness, I know how to handle unforeseen situations.				
6	I can solve most problems if I invest the necessary effort.				
7	I can remain calm when facing difficulties because I can rely on my coping abilities.				
8	When I am confronted with a problem, I can usually find several solutions.				
9	If I am in trouble, I can usually think of a solution.				
10	I can usually handle whatever comes my way.				

You do not need our explicit permission to utilize the scale in your research studies. We hereby grant you permission to use and reproduce the General Self-Efficacy Scale for your study, given that appropriate recognition of the source of the scale is made in the write-up of your study. (Schwarzer & Jerusalem, 1995)

Appendix E

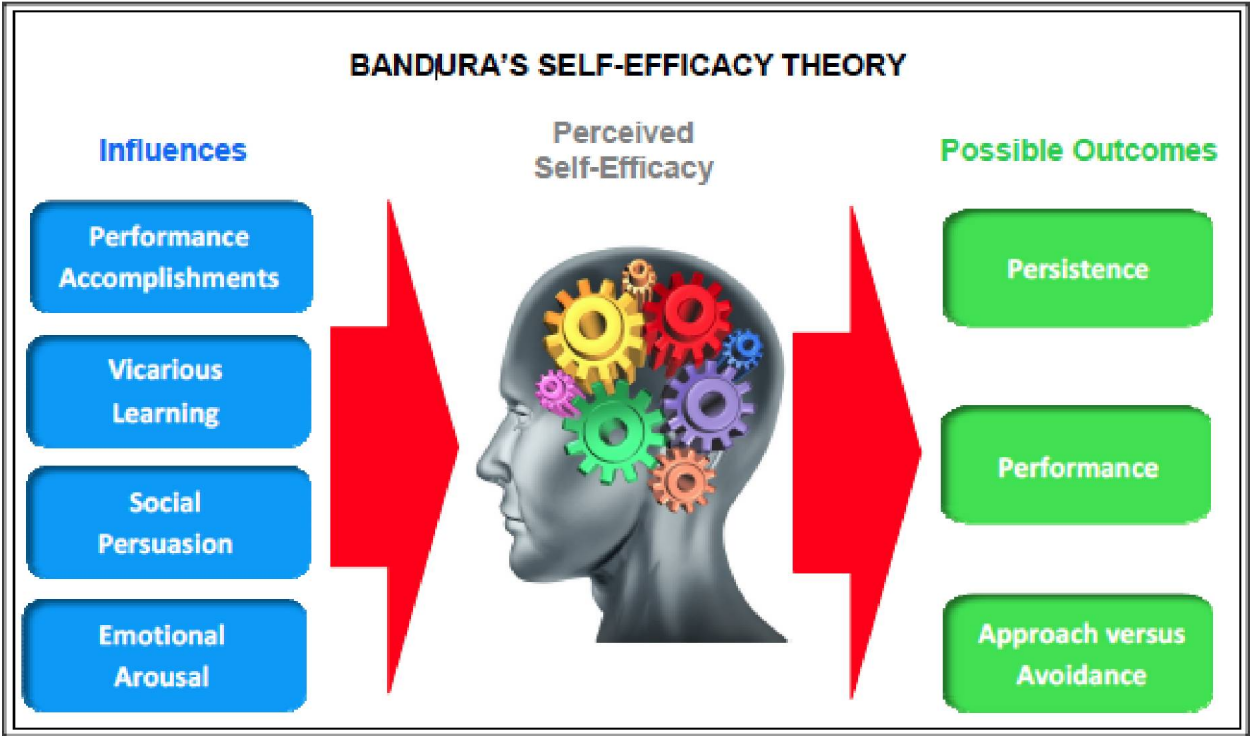
The Health Belief Model



(Penn State, 2021) Permission granted if cited.

Appendix F

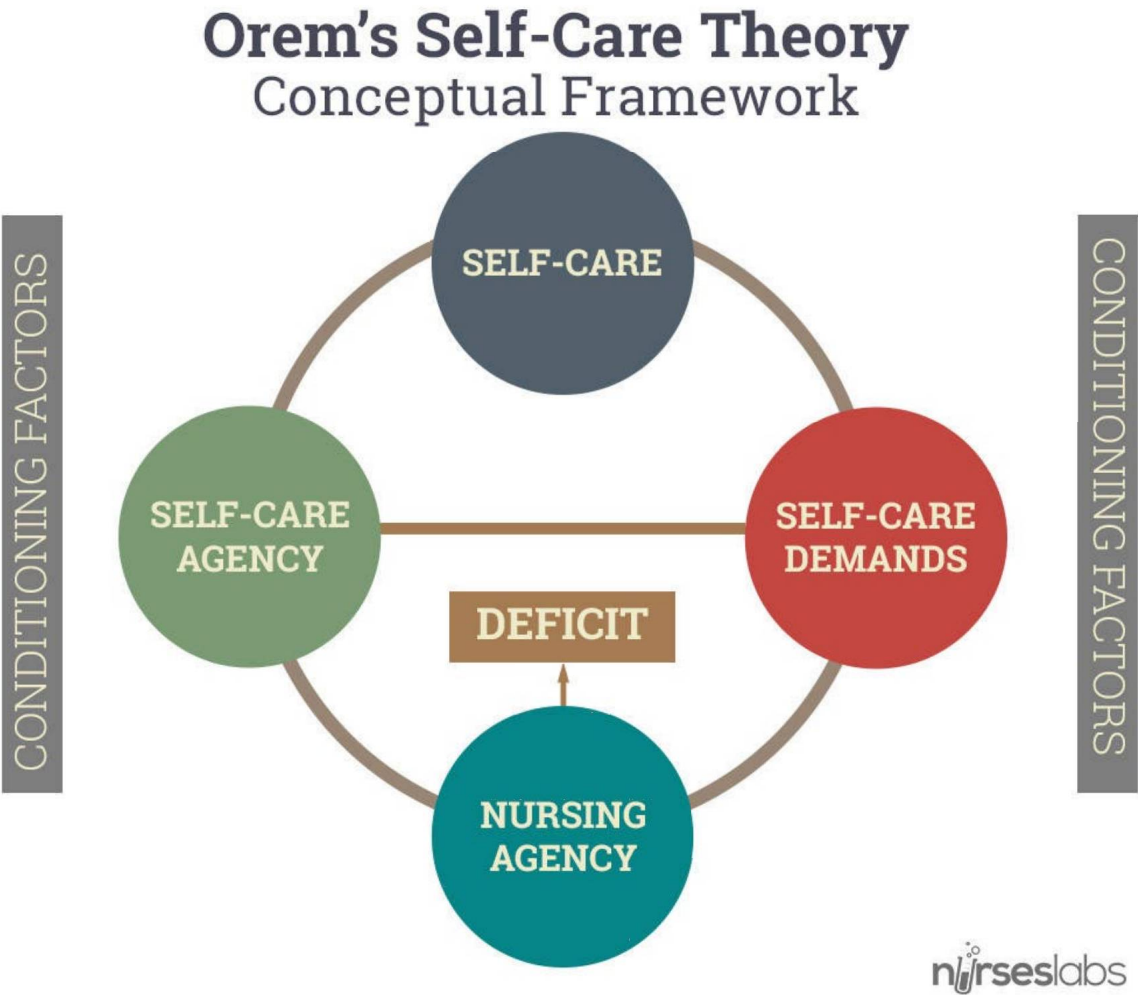
Bandura’s Self Efficacy Theory



(Lopez-Garrido, 2021) permission granted if cited.

Appendix G

Orem’s Self-Care Theory



(Gonzalo, 2021) permission granted if cited.

Appendix H

Pretest and Posttest Scores

Table H1-represent the average test scores of participants who completed the General Self Efficacy scale pretest and posttest from the website. Minimum score of 25 could be where maximum score is 100.

pretest	posttest	difference
88	100	12
80	83	3
75	85	10
75	75	0
68	93	25
83	85	2
83	93	10
85	85	0
73	83	10
78	90	12
75	100	25
75	100	25
73	88	15
83	73	-10
73	68	-5
90	90	0

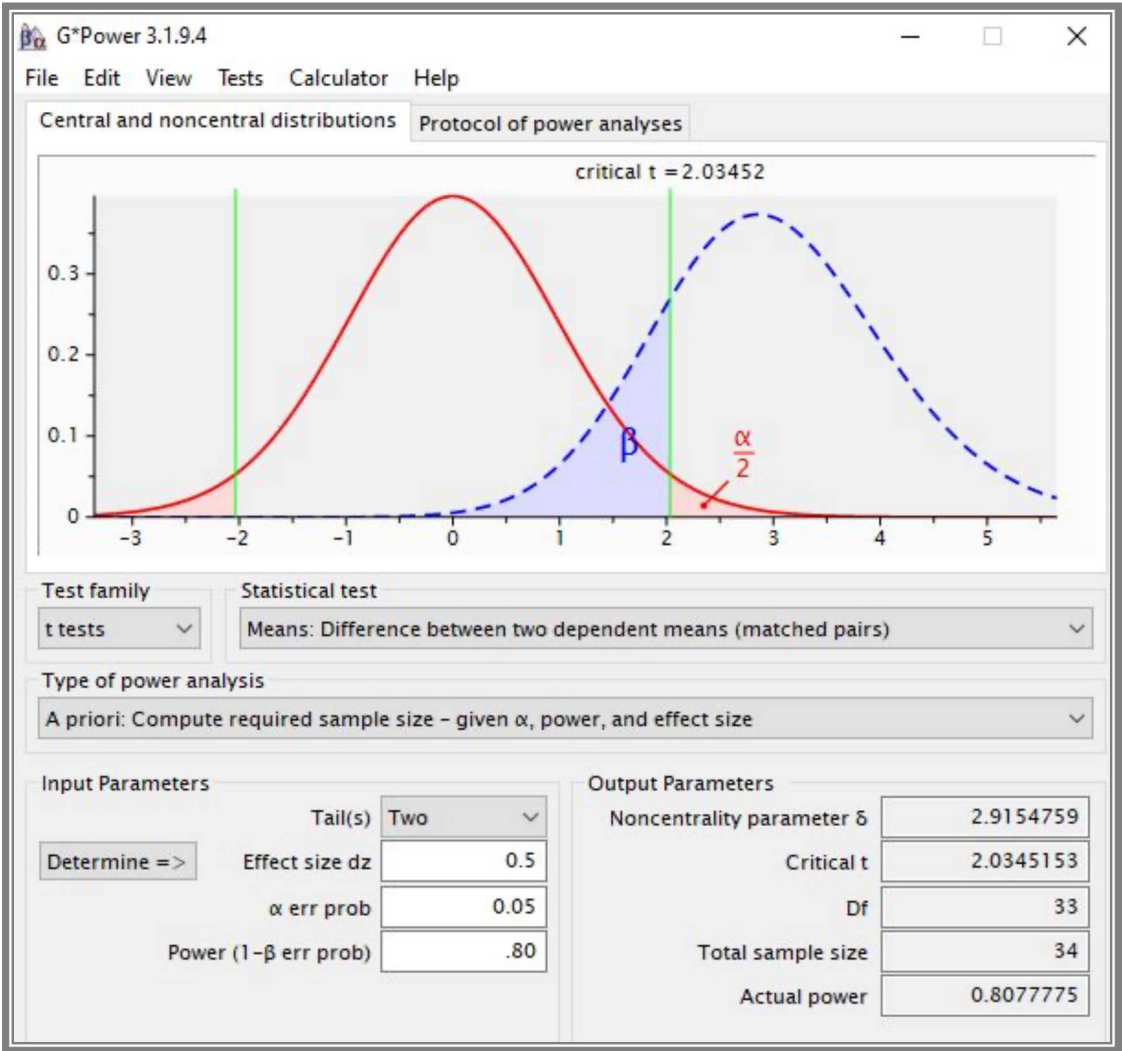
Table H2

<i>difference</i>	
Mean	8.375
Standard Error	2.664387046
Median	10
Mode	10
Standard Deviation	10.65754819
Sample Variance	113.5833333
Kurtosis	-0.660458924
Skewness	0.214653942
Range	35
Minimum	-10
Maximum	25
Sum	134
Count	16
Confidence Level(95.0%)	5.679006559

P value = .0034 < .05 showing statistical significant difference

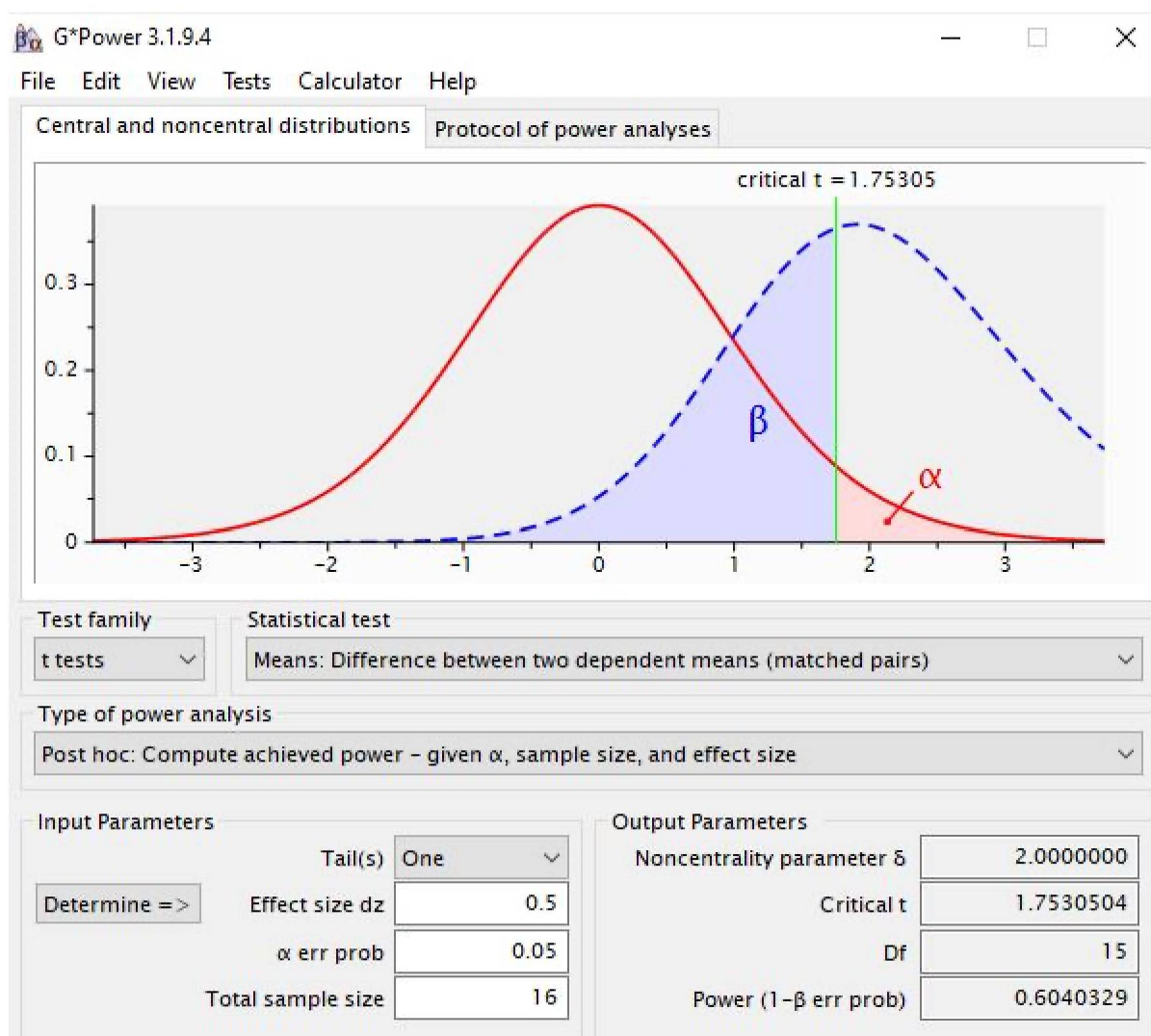
Appendix I

Power Analysis Pre-intervention



Appendix J

Power Analysis Post



Appendix K**Project Approval Letter**

Spring Arbor University

Institutional Review Board

Decision Sheet for Willis-Carr, Shaw Educational Advances in Increasing Self Efficacy in Short Bowel Syndrome

Project Category:

☒ New Assigned IRB#: 03230702-080721

☐ Renewal Funding Agency, (if applicable):

Project Timeline: Start Date: 08-07-21

End Date: 08-07-22

Committee Decision:

☐ Approved as an exempted review, no further review needed unless protocol changes.

☒ Approved as an expedited review, no further review needed unless protocol changes.

☐ Approved as a full review, no further review needed unless protocol changes.

☐ Denied due to:

Comments:

We understand the nature of this study is an expedited level study and give approval to conduct the data collection on our campus, provided that subjects complete an informed consent statement.

Date of Decision: August 7, 2021

Signature of IRB Designate: Bethany J Ulrich