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Improving Breastfeeding Education Among Hospital Nurses

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BY

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Abstract

Breastfeeding is well-documented as the most beneficial method of infant feeding worldwide. There are numerous national initiatives present to improve breastfeeding outcomes. Despite knowledge and health care organization efforts, the recommendations of exclusive breastfeeding through six months of life with continued breastfeeding through one year of age are not being met. The purpose of this DNP project is to determine if a structured self-study educational program on breastfeeding recommendations, the 4th Edition of the Lactation Management Self-Study Modules created by Wellstart International™, provided to hospital nurses on a maternity unit in Central, New York with a Level One nursery, will improve nursing knowledge of appropriate breastfeeding practices, decrease variations in breastfeeding education provided to patients, and improve breastfeeding outcomes for the facility. The research study used a quasi-experimental design to determine how an educational program provided to hospital nurses impacts both their knowledge of breastfeeding as well as the breastfeeding outcomes for the hospital. This DNP project, along with the growing body of literature, supports the need for continued provision of education related to breastfeeding among nurses in direct care of breastfeeding mothers, and expresses a need for further research on this topic to optimize breastfeeding outcomes worldwide.

This DNP capstone project is dedicated to my husband Richard who provided his love, support and guidance throughout this journey. It is additionally dedicated to my son Joseph and dog Gracie who also provided their love and support.

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Chapter 1: Problem Statement

Introduction

Breastfeeding is widely supported as the optimal form of nutrition among infants. There is significant documentation of the countless health benefits of exclusively breastfeeding infants during the first six months of life and the continued presence of breastfeeding throughout the first year of life (American Academy of Pediatrics [AAP], 2012; Centers for Disease Control and Prevention [CDC], 2013; DiGirolamo, Grummer-Strawn, & Fein, 2008; Semenic, Childerhose, Lauziere, & Groleau, 2012; Ward, 2011; World Health Organization [WHO], 2013). Despite these recommendations there is a significant deficit in breastfeeding practices among American mothers. According to breastfeeding statistics, an estimated 75% of women initiate exclusive breastfeeding practices at the birth of the infant, yet this percentage drastically decreases to 15% by the time infants reach six months of age (Centers for Disease Control and Prevention [CDC], 2011). The Surgeon General's Call to Action to Support Breastfeeding (2011) discusses the importance of the role of the health care worker as related to improving breastfeeding outcomes. The document emphasizes the importance of improving practices of postpartum nurses to ensure the receipt of consistent, evidence-based maternity care to improve breastfeeding among patients.

There are numerous national initiatives, including the Baby Friendly Hospital Initiative (BFHI) and Healthy People 2020, aimed at improving breastfeeding practices among American mothers (Healthy People 2020, 2013; WHO, 2013). Recommendations of these initiatives include the provision of breastfeeding education and training to nursing staff directly working with breastfeeding women and infants. Although this suggested method of improving breastfeeding practices is well-documented, the majority of hospitals remain without a baby-friendly hospital designation. This has resulted in a wide variation of breastfeeding knowledge among hospital nurses who are essential to promoting successful breastfeeding. This disparity is largely due to the lack time, resources and finances required to provide the appropriate education and policy changes required to meet baby friendly standards.

There has been extensive research performed that focuses on evaluating the breastfeeding knowledge of hospital staff of various disciplines (Crowder, 2006; DiGirolamo, Grummer-Strawn, & Fein, 2008; Owoaje, Oyamade, & Kolude, 2002; Patton, Beaman, Csar, & Lewinski, 1996; Wallace, Kosmala-Anderson, 2007). This research has widely yielded results displaying the variance in level of knowledge of breastfeeding among health care workers in direct contact with breastfeeding couplets. Much of this research reveals a lack of knowledge regarding appropriate breastfeeding practices, as well as a lack of consistency in education provided to patients, among these staff members. Despite a lack of standardized breastfeeding education there has been limited research performed on developing effective educational programs for hospital nursing staff and their resultant efficacy. This lack of training has the potential to negatively influence long term breastfeeding rates among mothers in the United States.

Background

Breastfeeding is well-documented as the most beneficial method of infant feeding worldwide. The literature widely supports the positive effects of breastfeeding on an infant's neurological development, as well as a significant preventative measure in protecting the health of an infant (American Academy of Pediatrics [AAP], 2012; Centers for Disease Control and Prevention [CDC], 2013; DiGirolamo, Grummer-Strawn, & Fein, 2008; Semenic, Childerhose, Lauziere, & Groleau, 2012; Ward, 2011; World Health Organization [WHO], 2013). According to the World Health Organization (WHO) (World Health Organization [WHO], 2013), "If every child was breastfed within an hour of birth, given only breast milk for their first six months of life, and continued breastfeeding up to the age of two years, about 220,000 child lives would be saved every year (WHO, 2013, para. 2)." Current guidelines from the American Academy of Pediatrics (AAP) (American Academy of Pediatrics [AAP], 2012) recommend exclusive breastfeeding of an infant until six months of life, with introduction of complementary feedings and continued breastfeeding until at least one year of age.

According to the Centers for Disease Control and Prevention (CDC) (Centers for Disease Control and Prevention [CDC], 2011), in the United States (US) approximately 75% of infants are exclusively breastfed at birth; however current statistics show that by six months of age this national average drastically decreases to 15%. At the state level approximately 80.5% of new mothers initiate breastfeeding in New York State. This statistic represents any infant who has ever been breastfed in any capacity in 2013 (CDC, 2016). This figure drops to 55.8% and 31.3% for those continuing to breastfeed at six months and 12 months respectively (CDC, 2016). Statistics for infants who are

exclusively breastfed account for 37.1% a three months of age and 16.9% at six months of age. Within Broome County, NY, the population of focus for this DNP project, 79.3% of mothers initiate any form of breastfeeding during the hospital stay in 2014. This statistic decreased to 69.5% by the time of hospital discharge (Mothers and Babies, 2017).

The policy statement entitled Breastfeeding and the Use of Human Milk published by the AAP (2012) provides evidence of the decreased incidence of common infections and diseases of infancy and childhood, in newborns who are exclusively breastfed. These common infections include, but are not limited to, otitis media, celiac disease, gastrointestinal infections, Sudden Infant Death Syndrome (SIDS), and obesity. In addition, there are improved neurodevelopmental outcomes related to exclusive breastfeeding, resulting in higher intelligence scores among those infants breastfed longer than three months. This study provides evidence regarding the unique health benefits observed when an infant is exclusively breastfed during the first six months of life (AAP, 2012).

Current research supports breastfeeding guidelines, as discussed by both the CDC (2013) and AAP (2012); however national statistics suggest that these feeding goals are not met by the vast majority. Although there are high levels of breastfeeding initiation, there is a significant decrease in exclusive breastfeeding by six months of age (AAP, 2012, CDC, 2013, WHO, 2013). Due to this deficit, and the knowledge of breastfeeding benefits, there are numerous national initiatives aimed at improving breastfeeding outcomes. Healthy People 2020 (2013) is one national initiative which has focused on improving breastfeeding rates. Among the Healthy People 2020 goals for infant care are

numerous objectives which directly refer to infant feeding practices. These objectives are as follows:

- Increase the proportion of infants who are ever breastfed
- Increase the proportion of infants who are breastfed at six months
- Increase the proportion of infants who are breastfed at one year
- Increase the proportion of infants who are breastfed exclusively through three months
- Increase the proportion of infants who are breastfed exclusively through six months

Although national goals are in place, programs are needed to help meet these proposed objectives.

The literature widely supports the provision of educational programs to hospital staff as a method of improving this disparity in breastfeeding statistics (AAP, 2012; CDC, 2013; DiGirolamo, Grummer-Strawn, & Fein, 2008; Healthy People 2020, 2013; Semenic, Childerhose, Lauziere, & Groleau, 2012; Ward, 2011; WHO, 2013). Experts recommend formal breastfeeding training for any healthcare worker in the direct care of breastfeeding patients (AAP, 2012; CDC, 2013; WHO, 2013). Despite this knowledge, development of educational programs for healthcare workers is not widely applied at the hospital level. Creating a formal breastfeeding education program may help promote recommended infant feeding practices among new mothers.

One structured program currently in existence is the 4th Edition of the Lactation Management Self-Study Modules: Level One, created by Wellstart International™.

Wellstart International™ as an organization has had a strong focus on lactation management education since 1983. Their initial Lactation Management Education Program, which took place from 1983-1998 demonstrated positive outcomes related to breastfeeding practices and policies among attendees. This initial program was four weeks long and included a combination of educational components and policy development. Long term outcomes of the program included increased breastfeeding knowledge and skills for breastfeeding support, increased organization of breastfeeding conferences and workshops and increased improvement of breastfeeding policies among others. (Wellstart International™, n.d.)

The Lactation Management Self-Study Module: Level One is a program developed by Wellstart International™ that provides appropriate education pertaining to breastfeeding and is specifically created for those health care workers caring for breast feeding mothers and infants. The self-study module, now in the 4th edition incorporates education related to breastfeeding benefits, how to counsel breastfeeding mothers, optimal infant feeding, as well as breastfeeding practices and identification of common barriers. This program provides a standardized, comprehensive curriculum for basic breastfeeding practices. This self-study design of the program additionally allows participants to complete the educational tasks at their own pace in any setting they choose. This model increases accessibility and ease of completion for all individuals. The pre-test and post-test design additionally allows program participants to track knowledge gained throughout the course. (Wellstart International™, 2013)

The 4th Edition of the Lactation Management Self-Study Modules: Level One by Wellstart International™ is to be implemented among hospital nursing staff in order to

determine their impact on breastfeeding outcomes, with an ultimate goal of improving infant health outcomes. The intent of this DNP project is to bridge the gap between the vast knowledge of breastfeeding benefits and the implementation of an appropriate educational program within a hospital in Central, NY with a Level One nursery. The goal is to improve breastfeeding knowledge and provision of patient education among hospital nurses to ultimately help meet national health objectives provided by Healthy People 2020, thereby positively influencing long term breastfeeding success.

Significance

It is well documented in the literature that women who receive appropriate support while breastfeeding have improved outcomes in exclusive breastfeeding during the first six months of life (AAP, 2013; CDC, 2011; CDC, 2013; WHO, 2013). Based on this knowledge, Healthy People 2020 (2013) list numerous national health objectives aimed at increasing exclusive breastfeeding rates among newborn infants, as stated above. The CDC (2013) identifies the importance of the intra-partum hospital course in initiating breastfeeding successfully. Appropriate support and education from hospital providers and nursing staff throughout the hospital course greatly impacts the breastfeeding success of mother and infant. At this time, approximately one in three mothers will discontinue breastfeeding without appropriate support in the hospital setting (CDC, 2011).

This DNP project aims to assist in meeting national health objectives through evaluating and improving knowledge of hospital nursing staff on breastfeeding, with the implementation of an educational program for hospital nurses. The educational program

chosen for implementation in this DNP project is the 4th Edition of the Lactation Management Self-Study Modules: Level One by Wellstart International™. Although there is a growing body of literature supporting the education of hospital staff as a means of improving breastfeeding outcomes, no specific educational program has been identified as begin the most effective, indicating the need for future research on this topic.

Ward and Byrne (2011) performed a systematic review of 15 previously implemented educational programs for healthcare workers. The results of this study identified that programs which required a minimum of 18 hours of education had the greatest impact on breastfeeding outcomes for the facility. The authors however state that of the educational programs that were shorter than 18 hours in length, only one of those studies evaluated breastfeeding outcomes. The authors discuss that a positive impact of shorter breastfeeding programs cannot be ruled out based on the study. In addition, the results also noted that any form of continuing breastfeeding education was beneficial to staff members. It is important to note however that while this study analyzed previously implemented programs, the researchers did not implement their own program based on information learned from their analysis. The literature overwhelmingly supports breastfeeding as the ideal method of infant nutrition (AAP, 2012; CDC, 2013; DiGirolamo, Grummer-Strawn, & Fein, 2008; Semenic, Childerhose, Lauziere, & Groleau, 2012; Ward, 2011; WHO, 2013). At this time further evaluation of programs intending to improve breastfeeding outcomes is still needed to help increase national statistics of infants receiving the recommended methods of feeding over the first year of life. The objective of this DNP project is to add to the body of knowledge regarding lactation education, with an ultimate goal of improving both nurses' knowledge regarding

breastfeeding and breastfeeding outcomes. The study will employ the use of the 4th Edition of the Lactation Management Self-Study Modules created by Wellstart International™ in a hospital in Central New York State with a Level One nursery. The project will evaluate the effectiveness of a breastfeeding educational program by measuring breastfeeding knowledge among participating nurses and breastfeeding outcomes of the postpartum mothers they care for.

On the forefront of national breastfeeding initiatives is the Baby Friendly Hospital Initiative (BFHI) proposed by WHO and the United National Children's Fund (UNICEF). The Baby Friendly Hospital Initiative is a worldwide initiative officially launched by the WHO and UNICEF in 1991 in order to improve, promote and support breastfeeding practices. The 10 Steps to Successful Breastfeeding was first published by the WHO and UNICEF as a portion of the Baby Friendly Hospital Initiative in 1989 (WHO/UNICEF, 1999). This document entitled Protecting, Promoting and Supporting Breastfeeding: The Special Role of Maternity services, outlines the 10 essential steps each hospital must incorporate in order to appropriately support breastfeeding during the intra-partum hospital stay. In The 10 Steps to Successful Breastfeeding WHO and UNICEF (1989) state the following:

Every facility providing maternity services and care for newborn infants should:

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy.

3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within half an hour of birth.
5. Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants.
6. Give newborn infants no food or drink other than breast milk, unless medically indicated.
7. Practice rooming-in - that is, allow mothers and infants to remain together - 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

Of these 10 steps, the first two recommend creating a hospital breastfeeding policy and training all healthcare workers with the necessary skills for successful implementation (WHO, 2013). These first two steps indicate the importance of standardized breastfeeding policy and education. In the US this initiative is implemented by the accrediting body Baby-Friendly USA, Inc. (BFUSA) (Baby-Friendly USA [BFUSA], 2012). The BFHI recognizes hospitals who have successfully implemented both the 10 Steps to Successful Breastfeeding as well as the International Code of Marketing of Breast-milk Substitutes and provides them the designation of a baby friendly hospital. The International Code of Marketing of Breast-milk Substitutes (WHO,

1981) is a document delineating the appropriate use of breast-milk substitutes and further discusses appropriate marketing and distribution of these substitutes. Currently adoption of the 10 Steps to Successful Breastfeeding is the choice of each individual hospital. There are financial incentives at both the state and federal levels for demonstrating increased numbers of infants who are breastfed at birth; however the incentive simply mandates that each hospital have a documented breastfeeding policy in place and does not dictate the method institutions use to support increasing their breastfeeding rates.

The hospital chosen for participation of this DNP project is currently on their journey towards earning Baby-Friendly designation. This hospital is located in Central New York State and performs approximately 1200 births per year. Provision of the educational program dually benefits the participating hospital by assisting them in meeting the Baby-Friendly requirement of staff training and education. The hospital currently employs the use of Baby-Friendly practices and has a Level One nursery.

In a study performed by DiGirolamo, Grummer-Strawn, and Fein (2008), a strong link was discovered between mothers who were exposed to baby-friendly practices during their hospital stay, and the length of time they exclusively breastfed their infant. In this study, of the women included, approximately eight percent received all of the recommended baby friendly practices. Additionally, those who had the advantage of being exposed to the recommended baby-friendly breastfeeding practices were 13 times more likely to continue breastfeeding past the first six weeks of life (DiGirolamo, Grummer-Strawn & Fein, 2008). The CDC (2013) additionally discusses implementing educational programs for health care workers as an effective measure of supporting breastfeeding women, and improving outcomes for the maternal-infant dyad. Ward and

Byrne (2011) identified improved knowledge and patient education practices among nurses and health care providers who have received structured education on the topic.

Although education of hospital staff demonstrates positive impacts on breastfeeding outcomes, there are still only five percent of infants born in "Baby-Friendly" designated hospitals (CDC, 2011). Semenic and colleagues (2012) identified barriers to implementing the Baby-Friendly Hospital Initiative, with a primary factor of insufficient training of health care workers as one of the obstacles. A document published by Baby-Friendly USA in 2004 entitled Overcoming Barriers to Implementing the 10 Steps to Successful Breastfeeding discusses multiple barriers hospitals face when attempting to implement breastfeeding training among their staff (Baby-Friendly USA, 2004). These barriers include lack of time, lack of an expert trainer, lack of monetary resources, and high turn-over in staff members. This document suggests numerous solutions to overcome these barriers, including: assessing prior knowledge of breastfeeding, incorporating training at staff meetings, self-study modules and web-based training in order to meet the recommended 18 hours of breastfeeding education. The 4th Edition of the Lactation Management Self-Study Modules created by Wellstart International™ chosen for this DNP project addresses many of the aforementioned barriers hospitals face when providing staff education.

Although the current WHO breastfeeding course for healthcare workers is 18 hours in length, this amount of time is not feasible for many facilities due to many of the above mentioned reasons. Additional barriers present for the local hospital utilized in this DNP project include staffing issues related to an insufficient number of nurses. These barriers have impacted the successful implementation of the 10 Steps to Successful

Breastfeeding in many hospitals. Although the research supports that educating nurses about breastfeeding in any capacity is beneficial, as noted by Ward and Byrne (2011), further research is needed on educational programs which are shorter in length, as well as self-study programs which can be performed individually by employees. These programs are less burdensome for facilities due to the amount of time they take to implement, the flexible nature of implementation, as well as economic feasibility. The literature overwhelmingly supports that increased implementation of formal educational programs for nursing staff is needed to improve support of the maternal-infant dyad during the intra-partum hospital stay and assist in meeting the national health objectives discussed in Healthy People 2020 (AAP, 2012; CDC, 2013; DiGirolamo, Grummer-Strawn, & Fein, 2008; Healthy People 2020, 2013; Semenic, Childerhose, Lauziere, & Groleau, 2012; Ward, 2011; WHO, 2013). Despite this knowledge, hospitals are not abiding by these recommendations due to multiple previously identified barriers. At this time there has been comparatively less research performed on the impact of educational programs, which employ a self-study model, on both the breastfeeding knowledge of hospital nurses as well as the breastfeeding outcomes for the facility. The chosen educational program for this study meets the self-study criteria and program length is less than 18 hours. Implementation of this program will aid in bridging the gap of knowledge related to efficacy of these types of educational interventions.

Many studies have discussed a need for further education of hospital staff; however, more knowledge is needed regarding the most effective educational program for improved outcomes (AAP, 2012; CDC, 2013; DiGirolamo, Grummer-Strawn, & Fein, 2008; Semenic, Childerhose, Lauziere, & Groleau, 2012; Ward, 2011; WHO, 2013).

Specifically, literary resources support the development of a formal educational program to be uniformly implemented among nursing staff to improve outcomes and streamline patient education among hospitals (AAP, 2012; CDC, 2013; DiGirolamo, Grummer-Strawn, & Fein, 2008; Semenic, Childerhose, Lauziere, & Groleau, 2012; Ward, 2011; WHO, 2013). There continues to be a growing body of literature dedicated to improving breastfeeding outcomes, but at this time there continue to be gaps in knowledge regarding efficient methods of educating hospital nursing staff.

Problem Statement

Current research on breastfeeding evaluates the improvement in breastfeeding knowledge among nurses who have received some form of breastfeeding education. Despite this knowledge, the research does not focus on the type of educational program that is most effective at improving knowledge of nurses and breastfeeding outcomes (Li, Li, Ashley, Smiley, Cohen, & Dee, 2013; Owoaje, Oyemade, & Kolude, 2002; Ward, & Byrne, 2011). Furthermore, a frequent barrier hospitals face when attempting to implement the 10 Steps to Successful Breastfeeding is lack of time and resources for the implementation of the WHO recommended 18 hour educational program. Further research is needed to determine an effective educational program for nursing staff, which employs the use of a self-study model, in order to streamline the education provided to patients and improve national breastfeeding outcomes.

Purpose statement

The purpose of this DNP project is to determine if a structured self-study educational program on breastfeeding recommendations, the 4th Edition of the Lactation

Management Self-Study Modules created by Wellstart International™, provided to hospital nurses on a maternity unit in Central, New York with a Level One nursery, will improve nursing knowledge of appropriate breastfeeding practices, decrease variations in breastfeeding education provided to patients, and improve breastfeeding outcomes for the facility.

Theoretical Framework

This study aimed to implement an educational innovation, guided by the use of the Diffusion of Innovations theory, as discussed by Rogers (2005). The process involved adoption, implementation, and ideally maintenance of the innovation over time. The model of the study involved a pre-test and post-test design to evaluate knowledge before and after the intervention, in an effort to demonstrate program effectiveness. The educational program entailed nurses completing the 4th Edition of Wellstart International™ Lactation Management Self-Study Modules, Level One. The Diffusion of Innovations Theory guided implementation and assessment strategies to achieve optimal results.

The Diffusion of Innovations is a theoretical model originally published by Everett Rogers in 1962 (Rogers, 1962). In his book, Diffusion of Innovations, Rogers (2005) discusses innovation, communication channels, time, and social system as the four main elements that directly impact any new idea. Diffusion itself is a process which involves communication of the innovation. The innovation is then introduced to the social system over a period of time. Rogers (2005) discusses the five stages of diffusion as knowledge, persuasion, decision, implementation, and confirmation. Knowledge

involves the process of the individual acquiring initial knowledge of the innovation. The concept persuasion refers to the acquisition of further knowledge of the innovation. The decision process involves the individual determining whether or not to implement the innovation. Implementation refers to the individual actively applying the innovation. The final stage of confirmation involves the individual determining the benefits of the innovation and deciding to continue its application.

The innovation for this particular study involved introduction of a structured educational program among the nursing staff on a perinatal unit in Central New York State. For this study, the communication occurred through offering participation in the study to all nurses working on the hospital unit. Nurses were asked to complete The 4th Edition Lactation Management Self-Study Modules, Level One by Wellstart International™. The self-study module employs the use of a pre-test and posttest design. Nurses were directed to www.wellstart.org and asked to complete the Lactation Management Self-Study Modules. The course required nurses to complete the pre-test, followed by three modules, followed by the completion of the post-test. Nurses then signed into the website and complete the final exam online. Nurses who received a score of 80% or higher were be eligible for a certificate of completion for the course.

An additional impact of the educational program will be evaluated through the use of a telephone interview survey of mothers at six weeks postpartum. Mothers were interviewed in three waves, with one interview group completed prior to implementation and two interview groups completed after the implementation of the 4th Edition Lactation Management Self-Study Modules, Level One by Wellstart International™. Interviews were conducted by the primary researcher, Kara Connelly FNP-C. The two post

implementation groups were interviewed exactly six weeks after implementation and then a second group 10 weeks after implementation. From implementation to evaluation the time frame of the study occurred over a three month period.

Rogers (2005) additionally discusses five categories of individuals who are involved in adopting the intervention. These five categories include innovators, early adopters, early majority, late majority and laggards. These individuals range from those who are actively contributing towards diffusion and those who are protesting. Description of the five categories of individuals predicted possible obstacles or opposition to the proposed educational program. Through the application of the Diffusion of Innovations framework nurses included in the study were classified within these five categories. Nurses were categorized initially when the educational program was implemented, through the use of self-report. The theoretical framework guided the assessment of nurses to determine willingness to make changes and potential impact on influencing breastfeeding rates.

Finally, Rogers (2005) discusses five factors which impact how the individual perceives the intervention. These factors include relative advantage, compatibility, complexity / simplicity, ability to trial, and ability to observe. The factors relate to an innovation's benefits to the individual, how well it conforms to their needs, ease of implementation, ease of experimentation, and how visible it is to the majority. These concepts guided the development of the educational program to improve efficacy. Each of these factors directly impacts the success of diffusion. The local hospital participating in the DNP Project faced numerous barriers related to staffing and time. The largest barrier to increasing breastfeeding among this population was time. Nurses required an

educational program that could be done in the home setting and did not require further hours in the hospital. The proposed study provided comprehensive, structured education regarding updated breastfeeding practice. Educational concepts provided through the program are directly applicable to daily patient care. The overall design allowed for simple execution, and benefits of the program were evaluated by nurses participating. The study design was guided by the theoretical framework in order to optimize program success and adoption by nursing staff.

For the purposes of this study the theoretical framework has provided detailed methods of categorizing participants in order to determine potential obstacles and measure program success. The various concepts discussed by Rogers aided in analyzing data, and provided insight for best practices when diffusing an innovation in order to obtain optimal results. Most significantly, the theoretical framework provided a structured method of categorizing nurses in order to determine their willingness to implement the program. Additionally the use of the Diffusion of Innovations Model (Rogers, 2005), has guided program design to meet the needs of the participating hospital, in order to meet the goal of improving breastfeeding outcomes.

Chapter 2: Review of Literature

Introduction

Currently there is a growing body of literature dedicated to improving breastfeeding outcomes. It is well documented that improving healthcare workers' knowledge of evidence-based breastfeeding recommendations has a positive impact on breastfeeding outcomes. Given the national goal of increasing compliance with breastfeeding recommendations, as well as current recommendations of the 10 steps to successful breastfeeding, there is increased focus on improving breastfeeding education for healthcare workers in direct care of breastfeeding mothers.

Inclusion Criteria

For this review of literature a total of 26 studies were selected. Search engines used included MEDLINE, CINAHL, and Google Scholar. Search terms of breastfeeding, education, and nurse were used to find articles. With a total initial yield of over 3,000 articles between the three search engines, articles were further excluded based on their relevance, publishing date, availability in English, and availability in an online format. Articles were peer-reviewed and chosen based on publication date within the past 15 years, with the exception of one study performed in 1996. Articles included in this DNP project were both intervention and non-intervention studies. The final articles were chosen based on their topics related to: the impact of educational breastfeeding programs

on the knowledge of the healthcare workers; need for further education related to breastfeeding; and the impact of the intra-partum hospital stay on breastfeeding outcomes.

Impact of Nursing Knowledge and Practices

Of the articles reviewed there is a common discussion of the impact of nursing practices on successful initiation of breastfeeding (Cross-Barnet, Augustyn, Gross, Resnik, & Paige; 2012; DiGirolamo, & Grummer-Strawn, 2008; Ellis & Hewat, 1983; Patton, Beaman, Csar, & Lewinski, 1996). These studies suggest a direct correlation between the implementation of recommended breastfeeding practices and overall success in breastfeeding initiation. DiGirolamo & Grummer-Strawn (2006) discussed improved breastfeeding outcomes with the implementation of baby-friendly practices. Despite this knowledge, only 8.1% of mothers included in the study received all of the recommended baby-friendly practices. Patton, Beaman, Csar, & Lewinski (1996) identified a positive correlation between nurses' education and knowledge of breastfeeding as well as their attitude towards the practice. These articles determine a need for improvement in breastfeeding knowledge among healthcare workers and discuss the impact that the intra-partum hospital stay has on breastfeeding outcomes and successful initiation.

An additional five of the selected articles performed research evaluating the current knowledge and amount of education provided to healthcare workers in order to determine a need for further education (Brodribb, 2012; Osband, Altman, Patrick, & Edwards, 2011; Smale, Renfrew, Marshall, & Spilby, 2006; Wallace, 2007; Weddig, Bakers, & Auld, 2011). The majority of these articles additionally determined the

attitudes of healthcare workers related to breastfeeding (Smale, Renfrew, Marshall, & Spilby, 2006; Wallace, 2007; Weddig, Bakers, & Auld, 2011). Attitudes related to breastfeeding were often positively correlated with the level of education related to breastfeeding and knowledge of breastfeeding best practices. As discussed by Rogers (2006), prior to the implementation of an innovation it is necessary to acknowledge that individuals possess baseline knowledge of the topic in order to determine areas for improvement. The articles assessed this baseline knowledge in order to evaluate the need for implementation of educational remediation (Brodribb, 2012; Osband, Altman, Patrick, & Edwards, 2011; Smale, Renfrew, Marshall, & Spilby, 2006; Wallace, 2007; Weddig, Bakers, & Auld, 2011). Instrumentation to assess baseline knowledge varied among articles reviewed. Methods of assessing knowledge included use of interviews, surveys, questionnaires and analysis of previous studies. Studies were largely qualitative in design. The research uniformly supported a need for further education of nurses directly related to breastfeeding. Smale, Renfrew, Marshall, & Spilby (2006) discussed that practitioners interviewed acknowledged feeling unprepared to provide education to breastfeeding women. Furthermore, breastfeeding women interviewed felt unsupported and additionally felt that healthcare workers did not possess the knowledge to answer their questions.

Wallace (2007) performed an assessment of 549 practitioners, predominantly nurse midwives, to evaluate their knowledge of breastfeeding recommendations and hospital policy. Of the practitioners interviewed 9.8 % were unaware of the current WHO breastfeeding recommendations. Similarly, Weddig, Baker, & Auld (2011) assessed breastfeeding knowledge of healthcare workers and determined there was a

significant deficit among nursing knowledge of best breastfeeding practices. This study specifically documented a disparity in breastfeeding knowledge among non-baby-friendly hospitals.

A common weakness among these articles was the use of small sample size. Small sample size creates less reliable results due to increased potential of bias. With the exception of Wallace (2007), these studies involved sample sizes of less than 100 healthcare workers. This weakness hinders generalizability to the entire population. An additional weakness is the use of self-report as a means of collecting data. In these studies, all data were collected through verbal interviews, and therefore relied solely on self-report. Authors also discussed that documented attitudes related to breastfeeding are likely skewed in a falsely positive direction, as those who agreed to participate in the study were more dedicated to improving breastfeeding outcomes. Finally, none of the above mentioned research studies performed an educational program to determine if implementation improved attitudes, knowledge and breastfeeding outcomes.

Educational Program Design

Five additional articles used a pre-test and post-test design to determine the impact of an educational program on nursing knowledge and attitudes related to breastfeeding practices (Bernaix, Beaman, Schmidt, Harris, & Miller, 2010; Davis, Stichler, & Poelter, 2012; Ekstrom, Widstrom, &Nissen, 2005; Mellin, Poplawski, Gole & Mass, 2011; Weddig, Baker, Auld, & Hordynski, 2011). Common topics covered in these educational programs included, but were not limited to, current breastfeeding recommendations, importance of breastfeeding, skin-to-skin contact, the baby-friendly

hospital initiative and strategies for supporting the breastfeeding dyad. These studies diffusely documented an improvement in breastfeeding knowledge among intervention groups. An additional study performed by Dodgson & Tarrant (2007) employed the use of a control and intervention group to determine the effectiveness of an educational intervention related to breastfeeding. This particular program was provided to baccalaureate nursing students.

Among these studies, educational programs varied from online self-study, face-to-face lectures and a combination of both methods. With the exception of Davis, Stichler, & Poelter (2012) and Mellin, Poplawski, Gole & Mass (2011) study designs involved control and intervention groups, and additionally evaluated multiple hospital and clinic sites. Davis, Stichler, & Poelter (2012) executed a unique educational program by mandating all of the maternal / newborn nurses in one hospital to participate in a two hour educational program. Two of the research studies (Davis, Stichler, & Poelter, 2012; Weddig, Baker, Auld, & Hordynski, 2011) quantitatively evaluated participants initially post-education and at another interval afterwards. Researchers differed in their methods of post-educational program evaluation with the use of a second quantitative post-test at a three month interval (Davis, Stichler, & Poelter, 2012), and the use of an interview of nurses at a 12 month interview (Weddig, Baker, Auld, & Hordynski, 2011). One study evaluated both healthcare professionals as well as breastfeeding mothers pre and post intervention (Mellin, Poplawski, Gole & Mass, 2011). Researchers noted increased comfort among healthcare professionals related to breastfeeding however, no statistically significant improvement in breastfeeding satisfaction was noted among mothers. Each of

the studies determined a need for the provision of further breastfeeding education given at regular intervals.

A major weakness seen in each of these studies is the use of small sample size of less than 300 participants. An additional weakness for Davis, Stichler, & Poelter (2012) was the use of only one hospital setting. Although these studies generally documented an improvement in breastfeeding knowledge and attitudes, they failed to compare findings with other breastfeeding educational programs. Moreover, the research studies did not discuss the impact improved education had on breastfeeding outcomes within their facility.

Four studies (Bernaix, Beaman, Schmidt, Harris, & Miller, 2010; Davis, Stichler, & Poelter, 2012; Ekstrom, Widstrom, &Nissen, 2005; Weddig, Baker, Auld, & Hordynski, 2011) support the use of the Diffusion of Innovations model through their methods of implementation. The educational programs use Rogers' (2006) stated steps of diffusion. The steps of knowledge, persuasion, decision, implementation, and confirmation were outlined in the research studies when detailing the implementation of educational programs. Each of the educational programs built on the baseline breastfeeding knowledge of the participants. Prior to inclusion in the research study participants were informed of the requirements and therefore able to make an informed decision to accept or decline the invitation to participate. Researchers determined success of the educational intervention with a post-test and further follow up to assess the participants' confirmation to continue applying acquired knowledge. Research programs were made visible to potential participants either through requesting participation or mandating participation within the facility. The process of educational implementation

within each of the research studies mirrors the concepts with in the Diffusions of Innovations model and therefore supports the theoretical framework.

Impact of Educational Programs on Breastfeeding Knowledge

An additional three studies reviewed the impact of breastfeeding educational programs on overall knowledge related to the topic (Li, Li, Ashley, Smiley, Cohen, & Dee, 2013; Owoaje, Oyemade, & Kolude, 2002; Ward, & Byrne, 2011). These studies employed the use of qualitative methods of evaluation of knowledge including evaluating national survey responses, interviewing nurses and analysis of prior research studies. Each of these studies determined that healthcare workers with increased levels of education related to breastfeeding possessed improved knowledge and overall improved breastfeeding outcomes for their patients. Ward & Byrne (2011) evaluated 15 studies in order to compare varying educational programs. Results of the study determined that breastfeeding educational programs that are a minimum of 18 hours in length have optimal impact on breastfeeding outcomes. This finding supports the current WHO recommendations for breastfeeding education.

Despite this finding, authors discussed that the impact of shorter educational programs cannot be ruled out at this time due to insufficient documentation. Of the shorter length educational programs evaluated in by Ward & Byrne (2011), only one documented its impact on breastfeeding outcomes. Authors additionally discussed that lengthier programs are frequently not feasible for facilities due to cost, time and lack of resources. Ward & Byrne (2011) demonstrated a need for further evaluation of

educational programs that are more feasible for institutions to implement, with a specific focus on their impact on breastfeeding outcomes.

Impact of Education on Breastfeeding Outcomes

An additional study performed by Siggia & Rosenburg (2014) evaluated the impact of breastfeeding education for nursing staff on overall breastfeeding rates for the institution being studied. Researchers employed the use of a multidisciplinary approach in order to provide a total of 20 hours of education related to breastfeeding for nursing staff. Findings did show an increase in initiation of exclusive breastfeeding among mothers who gave birth at their facility. Researchers employed both didactic and bedside educational interventions in their study. This study was particularly strong with a sample size of 500 nurses.

The current recommendation for initial breastfeeding training of staff members is a minimum of 18 hours (WHO, 2012). Baby-Friendly USA (2004) discusses multiple barriers that facilities face when implementing this amount of education for their staff members. Among the stated barriers are time and cost. The author recommends numerous methods of attaining the recommended 18 hours of training over time, including assessing baseline knowledge of nursing staff and providing periodic research updates. Semenic, Childerhose, Lauziere, & Groleau, (2012) discuss effective leadership and hospital training as two of the major barriers to successful implementation of baby-friendly practices within hospitals. Ward & Byrne (2011), identified the need for further research of the impact of programs that are shorter than the recommended 18 hours to help decrease barriers for educating healthcare workers. Despite documentation of the

proven success of baby-friendly practices, facilities are still not meeting the minimum recommendations. Multiple literary sources discuss the barriers that hospitals face when attempting to implement these practices (Baby-Friendly USA, 2004; Semenic, Childerhose, Lauziere, & Groleau, 2012; Ward & Byrne, 2011). These research findings suggest the importance of assisting facilities in overcoming the documented barriers with a goal of improving breastfeeding outcomes.

Summary

The body of literature related to improving breastfeeding education for those caring for breastfeeding mothers continues to grow. Educational programs reviewed supported the theoretical framework through inclusion of methods detailed within its concepts. Presently there are gaps in the literature related to determining educational programs which are most effective. Although there is significant support for educational programs, there is still debate as to which programs produce ideal results. There is additionally increasing documentation of the barriers hospitals face when attempting to meet the recommended breastfeeding education guidelines outlined by WHO (2012). Moreover, Ward & Byrne (2011) discuss a distinct deficit in knowledge of the impact on educational programs that are shorter in length and more flexible in their implementation, have on breastfeeding outcomes. At this time further research is needed on these programs due to their economic feasibility and ease of implementation. Although these shorter educational programs do not match the current 18 hour educational recommendation, they provide condensed education to nurses in facilities which are currently unable to meet the 18 hour guideline. This project aims to bridge the gap in the literature, through implementation of Wellstart International's™ Lactation Management

Self Study Modules, and further documents impact on breastfeeding outcomes for the participating facility. The study intends to provide further research on a condensed, self-study educational program to assist facilities that are facing barriers towards implementing breastfeeding education among their staff members. Wellstart International's™ Lactation Management Self-Study Modules, Level One, 4th Edition limits many of these barriers while providing a comprehensive, standardized educational program for nurses.

Chapter 3: Plan for Resolution

Methods

The research study used a quasi-experimental design to determine how an educational program provided to hospital nurses impacts both their knowledge of breastfeeding as well as the breastfeeding outcomes for the hospital. The program was implemented on a group of nurses, working on a maternity unit in one hospital in Central New York. Inclusion criteria for the selected hospital site were based on its location in the city of Central, NY, provision of care to patients of varying demographics, the Labor, Delivery, Recovery, Postpartum (LDRP) model of the maternity unit, Level One nursery and willingness of the facility to participate in the study. The hospital involved in the research study does not currently possess a Baby-Friendly designation. The facility is however in the process of working diligently to obtain this prestigious designation in order to meet the breastfeeding needs of the community. The sample of nurses was chosen using convenience sampling methods. All nurses on the unit were offered the opportunity to participate in the educational program, which was part of their annual breastfeeding education. The final sample included all nurses who voluntarily complete the Lactation Management Self-Study Modules and receive a certificate of completion. Participation in the study was strictly on a volunteer basis, no incentives are in place for participants.

The educational program consisted of instructing nurses to visit www.wellstart.org and complete The 4th Edition of the Wellstart International™ Lactation Management Self-Study Modules, Level One. Written approval via email was obtained for use of this program in the study (Appendix C). Prior to beginning the educational modules all nurses completed a pre-test which measured their baseline knowledge regarding breast feeding. After finishing the program the nurses then completed the final exam on the website. Nurses were finally asked to display proof of program completion by presenting their certificate of completion within two weeks of program initiation. Final exam scores were reviewed, and compared to self-reported pre-test scores. In this study, the participating hospital nurses already possessed an undetermined baseline level of knowledge of breastfeeding practices. All nurses working on the maternity unit were invited to participate in the study and those who agreed to participate were enrolled in the educational program. To assess the initial Registered Nurse (RN) knowledge base, nurses completed the pre-test evaluation in the form of a written test through the use of Wellstart International's™ online Lactation Management Self-Study Modules. Upon completion they were instructed to begin the three Self-Study Modules. Self-Study Modules were performed individually by each nurse at their own pace, the completion of the program was verified through self-report. The final step involved completing the post-test and receiving a certificate of completion through Wellstart International™. The post-test evaluation assessed the stage of confirmation, by evaluating whether or not the nurses attained the concepts taught in the modules, with an ultimate goal that new knowledge will be incorporated into patient care (Rogers, 2005). After program initiation, nurses were asked to complete all Self Study Modules and

present their certificate of completion within two weeks. Nurses were then asked to implement knowledge learned from the course into their patient interaction and patient education. Lastly, program efficacy and nursing implementation of new knowledge gained was evaluated through interviewing postpartum mothers.

Effectiveness of the educational program was evaluated using three different evaluative tools. Nurses' knowledge regarding breastfeeding was measured prior to the start of the three self-study modules through completion of the program's 28 question pre-test, and again after module completion with the 28 question post-test. Finally nurses signed into the final examination on the Wellstart International™ website. Nurses were restricted only with a two week time frame for completion of the educational program and were allowed to complete all educational components at their own pace. After achieving a score of 80% or higher, nurses were eligible to download and print their certificate of completion. This tool has been validated strictly as an educational tool by Wellstart International™. Its efficacy as a method of improving patient breastfeeding outcomes has never been studied.

This project additionally evaluated the impact of the educational program on breastfeeding outcomes for the unit. The Breastfeeding Telephone Interview Survey, designed by Pamela D. Hill (Appendix A) was used to contact postpartum patients six weeks after they returned home. Written consent was obtained for use of this evaluative tool in the study. This survey is designed to evaluate mothers who are six weeks postpartum. The tool employs a list of questions designed to evaluate whether the patient is still breastfeeding, their perception of their breastfeeding experiences, factors they felt their ability to successfully breastfeed, and factors that impacted their decision to

discontinue breastfeeding. The complete survey is included as Appendix A. The survey has not been modified from its original form for the purposes of this study. Mothers were contacted and interviewed once for the purposes of this DNP project. Telephone interviews were made in three waves at program initiation, six weeks after program initiation and 10 weeks after program initiation. These time frames were chosen to evaluate potential differences of maternal responses in relation to the educational program provided. Oral consent for mothers to participate was obtained before initiating the telephone interview. The oral consent form used during the interviews was evaluated and approved during the IRB process. A waiver of prior authorization by research participant was submitted and approved as a component of the IRB approval process, allowing access to protected patient information for the purpose of recruitment. A convenience sampling of postpartum women who were patients on the unit prior to program implementation were first evaluated. All women who were six weeks postpartum at the time of program initiation were contacted during the first wave of interviews. After the educational program was implemented two additional groups of women were contacted. All women who were six weeks postpartum during the time interviews took place were contacted to be part of the sample group. A first group was contacted two weeks after program completion. A second group was contacted six weeks after program completion to evaluate if breastfeeding outcomes differed at varying intervals after program completion and a third group was contacted 10 weeks after program completion. Results of the three waves of interviews were then compared to evaluate the program's impact on maternal breastfeeding outcomes of those women that gave birth at the institution.

The program was implemented over the course of three months. The first set of postpartum mothers was interviewed in the two weeks prior to program implementation. Six weeks after the program was implemented a second round of randomly selected mothers was interviewed using the same methods and then finally a third group 10 weeks after program completion.

Target Population

The program is aimed to impact the education provided to Registered Nurses who are offering direct care of breastfeeding mothers during their postpartum stay in a hospital in Central New York State with a Level One nursery. Specifically, the program is designed to improve breastfeeding outcomes through providing structured education for postpartum nurses caring for patients during the critical postpartum hospital stay. All nurses providing care to breastfeeding mothers within the maternity unit of the participating hospital were offered the educational intervention as a component of the institution's annual breastfeeding education. All RNs who completed the modules and received a certificate of completion were included in the study.

Setting

The hospital chosen is a small private hospital in Central, NY. The nursing unit targeted employs a Labor, Delivery, Recovery, Postpartum (LDRP) Model. The hospital was selected due to its current dedication to providing optimal circumstances for successful breastfeeding and present adoption of many of the recommendations of the 10 steps to successful breastfeeding. The hospital does not have a current baby friendly designation, but has a goal of obtaining this designation in the future. The unit currently

has two part-time lactation consultants who rotate during the day and evening shifts, as well as some weekends. Current breastfeeding education for nursing staff includes an initial breastfeeding education day upon hire to the unit, with one additional breastfeeding education program annually in the month of August. The hospital does hold magnet status for excellence in nursing care. The unit is an 18 bed nursing unit, employing a total of 33 nurses at the time of the study. The unit participates in approximately 1200 births per year.

Budget

This research project is not funded by a research grant. The cost to implement the program was minimal and limited to photocopying evaluative tools to be presented to program participants. The self-study modules used in the research study are provided free of cost for all participants. All costs of the program were incurred by the DNP student conducting the study.

Chapter 4: Outcome / Evaluation

Purpose

The purpose of this study was to determine the impact of breastfeeding education provided to hospital nurses on the breastfeeding outcomes of postpartum mothers and their infants. Although there is significant research present regarding the innumerable benefits of breastfeeding for mother and infant, gaps still remain related to education provided to nurses on this subject. A review of literature further exposed barriers for hospitals attempting to provide sufficient breastfeeding education to their staff members, including time, money and available educational resources (Baby-Friendly USA, 2004; Semenic, Childerhose, Lauziere, & Groleau, 2012; Ward & Byrne, 2011). The research study specifically aimed to employ the use of a self-study module with a pre-test / post-test design in order to increase compliance in completing educational activities related to breastfeeding among RNs due to ease and convenience of completion.

PICOT Question

The goal of this study was to answer the following PICOT question:

What is the effect of a structured self-study breastfeeding educational program on the breastfeeding knowledge of hospital nurses, and breastfeeding outcomes on a maternity unit in Central New York?

Data Collection

This study was initiated through attaining Institutional Review Board (IRB) approval through both Binghamton University and the participating hospital. After receiving written consent for participation in the research study all Registered Nurses employed in the birthing center of a hospital in Central, NY with a Level One nursery were instructed to go online and complete the 4th Edition of Wellstart International's™ Lactation Management Self-Study Modules, Level One. This educational program was required of all birthing center nurses as a component of achieving Baby-friendly designation. A total of 33 nurses participated in the study with a 100% completion rate for the unit. All nurses succeeded in receipt of a certificate of completion from Wellstart International™. This certificate of completion indicates successful scores of 80% or greater on the final post-test. Nursing self-report indicated improved knowledge through completion of the educational intervention, as well as improved scores between pre and post-tests. Of nurses participating in the educational intervention a mean age of 41 was identified with a range of 23 to 60 years of age. Years of nursing experience within the maternal-child field of nursing among participants ranged from a minimum of less than one year to a maximum of 25 years, with the greatest number of RNs possessing five-10 years of experience.

The impact of the enhanced breastfeeding education on breastfeeding practices was evaluated through conducting three rounds of telephone interviews for mothers who were six weeks postpartum. Interviews were conducted through use of the Breastfeeding Telephone Interview Survey, designed by Pamela D. Hill. All mothers who delivered at the participating hospital, initiated breastfeeding during their hospital stay and were six weeks postpartum at the time telephone interviews commenced were contacted for

participation in the study. Round one of interviews was conducted at the time nurses initiated the self-study module as a pre-intervention group. A total of 28 women met inclusion criteria and were contacted via telephone to be interviewed. Of the 28 contacted a total of seven women participated in the study. Two subsequent rounds of post-intervention telephone interviews were then completed. Round two of interviews was conducted six weeks after nursing completion of the self-study module. A total of 33 mothers were contacted with a final participation group of seven women. Finally, round three of interviews was performed 10 weeks after the educational intervention. During this round 35 mothers were contacted, with a total of eight participating in the telephone interview process. Incorrect telephone number provision, disconnected telephone numbers, failure to answer the telephone and opting against participation in the study accounted for the final sample size totaling 22 women who participated during the three rounds of interviews. Contact attempts for those who did not answer the telephone were made a total of three times on varying days and times. All individuals participating in the telephone interview provided oral consent for participation in the research study.

Statistical Analysis

Results of telephone interview questions were evaluated through the use of IBM SPSS Statistics – Version 23 (1989, 2015) software. Each participating mother was provided an individual row within the data set and identified with a unique number correlating with her interview number, numbers one through twenty-two. Participants were further identified based on their telephone interview group number, numbers one, two and three.

Descriptive statistics were generated for the data set, including minimum, maximum, mean, and standard deviation. Among maternal research participants mean maternal age was 30.0909, with a minimum age of 22 and maximum age of 42. Mean gestational age of infant at birth was 39.4273, with a minimum gestational age of 37.5 and maximum gestational age of 41.4. Mothers participating in the study presented with a mean of Para 1.909 with a minimum of Para 1 and a maximum of Para 4. Of the 22 participating mothers, a total of seven delivered via cesarean section and 15 delivered via vaginal delivery. Racial variation among participants included 19 mothers identifying as Caucasian, two mothers identifying as African American and one mother identifying as Indian.

The data set identified that 100% of participants reported rooming in with their infants during the hospital stay. Additionally, 100% of mothers identified that their initial breastfeeding attempt was made within the first hour after birth and attained a successful first latch within the first four hours after birth. Hospital initiation of Baby-Friendly practices can account for these constant variable results. Of the 22 maternal participants less than half reported participating in a breastfeeding class for this pregnancy, although 95% reported feeling well informed of breastfeeding practices prior to delivery.

Reports of maternal and infant health were included among the telephone interview questions. Mothers who reported that their infants experienced health problems were coded as 1.0 while mothers who reported their infants remained healthy since birth were coded as 2.0. This was coding was selected to identify of newborn health issues that may have potentially impacted length of breast feeding. Reported health issues

among infants included newborn jaundice, constipation, tongue tie and oral candidiasis. Descriptive statistical analysis indicated a mean of 1.7727 among responses for overall infant health since delivery. Responses related to maternal health were valued as 1.00 for those indicated maternal health issues since delivery and 2.00 among those who reported no postpartum health issues. Maternal report of health issues included mastitis, nipple candidiasis, and upper respiratory infections. Responses indicated a mean of 1.6818 among responses for overall maternal health since delivery.

Interview responses indicated that on the whole mothers were feeding their infants on demand, with an average of eight-12 feedings in 24 hours and approximately two-three hours between feedings. A total of 10 mothers indicated their infants had to receive some formula supplementation since delivery, with a total of four mothers indicating that their infant was solely formula fed six weeks after delivery. In wave one of telephone interviews one out of seven mothers was solely formula feeding. In wave two, three out of eight mothers were solely formula feeding. Finally, all seven mothers in wave three were still breastfeeding. Among the four mothers who reported solely formula feeding two disclosed maternal upper respiratory illness and two disclosed low breast milk supply as the reasons for discontinuing breastfeeding.

As a component of the breastfeeding telephone interview survey mothers were asked the following question:

How important have the following persons or organizations been to breastfeeding?

Your Mother Very Important Important Not Important

Male Partner	Very Important	Important	Not Important
Female Friend	Very Important	Important	Not Important
Nurse	Very Important	Important	Not Important
Physician	Very Important	Important	Not Important
La Leche League	Very Important	Important	Not Important
Other	Very Important	Important	Not Important

Responses from group one indicate that five out of seven mothers expressed that the hospital lactation consultant was very important to their breastfeeding success. Within group two, one mother reported the hospital lactation consultant was very important to her breastfeeding success, while three out of eight mothers reported hospital nursing staff as being very important. Group three responses included one mother indicating the hospital lactation consultant was very important, with four out of seven mothers reporting the hospital nursing staff as very important. Maternal response trends indicated that mothers within the two post-intervention groups increasingly reported the importance of hospital nursing staff in their breastfeeding experience.

Summary of Findings

In summation, statistical analysis of the research study does yield multiple significant findings. The most significant finding indicated an increase in mothers reporting the importance of hospital nursing staff in their breastfeeding success among mothers in maternal intervention groups two and three (Group one = pre-educational intervention, Groups two-three = post-educational intervention group). Additionally, group three had the highest concentration of mothers breastfeeding at six weeks postpartum while group two had the lowest concentration. The two reasons indicated for

breastfeeding discontinuation included maternal upper respiratory illness and low breast milk supply. Although minimal significant data was present, results are limited due to multiple contributing factors including small sample size, experienced nursing staff therefore limiting effectiveness of educational intervention, hospital participation in baby-friendly practices, high level of maternal knowledge of breastfeeding and prior maternal breastfeeding success. Findings related to success of the educational intervention in regards to improving nursing knowledge of breastfeeding practices are additionally unreliable due to self-report of variance between pre-test and post-test scores as well as self-report of perception of impact of the educational intervention. While the study did yield multiple statistically significant findings, further evaluation with a larger sample size of both nurses and breastfeeding mothers is needed to determine effectiveness of the educational intervention on nursing knowledge of breastfeeding practices and maternal breastfeeding outcomes.

Chapter 5: Summary

Introduction

Breastfeeding is widely supported as the optimal method of infant feeding worldwide (AAP, 2012; CDC, 2013; CDC, 2016; DiGirolamo, Grummer-Strawn, & Fein, 2008; Semenic, Childerhose, Lauziere, & Groleau, 2012; Ward, 2011; World Health Organization [WHO], 2013). There are numerous national initiatives present to improve breastfeeding outcomes. Despite knowledge and health care organization efforts, the recommendations of exclusive breastfeeding through six months of life with continued breastfeeding through one year of age are not being met (AAP, 2012; CDC, 2011; CDC, 2013; CDC 2016). According to the 2016 Breastfeeding Report Card for the United States, published by the CDC, there are high levels of breastfeeding initiation nationwide however these rates decrease significantly throughout the first year of life.

This DNP project aimed to focus on breastfeeding education provided to hospital nurses in direct care of breastfeeding mothers as a means of improving breastfeeding outcomes. Use of the Wellstart International™ Lactation Management Self-Study Modules Level One, Fourth Edition 2014 guided nursing staff through a comprehensive educational program related to breastfeeding. Outcomes were evaluated at the nurse and patient level to determine the efficacy of a web-based, self-study module in improving nursing knowledge of breastfeeding and ultimately improving breastfeeding outcomes among their patients.

Summary of Findings

This DNP project included a total of 33 nurses and 22 mothers in the study. Nurse participation accounted for 100% of the nurses working on the participating unit at the time of initiation. Complete nurse participation was attained through inclusion of the educational intervention in the annual breastfeeding education requirements for the unit staff. Of the 33 participating nurses all were successful in achieving a final exam score of 80% or higher and successfully received a certificate of completion from Wellstart International™. Nursing self-report indicated that all nurses had increased post-test scores and felt the educational intervention was helpful in improving their breastfeeding knowledge.

As discussed above in the statistical analysis, the research did yield multiple significant findings. Analysis displayed a statistically significant relationship between maternal intervention group and importance of hospital nursing staff in maternal breastfeeding success. Mothers reported that hospital nurses were very important in their breastfeeding experience with increasing frequency among groups two and three. Mothers in group one listed the hospital lactation consultant alone. Additionally the two reasons reported for breastfeeding discontinuation included maternal upper respiratory illness and low breast milk supply. Although significant findings were yielded through the statistical analysis there was no indication that the educational intervention improved breastfeeding outcomes among the mothers surveyed. Responses showed the highest concentration of mothers still breastfeeding at six weeks postpartum in group three however, group two indicated the lowest concentration of mothers still breastfeeding.

Improved breastfeeding success among mothers from group three cannot be attributed to the educational intervention.

Findings from this study indicate a positive reported impact on nursing educational outcomes with no apparent change in breastfeeding outcomes among surveyed mothers. This lack of change in maternal outcomes may be accounted for due to small sample size and experienced nursing staff causing minimal impact of the educational intervention on existing knowledge. An additional factor impacting outcomes includes the fact that mothers were only six weeks postpartum at the time of interviews. Further contributing factors may include the participating hospital's dedication to Baby-friendly practices on their journey towards attain a Baby-friendly hospital designation during the time of the study. Overall, study findings indicate a need for further research related to this topic.

Implications for Practice

The growing body of literature supports breastfeeding as the optimal form of infant nutrition and focuses on methods of improving breastfeeding outcomes. Among these recommended methods of improvement is the provision of breastfeeding education to nursing staff (AAP, 2012; CDC, 2013; DiGirolamo, Grummer-Strawn, & Fein, 2008; Healthy People 2020, 2013; Semenic, Childerhose, Lauziere, & Groleau, 2012; Ward, 2011; WHO, 2013). The literature supports a need for increased education provided to hospital nurses related to breastfeeding due to great disparities in knowledge of nursing staff related to breastfeeding and best practices (Brodribb, 2012; Crowder, 2006; Osmand, Altman, Patrick, & Edwards, 2011; Smale, Renfrew, Marshall, & Spilby, 2006;

Wallace, 2007; Weddig, Bakers, & Auld, 2011). The literature further divulged barriers to educational provision including time, monetary resources and lack of teaching staff and educational resources (Baby-Friendly USA, 2004; Semenic, Childerhose, Lauziere, & Groleau, 2012; Ward & Byrne, 2011). This DNP project intended to add to the current literature and research through implementing a web-based, self-study educational intervention that was free of cost and less than 18 hours in length. The Wellstart International™ Lactation Management Self-Study Module 4th Edition, Level1 met these criteria and was implemented on the maternity unit of a hospital in Central New York State with a Level One nursery.

Results as discussed above indicated self-reported improvements in knowledge of nurses, with no apparent change in breastfeeding outcomes among their patient over a three month period. Implications for practice include a need for continued education of hospital nurses in direct care of breastfeeding mothers. Inclusion of web-based, self-study educational programs is supported due to positive outcomes among nurses. This method of providing education to nursing staff assisted in meeting their unit education requirements for Baby-friendly designation and the 18 hours of initial breastfeeding education recommended by WHO (2013). Participant responses additionally supported a need for increased access to lactation consultants during the immediate postpartum hospital stay. This response further supports continued education for nurses due to the fact that lactation consultants are not always readily available for patients. This study, along with the body of literature, supports a need for continued education provided to nurses related to breastfeeding and best practices. The study further supports use of web-based, self-study modules as a means of overcoming barriers hospitals often face when

attempting to meet the breastfeeding education recommendations as proposed by WHO, UNICEF and Baby-Friendly USA.

Limitations

This study was limited due to a small sample of nurses at only one hospital, which further limited the number of maternal participants. Use of a larger sample of nurses through providing educational interventions at multiple hospitals would strengthen future research studies. The DNP project was further limited due to use of self-report as a means of obtaining impact of the educational intervention through pre-test and post-test result comparisons. Future studies would employ use of a pre-test / post-test design; however obtaining hard copies of completed tests would strengthen the study design.

Recommendations for Research

This study aimed to add to the body of research related to breastfeeding education provided to hospital nurses. Findings support the current body of research by indicating a need for further evaluation of available breastfeeding education programs (Li, Li, Ashley, Smiley, Cohen, & Dee, 2013; Owoaje, Oyemade, & Kolude, 2002; Ward, & Byrne, 2011). Recommendations for future research include use of a larger sample size of both nurses and postpartum mothers. Additional recommendations for future research include tracking breastfeeding outcomes for participating mothers over the first year of life of their infants. The design of this research project was limited due to short interval follow up with mothers at six weeks postpartum. Current statistics indicate that breastfeeding levels drop off significantly after three months of age (CDC, 2013). Future studies

would aim to track mothers and their infants over the entire first year of life to determine impact on extended breastfeeding outcomes.

Furthermore, the level one modules used in this study are self-proposed as entry-level, base knowledge related to breastfeeding and breastfeeding practices. Use of higher level modules, such as level two and level three by Wellstart International™, may yield more significant results and build on intrinsic knowledge nurses may already possess due to field experience. This research study adds to the growing body of research related to breastfeeding education programs provided to hospital nurses. Research design and execution exposed multiple areas for improvement for future research studies. Findings support a need for continued research related breastfeeding education provided to hospital nurses as a means of improving breastfeeding outcomes for postpartum mothers and their infants.

Conclusion

Breastfeeding and its innumerable benefits for both mother and infant are widely documented in the literature. UNICEF (2005) states the following:

> " breastfeeding is a unique process that provides ideal nutrition for infants and contributes to their healthy growth and development, reduces incidence and severity of infectious diseases, thereby lowering infant morbidity and mortality, contributes to women's health by reducing the risk of breast and ovarian cancer, and by increasing the spacing between pregnancies, provides social and economic benefits to the family and the nation, provides most women with a sense of satisfaction when successfully carried out (UNICEF, 2005, p. viii)."

In the Surgeon Generals Call to Action to Support Breastfeeding (2011) the US Department of Health and Human Services lists health care, research and surveillance among the areas to focus when attempting to increase national breastfeeding rates and outcomes. This DNP project focused on the use of education provided to hospital nurses as a means of improving both nursing education related to breastfeeding and overall breastfeeding outcomes for mothers and their infants. Guided by Rogers (2003) Diffusion of Innovations model, the study succeeded in implementing an educational intervention to hospital nurses and further evaluated their educational growth and its impact on the breastfeeding outcomes of patients in their care.

The research study was successful in implementing the Wellstart International™ Lactation Management Self-Study Modules Level One, Fourth Edition among nurses on a maternity unit in Central New York State with a Level One nursery. While the study yielded self-reported improvement in pre-test and post-test scores, no significant improvement in breastfeeding outcomes among mothers at six weeks postpartum was noted during three rounds of telephone interviews. Limitations of sample size, self-report, experienced nursing staff, short interval follow up with postpartum mothers and entry-level breastfeeding curriculum may have contributed to documented outcomes. Recommendations for future research include the inclusion of multiple hospitals, therefore increasing sample size, obtaining hard copies of nursing pre-test and post-test scores, increasing difficulty of the educational program and continued surveillance of participating postpartum mothers over the first year of life of their infant. In regards to future practice, the study supports continued provision of breastfeeding education to

health care workers in direct care of breastfeeding mothers, as well as use of web-based, self-study modules for providing such education.

The goal of this DNP project was to answer the following PICOT question:

What is the effect of a structured self-study breastfeeding educational program on the breastfeeding knowledge of hospital nurses, and breastfeeding outcomes on a maternity unit in Central New York?

The study succeeded in determining that the implemented educational program positively impacted nursing knowledge while having no notable impact on breastfeeding outcomes at six weeks postpartum. The research, along with the aforementioned proposed changes, adds to the body of literature related to breastfeeding education and delineates areas of need for future research and recommendations for current practice. This DNP project, along with the growing body of literature, supports the need for continued provision of education related to breastfeeding among nurses in direct care of breastfeeding mothers, and expresses a need for further research on this topic to optimize breastfeeding outcomes worldwide.

Appendix A

Breastfeeding Telephone Interview Survey

P. D. Hill

Primary Source

Hill, P. D. (1987). Effects of education on breastfeeding success. Maternal-Child Nursing Journal, 16, 145-156.

Purpose Statement

Breastfeeding Telephone Interview Survey is designed to assess mothers' current method of infant feeding (e.g., schedules, frequency, and number of feedings per day), and satisfaction with that method six weeks after delivery. Items (11) designed for mothers who are currently bottle feeding their baby include questions regarding whether the mothers are happy with bottle feeding and whether they wish they had tried breastfeeding. Items (17) designed for mothers who are currently breastfeeding include questions concerning how long they plan to breastfeed their baby, how soon after the baby's birth they began to breastfeed, perceptions of success at breastfeeding, and how important specific persons and organizations have been to breastfeeding. Finally, items (15) designed for mothers who tried breastfeeding and are currently bottle feeding include questions regarding how long they breastfed their baby, how soon after their baby's birth they began to breastfeed, the reason they stopped breastfeeding, feeding schedules followed when they were breastfeeding, and perceived success at breastfeeding. Designed to be completed by mothers six weeks after delivery, this questionnaire can be self-administered or administered by an interviewer. It contains rating scales, yes/no and multiple-choice items, and open-ended questions.

Reliability

Reliability statistics are not easily identified in the source.

Number of Questions

Vary from 11, 17, or 15 depending on infant feeding method adopted.

Directions for Scoring

Calculate percentages for rating scales, yes/no, and multiple-choice item responses. Similarly, calculate percentages for open-ended questions, following development of a coding scheme for reasons provided.

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Health and Psychosocial Instruments

(HaPI)

Breastfeeding Telephone Interview Survey

P. D. Hill

Breastfeeding Telephone Interview Survey

P. D. Hill

GENERAL INFORMATION

NAME _____

1. Has your baby had any health problems since delivery?

YES…...1
NO…….2

If YES, please explain

_____

2. What has been your general state of health since the birth of your baby?

EXCELLENT……..1
GOOD……..2
FAIR……3
POOR……..4

3. Have you had any health problems since delivery?

YES…...1
NO…….2

If YES, please explain

_____

4. How have things been going since you came home from the hospital?

VERY WELL……..1
PRETTY WELL…….2
FAIR……3
POOR……..4

5. Did you have any organized classes on breastfeeding or receive information on this topic?

YES…...1
NO…….2

If YES, please explain

_____

6. How well informed about breastfeeding did you feel?

VERY INFORMED……..1
SOMEWHAT INFORMED……..2
POORLY INFORMED…….3
NOT INFORMED……4

7. Did you attempt to breastfeed your baby?

YES…...1
NO…….2

If NO, go to page 3.

If YES, and you are still breastfeeding, go to page 4.

If YES, and you are now bottle feeding, go to page 6

FOR MOTHERS WHO ARE BOTTLE FEEDING THEIR BABY

1. While in the hospital, did you keep your baby in the room with you?
YES…...1
NO……2

2. How many bottle feedings are you giving your baby each day? _____
How many ounces/feeding? _____

3. Are you completely happy with bottle feeding?
YES…...1
NO……2

4. Do you wish you had tried breastfeeding?
YES…...1
NO……2

If YES, explain
_____

If NO, explain
_____

FOR MOTHERS WHO ARE NOW BREASTFEEDING

1. How long do you plan on breastfeeding your baby? _____ month(s)

2. How soon after the birth of your baby did you begin to breastfeed?

IMMEDIATELY AFTER DELIVERY……..1
WITHIN 4 HOURS…….2
WITHIN 5-8 HOURS……..3
WITHIN 9-12 HOURS……4
AFTER 12 HOURS……..…5

3. While in the hospital did you keep your baby in the room with you?
YES…...1
NO…….2

4. Do you breastfeed your baby at specific times of the day or whenever you think he/she is hungry?

SPECIFIC TIMES…….1
WHEN HUNGRY…….2

5. On a typical day, how many times do you breastfeed your baby? _____

6. Have you been feeding your baby anything else besides breast milk?
YES…...1
NO…….2

7. Do you feel you have been successful in breastfeeding your baby?
YES…...1
NO…….2

If NO, explain
_____

8. How important have the following persons or organizations been to breastfeeding?

YOUR MOTHER	VERY IMPORTANT	IMPORTANT	NOT IMPORTANT
MALE PARTNER	VERY IMPORTANT	IMPORTANT	NOT IMPORTANT
FEMALE FRIEND	VERY IMPORTANT	IMPORTANT	NOT IMPORTANT
NURSE	VERY IMPORTANT	IMPORTANT	NOT IMPORTANT
PHYSICIAN	VERY IMPORTANT	IMPORTANT	NOT IMPORTANT
LA LECHE LEAGUE	VERY IMPORTANT	IMPORTANT	NOT IMPORTANT
OTHER	VERY IMPORTANT	IMPORTANT	NOT IMPORTANT

If OTHER, please explain

_____

9. Does anyone specifically help you with the baby?

MOTHER	YES	NO
MALE PARTNER	YES	NO
FEMALE FRIEND	YES	NO
LA LECHE LEAGUE	YES	NO
OTHER	YES	NO

If OTHER, please explain

_____

10. Are you satisfied with the feeding you are giving your baby?
YES…...1
NO…….2

If NO, explain

_____

FOR MOTHERS WHO TRIED BREASTFEEDING
AND ARE NOW BOTTLE FEEDING

1. How soon after the birth of your baby did you begin to breastfeed?

IMMEDIATELY AFTER DELIVERY…....1
WITHIN 4 HOURS…….2
WITHIN 5-8 HOURS……..3
WITHIN 9-12 HOURS……4
AFTER 12 HOURS……..…5

2. How long did you breastfeed your baby? _____ days

3. While in the hospital did you keep your baby in the room with you?
YES…...1
NO…….2

4. Could you tell me the most important reason why you stopped breastfeeding?

EMBARRASSED……..……1
NOT CONVENIENT……..…..2
SORE NIPPLES…….……...3
NOT ENOUGH MILK……..4
FATIGUE…….…5
BECAUSE OF HUSBAND'S WISHES……...6
TO AVOID RESTRICTING SOCIAL LIFE…7
MILK WOULD NOT FLOW……8
IT WAS MESSY……9
I WAS SICK……10
BABY WAS SICK……..11
RETURNED TO WORK……12
RETURNED TO SCHOOL……13
FEAR OF LOSING FIGURE……14
OTHER……....15

If OTHER, please specify

_____

5. Did you breastfeed your baby at specific times of the day or whenever you thought the baby was hungry?
YES…...1
NO…….2

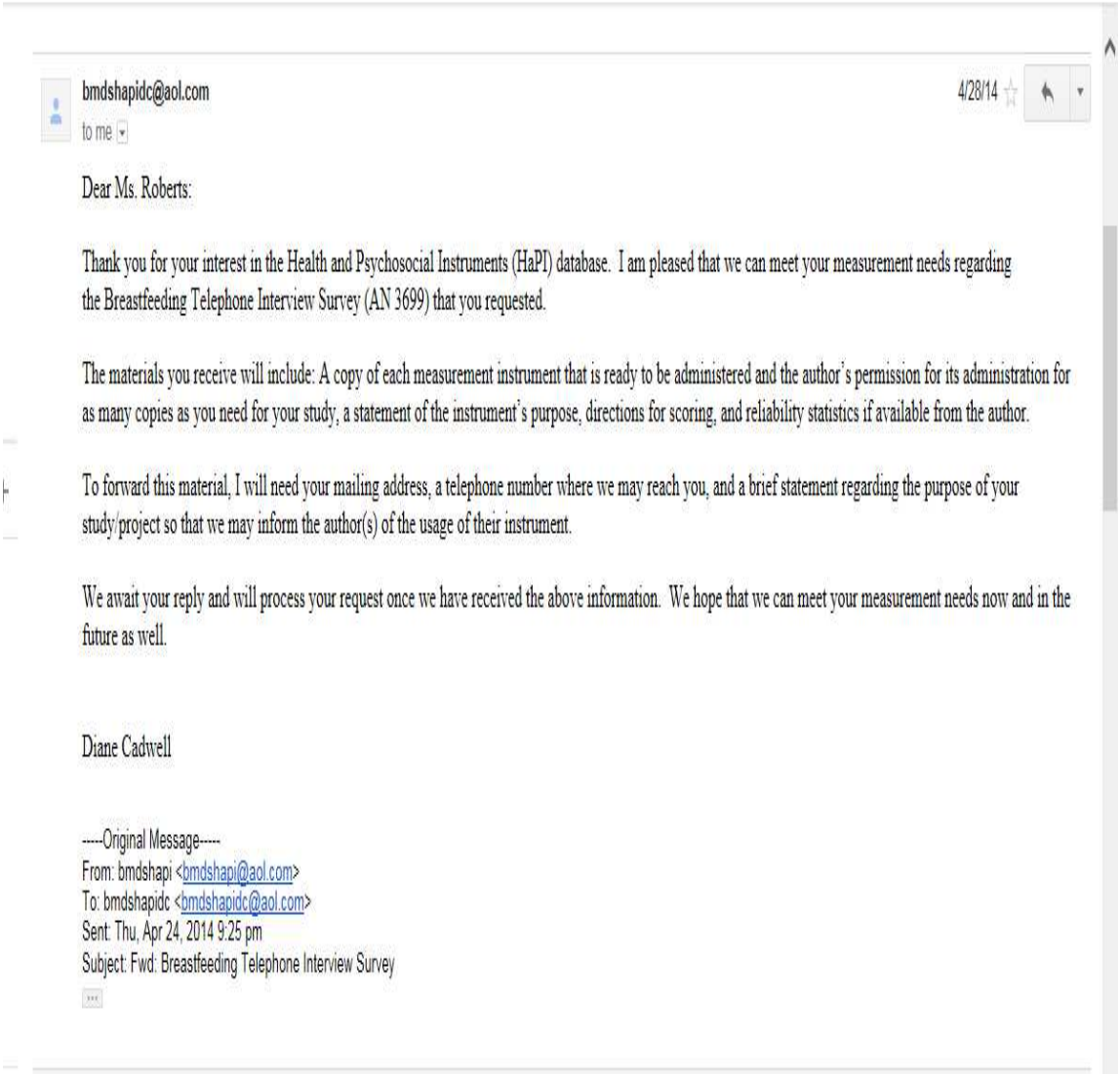
6. On a typical day, how many times did you breastfeed your baby? _____
   times

7. Do you feel you were successful in breastfeeding your baby?
YES…...1
NO……2

8. Are you satisfied with the feeding you are giving your baby?
YES…...1
NO……2

   If NO, explain
_____

Appendix B



bmdshapidc@aol.com 4/28/14

to me

Dear Ms. Roberts:

Thank you for your interest in the Health and Psychosocial Instruments (HaPI) database. I am pleased that we can meet your measurement needs regarding the Breastfeeding Telephone Interview Survey (AN 3699) that you requested.

The materials you receive will include: A copy of each measurement instrument that is ready to be administered and the author's permission for its administration for as many copies as you need for your study, a statement of the instrument's purpose, directions for scoring, and reliability statistics if available from the author.

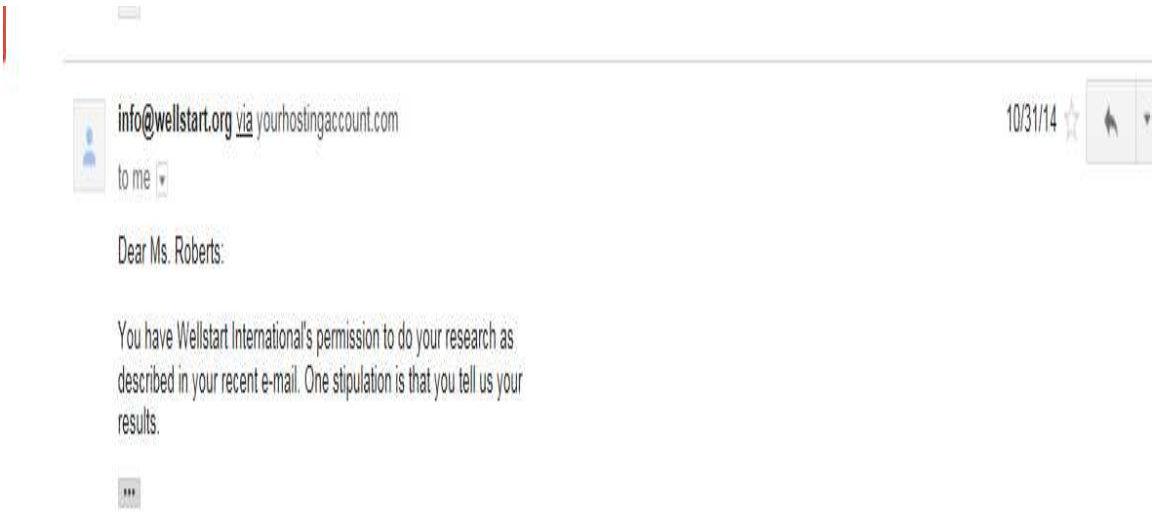
To forward this material, I will need your mailing address, a telephone number where we may reach you, and a brief statement regarding the purpose of your study/project so that we may inform the author(s) of the usage of their instrument.

We await your reply and will process your request once we have received the above information. We hope that we can meet your measurement needs now and in the future as well.

Diane Cadwell

-----Original Message-----
From: bmdshapi <bmdshapi@aol.com>
To: bmdshapidc <bmdshapidc@aol.com>
Sent: Thu, Apr 24, 2014 9:25 pm
Subject: Fwd: Breastfeeding Telephone Interview Survey

Appendix C



info@wellstart.org via yourhostingaccount.com 10/31/14

to me

Dear Ms. Roberts:

You have Wellstart International's permission to do your research as described in your recent e-mail. One stipulation is that you tell us your results.

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