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# The Effect of an Educational Intervention on Knowledge and Intent to Participate in Cervical Cancer Screening

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**THE EFFECT OF AN EDUCATIONAL INTERVENTION ON KNOWLEDGE AND  
INTENT TO PARTICIPATE IN CERVICAL CANCER SCREENING**

by

**ANN MARIE TRAPP**

**EVIDENCE-BASED PRACTICE PROJECT REPORT**

Submitted to the College of Nursing and Health Professions

of Valparaiso University,

Valparaiso, Indiana

in partial fulfillment of the requirements

For the degree of

**DOCTOR OF NURSING PRACTICE**

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Ann Marie Trapp 5/6/15  
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## DEDICATION

For Astrid, Anneliese, Gwendolyn, Heidi, and Hans, for patience and understanding in the journey of life-long learning.

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## ABSTRACT

Globally, cervical cancer ranks third among cancers affecting women (Arbyn et al., 2013). In the United States, approximately 12,000 women are diagnosed with cervical cancer and approximately 4,000 women die yearly (Centers for Disease Control and Prevention, 2014). Papanicolaou (Pap) screening is an effective means of detecting precancerous cell changes of the cervix with early cervical cancer diagnosis carrying a 91% five-year survival rate (Gonzalez et al., 2012). The purpose of this evidence-based practice project was to identify interventions that increase adherence to cervical cancer screening and to implement best practices to reduce unnecessary deaths related to late diagnoses of cervical cancer. Rogers' (2003) Diffusion of Innovation and Pender's (2011) Health Promotion Model guided this project. Multimodal community educational presentations were held monthly for three consecutive months at a health center in northern Indiana. Cervical cancer knowledge and intent for screening were compared through pre- and post- presentation questionnaires. Paired-samples *t* tests were calculated via SPSS to compare pre- and post- intervention total scores of knowledge and pre- and post- intervention scores of Pap screening intent. Mean scores of knowledge and Pap screening intent both increased however, the difference was not statistically significant. The percentage of clinic patients with completed Pap smears remained relatively constant prior to, during, and after the educational intervention. The results of this DNP project indicated that among females ages 21-65 years, multi-modal educational presentations did not significantly impact cervical cancer knowledge, screening intentions, or Pap smear rates over a 3-month period as compared with the previous standard of care. However, participants reported a sense of unity within the group and an enlightened sense of purpose in sharing the importance of cervical cancer screening with other women. The diffusion of this message may have an impact beyond the statistics gathered during this project.

*Keywords:* Cervical cancer, screening, disease prevention, health promotion, behavior

## CHAPTER 1

### INTRODUCTION

#### Background

Globally, cervical cancer ranks third among cancers affecting women, with the diagnosis occurring most frequently in women 30 to 50 years old (Arbyn et al., 2013). In the United States alone, approximately 12,000 women each year are diagnosed with cervical cancer and approximately 4,000 women die yearly (Centers for Disease Control and Prevention, 2014). Cervical cancer screening via a Papanicolaou (Pap) test is an effective means of detecting pre-cancerous cell changes within the transformational zone of the cervix and reducing the incidence of cervical cancer in the asymptomatic stage (Coughlin & King, 2010; Everett et al., 2014). Early diagnosis of cervical cancer through Pap screening carries a 91% five-year survival rate (Gonzalez et al., 2012). The burden of cervical cancer mortality is avoidable. The target of Healthy People 2020 is to reduce cervical cancer incidence and deaths from cervical cancer by 10% (U.S. Department of Health and Human Services, 2014).

Historically, screening guidelines for Pap smears were inconsistent between differing organizations. Interventions to clarify, simplify, and standardize recommendations were based on the value of early cervical screening in preventing unnecessary loss of life. A collaborative agreement between the American College of Obstetricians and Gynecologists (ACOG), American Cancer Society (ACS), and the U.S. Preventative Services Task Force (USPSTF) led to the revised 2012 cervical cancer-screening recommendations (Saraiya et al., 2013).

These recommendations include Pap testing in women ages 21 to 65 years regardless of age of initial sexual encounter. Previous recommendations were based upon the incidence of risk factors such as sexual activity, exposure to HIV, or smoking. Cervical dysplasia has been associated with sexual activity, but often stems from an infection with HPV and in most cases the viral load will decrease or clear without intervention within 8-24 months (Simmons, 2010).

Due to this spontaneous regression, the incidence of cervical cancer in young women has not increased (Simmons, 2010). On this basis, cervical cancer screening recommendations updated in 2012 discontinued Pap screenings on females younger than 21 years old. The administration of vaccines targeting HPV-16 and HPV-18 strains causing 70% of HPV cervical cancers also contributes to a lower incidence of cervical cancer in young women (Simmons, 2010). Females under the age of 21 should however, receive counseling regarding safe sex, contraception, and sexually transmitted infections (Simmons, 2010). Incorporation of these preventative practices prior to screenings empowers young women toward continued health promotion (Simmons, 2010).

### **Statement of the problem**

The problem that the evidence-based practice (EBP) project addresses is poor compliance with cervical screenings. The implication of a late diagnosis of cervical cancer is often death. Yet early detection is easily treated. Changes in screening recommendations and the introduction of the HPV vaccine have added to public confusion regarding the purpose and frequency of cervical screening.

**Data from the literature supporting the need for the project.** With the implementation of Pap screening, cervical cancer rates decreased 60-90% in populations previously naive to screening (U.S. Preventative Services Task Force, 2012). According to the National Health Interview Survey (NHIS) 2010 statistics, 69-85% of women ages 18-64 years in the United States (U.S.) participated in Pap screening within 3 years of a household interview (National Center for Health Statistics, 2014). However, only 61.9% of uninsured persons reported having a Pap smear in the 3-year period prior to the household interview (National Center for Health Statistics, 2014). This statistic falls well below the Healthy People 2020 target of 93% cervical screening rates and raises questions as to the underlying causes for lack of participation.

Studies have identified various barriers to cervical cancer screening, such as lower income and education levels, lack of insurance, and lack of health care provider

recommendation or reminder for testing (Coughlin & King, 2010). Other barriers to screening include lack of knowledge, transportation, or finances. Moreover, studies have identified that young women lack information regarding risk factors and the purpose of screenings, and have negative conceptions regarding Pap testing (Duffett-Leger, Letourneau, & Croll, 2008).

Numerous outreach initiatives have been implemented in an effort to empower women and provide access to health promotion and screening services.

Considerable critique has been given to the paradigm that assumes knowledge alone has the potential to produce behavioral change (Twinn, 2001). Certainly, for some individuals this does hold true. However, in implementing an educational intervention directed toward a population diverse in race, culture, socio-economic status, and resources, research supports a comprehensive educational approach.

**Data from the clinical agency supporting the need for the project.** According to the Centers for Disease Control and Prevention (CDC) 2010 statistics published in 2012, the state of Indiana had an incidence rate of cervical cancer of 7.3-8.0 women per 100,000. Twelve states had higher incidence rates than Indiana, 11 had rates similar to Indiana, 24 states had fewer incidence of cervical cancer, and no data was available for 3 states (CDC, 2012). Improvement is needed within the state of Indiana to meet Healthy People 2020 goals.

The clinical site for this project was a Community Health Center in Northern Indiana. This Patient-Centered Medical Home (PCMH) is committed to the community, meeting the needs of the uninsured, underinsured, and those with insurance coverage. The focus is on treatment of the whole person toward facilitation of health. Utilizing a team approach of physicians, nurse practitioners, nurses, behavior health specialists, medical assistants, and support staff, approximately 1,600 medical visits each month are directed toward meeting the needs of individual patients. On-site access to medical, dental, behavioral, pharmaceutical, and optometry resources allows for comprehensive care of each patient.

Health promotion is an integral component of the Community Health Center as well as a vital factor in decreasing the burden of preventable disease. Educational interventions have notoriously been identified with behavior change via increases in knowledge and understanding (Twinn, 2001). Pap screening reminders have been incorporated into each electronic medical record and are satisfied upon receipt of documentation indicating a satisfactory cervical screening sample was obtained and analyzed by the laboratory. Subpar Community Health Center cervical screening rates can be attributed to a lack of screening, lack of satisfying the reminder accurately, insufficient cervical sample of the transitional zone, or lack of documentation from a cervical screening obtained through another health care facility. For the purpose of this EBP project, the DNP student focused on the impact of an educational intervention on cervical cancer knowledge and intent to participate in cervical cancer screening. The multi-modal educational approach limits, however, the ability of the researcher to confidently attribute a single component of the intervention to a desired outcome.

### **Purpose of the EBP project**

Despite increasing national attention and efforts toward health promotion and disease prevention, statistical figures do not reflect an equal and comparative increase in Pap testing adherence across populations. Supplementary interventions may aid in individual recognition of congruency among beliefs and values thereby facilitating the decision-making process toward increased adherence to recommended clinical preventative services and prevention of late diagnostic related cervical cancer fatalities. The purpose of this evidence-based practice project was to identify interventions that increase adherence to cervical cancer screening and to implement best practices to reduce unnecessary deaths related to late diagnoses of cervical cancer.

**Identifying the compelling question.** The compelling clinical question was: *What is the effect of an educational presentation on cervical cancer knowledge, screening intention, and Pap smear rates?*

**PICOT format.** Based upon the PICOT (Patient population, intervention, comparison, outcome, and time) format as described by Schmidt and Brown (2012), the burning clinical question was: *Among females ages 21-65 years, what is the effect of a multi-modal educational presentation on cervical cancer knowledge, screening intention, and Pap smear rates over a 3-month period as compared with the previous standard of care?*

### **Significance of the project**

Early detection through cervical cancer screening has decreased the incidence of cervical cancer by 50% over the last 30 years (American College of Obstetrics & Gynecology Committee on Practice Bulletins, 2009). This evidence-based practice project was designed to improve the adherence rate of cervical cancer screening and decrease the burden of mortality secondary to late stage diagnosis of cervical cancer. A secondary goal was to improve the Community Health Center quality improvement indicators of compliance with preventative screening, specifically Pap smear rates.

While health education is an integral component in clinical practice, Community Health Centers and supportive organizations must provide supplementary education within communities to empower women toward regular health screenings. In application of Pender's Model of Health Promotion, concepts of awareness, empowerment, and control regarding decision-making were also addressed.

## CHAPTER 2

### THEORETICAL FRAMEWORK AND REVIEW OF LITERATURE

Theories provide a lens and a reference point through which behaviors can be understood when determining interventions for the facilitation of behavioral change (Gonzalez et al., 2012). In this chapter, the author will discuss the theoretical framework and EBP model of implementation used for the project. Additionally, a description of the literature search and synthesis of evidence in constructing the best practice model recommendation will be provided.

#### Theoretical Framework

The Health Promotion Model (HPM) developed by Nola Pender provided the theoretical framework for this project. Relevant concepts helped to explain the phenomenon of behavior surrounding cervical cancer screening and facilitated implementation of effective strategies to promote healthy behaviors.

**Description of the theoretical framework.** Pender's HPM was first published in 1982 and underwent subsequent revisions through incorporation of new research and substantiation of theoretical concepts resulting in the latest sixth edition of *Health Promotion in Nursing Practice*. The Health Promotion Model is widely used in nursing to guide individual as well as societal behaviors toward healthy lifestyles (McCullagh, 2009). The model has direct applicability for integrating individuals, communities, and public policies in the promotion of health (Pender, Murdaugh, & Parsons, 2011). The model is based on the premise that unique and dynamic interactions of the individual and their environment affect one's holistic state of health. Health is conceptualized along a continuum, with interventions having the capacity to either promote health or detract from it. The best methods for promotion of health on an individual level take into consideration the unique aspects of the individual and their environment. These aspects may be addressed biologically, behaviorally, psychologically, or culturally. Addressing barriers to health and means to overcome barriers is an integral

component in health promotion. Promotion of individual health through education and counseling ultimately improves societal health and can decrease future health care costs associated with illness and disease (McCullagh, 2009).

**Application of the theoretical framework to the EBP project.** Pender's Health Promotion Model is applicable to this DNP project in regards to the focus on health as opposed to illness along with the inclusion of the perspective of the individual in regards to the meaning of health. The HPM is also in alliance with the model of Patient-Centered Medical Homes, primarily, holistic and coordinated health care that is accessible to, and focused upon, the individual (Agency for Healthcare Research and Quality, 2012). An Evidence-Based Practice Center (EBPC) report in 2012 by the Agency for Healthcare Research and Quality (AHRQ) supports improved preventative care and patient experiences within a PCMH.

Primary prevention includes educational interventions to improve beliefs and attitudes toward habits of preventative health. Secondary prevention is exemplified through early detection of cervical cancer via cervical cancer screening. An abnormal pap smear should not be considered a shift to illness or lack of health, but rather, an extension of health that necessitates alternative interventions and draws upon the resources and capabilities of the individual. The patient-centered medical home setting affords opportunities for health improvement through a broad perspective incorporating the physical and mental health of both individuals as well as families. Research indicates that adherence to cervical cancer screening recommendations is strongly influenced by the attitudes and input of family, spouse, and friends. This is congruent with Pender's model, which addresses the importance of satisfying relationships and maintaining harmony with the environment as well as health promotion toward the family and the community for successful outcomes (McCullagh, 2009).

The assumptions and propositions of the Health Promotion Model are relevant to cervical cancer screening in that many of the barriers limiting screening are validated by the theoretical assumptions described by Pender. An important component of adherence to cervical

cancer screening entails understanding the process and implications of the screening. In congruence with this factor, the HPM incorporates Bandura's (1986) social cognitive theory and self-efficacy (McCullagh, 2009). According to Pender, self-efficacy, or the perceived ability to perform a behavior, has a direct correlation with that particular behavior being carried out (McCullagh, 2009). Therefore, if a woman understands the process and implication of cervical cancer screening and can foresee participating in this examination, the likelihood of adherence will increase. The HPM does not focus on threat of disease as a powerful motivator of action, but focuses rather on self-actualization and wellness (McCullagh, 2009).

Salient concepts of Pender's Health Promotion Model related to cervical cancer screening include behavior-specific cognitions as motivators for behaviors of health promotion. Pertinent components include, "perceived benefits of action, perceived barriers to action, perceived self-efficacy, activity-related affect, interpersonal influences, and situational influences. Individual characteristics and experiences included in the model include prior related behavior and personal factors" (McCullagh, 2009, p. 294). "The additional concepts of the model include immediate competing demands and preferences, commitment to a plan of action, and health-promotions behavior" (McCullagh, 2009, p. 294).

In addition to health-promoting behaviors, incorporation of individual characteristics such as prior behavior and personal demographic data facilitate tailoring of interventions and personal empowerment toward self-care (McCullagh, 2009). Tailoring implies shaping the message or the delivery of the message in a way that is congruent with the audience (McCullagh, 2009). These measures not only increase the perceived applicability for the individual but also increase effectiveness (McCullagh, 2009). Similar characteristics or behaviors may be present within a subset of a population thereby enabling tailoring based on core characteristics, such as lack of understanding of the cervical cancer screening procedure or unfamiliarity with the implications of screening results. Success of interventions can be measured by increased adherence to cervical cancer screening recommendations.

**Strengths and limitations of the theoretical framework for the EBP project.** The strengths of the HPM lie in the applicability to individuals of all ages, cultures, ethnicities, and financial resources. The humanistic perspective of the Health Promotion Model stresses the value of each individual, who empowered, has the ability to change behavior (McCullagh, 2009). One weakness of the HPM lies in the focus on the individual to access resources for promotion of health and removal of barriers; outcomes are influenced by individual input. Another weakness is the lack of integration of threat of disease among foundational concepts. Certainly threat of disease plays an integral part in the motivational drive of human nature and the exclusion of this factor detracts from an encompassing holism. In consideration of all strengths and weakness, the HPM provides a practical framework for empowering others, including vulnerable populations, toward a higher quality of life. Consistent with this DNP project, the advanced practice nurse acts as the change agent, guiding and promoting self-actualization and personal responsibility of healthy behaviors that decrease the risk of late diagnosis of cervical cancer.

### **Evidence-based practice model of implementation**

Evidence-based practice (EBP) is founded upon three primary components; best available research evidence, patient preference, and the clinical judgment of the provider (Schmidt & Brown, 2012). Incorporation of EBP optimizes clinical outcomes and minimizes risks involved with trial and error methods (Schmidt & Brown, 2012). The Advanced Practice Nurse (APN) is ideally suited to facilitate the integration of EBP into the clinical setting. Expanding upon a solid nursing foundation, APNs have additional training in advanced theoretical, organizational, legal, and research concepts to provide the leadership necessary to promote change within an organization.

### **Valparaiso University Advanced Practice Nursing Conceptual Model**

According to the Valparaiso University College of Nursing and Health Professions (CONHP) advanced practice nursing conceptual model, APNs expertly guide the health not only

of individuals but also of the expanding spheres of influence including family, community, and wider populations. The roles of clinician, educator, leader, consultant, and researcher provide opportunities for the APN to influence the health of individuals and their communities. Strategies to improve access to healthcare resources and to eliminate environmental barriers can be facilitated through engagement with local and global political, legal, societal, economic, ethical, cultural, and technological entities. In addressing the unique characteristics of each individual as well as understanding the dynamic influence of family, community, and broader population, the APN is able to customize interventions tailored to specific individual needs. Attributes that support the APN role in this endeavor include communication, critical thinking, lifelong learning, and change facilitation skills. This model has provided the foundational basis for academic endeavors of the DNP student and demonstrates the dynamic nature of health promotion in decreasing the burden of mortality.

### **Rogers' Diffusion of Innovation**

Rogers' Diffusion of Innovation (DOI) provided the change theory for this project. APNs are leaders and diffusion agents in making EBP standard of care. The DOI model has successfully guided interdisciplinary efforts in the explanation of social change.

**Description of the EBP model.** According to Rogers (2003), "diffusion is the process in which an innovation is communicated through certain channels over time among the members of a social system" (p. 5). Change occurs at the organizational system level as well as the individual patient level. Factors influencing the rate of diffusion of an idea include the innovation attributes, type of decision-making, channel of communication, characteristics of the social system, and promotional efforts of the change agent (Rogers, 2003). Rogers (2003) has also identified characteristics of adopters based on patterns of similar behavior.

Characteristics of an innovation are directly but not equivocally associated with diffusion based on perceived applicability and value to the individual. These attributes include the relative advantage the innovation provides to the adapter, the compatibility of the innovation with the

values and experiences of the adapter, the complexity of the innovation and ease of adoption, the trialability or potential for adoption in partial succession, and the observability or visibility of the innovation among peers or society (Rogers, 2003). These components have been associated with the effectiveness in implementing new ideas (Rogers, 2003).

Decisions may be optional, collective, or authoritatively imposed. According to Rogers (2003), the individual decision-process in adopting an innovation entails five sequential steps. These steps include the following; acquisition of knowledge, development of an opinion or persuasion regarding the innovation, formulation of acceptance or rejection of the innovation, integration or implementation of the innovation, and confirmation of the decision through reinforcement (Rogers, 2003). Information is acquired, processed, and used for reevaluation. A decision may be reversed or negated through exposure to new knowledge. In terms of adopting cervical cancer screening recommendations and health promotion behaviors, there is potential through the educational session of the DNP student to introduce, influence, impact, facilitate, or reinforce new and previously held conceptions.

One method of communication of the innovation is direct, face-to-face encounters. This method, while very persuasive, has a limited capacity to reach an extensive population simultaneously. Mass media on the other hand, provides a more rapid and far-reaching mode of delivery but lacks the same potential for personal persuasion. Interactive technological communication as per the Internet has become a mainstay in American society for transmission of information instantaneously across demographical expanses. However, credibility of information can be dubious. Channels of communication impact diffusion of an innovation and individual rate of idea adoption (Rogers, 2003).

Characteristics of the social system that impact the diffusion of innovation involve societal norms and the network interconnectedness that promotes the acceptance of these standards. Societal norms can present barriers to change regardless of individual willingness (Rogers, 2003). Promotional efforts of the change agent are associated with the credibility of the

individual and the congruence of the innovation in terms of boundaries of the norms (Rogers, 2003).

Similarities among individual adoption behaviors have enabled the formation of five classifications of adopters. According to Rogers (2003) these classifications are as follows: innovators who actively seek out new innovations and information, early adopters who are judicious decision makers and leaders, the early majority who are deliberative but not commonly leaders with innovation, the late majority or skeptics, and lastly the suspicious laggards. Understanding the common characteristics and patterns of each categorical grouping enables the DNP student to incorporate educational components specific toward the needs of each group for the purpose of decision-making facilitation.

**Application of the EBP model to the EBP project.** In regards to the application of the EBP model to the EBP project, this particular Patient-Centered Medical Home has a reputation for implementing innovative ideas and being at the leading edge in provision of healthcare and display of commitment to patients. Change is inevitable and ongoing. The organizational culture is conducive to changes that promote evidence-based practice, empower patients through knowledge and awareness, and increase agency quality indicator scores. Small practice improvements based on evidence are beneficial in providing the groundwork for nurse practitioners and physicians to build upon during individual patient examinations. Healthcare providers at the Community Health Center were informed of the project details, role responsibilities in performing Pap smears, and the provision of continued promotion of cervical cancer awareness.

Throughout the community educational sessions, consideration of the different characteristics of adopters and corresponding willingness to accept new ideas or innovations were taken into account. Innovators are the participants most accepting of concepts that are new or unfamiliar, those who receive information from the health educator eagerly, and are willing to participate in cervical cancer screening without hesitation. Innovators and early

adopters could be successfully integrated to further mobilize the decision-making process for others. Early adopters tend to have strong opinions and are vocal in furthering the innovative concepts to others among the group as well as playing an important role in promoting the credibility and value of the innovation. Creating a rich synergy within the group allows for expansion of ideas and depth of experiences. Early majority members are less risk tolerant and prefer to observe the experience of others. Late majority members often resist adoption of the innovation until it is an integrated part of the community and may likely resist efforts to change personal health screening practices. Through mobilization of opinion leaders and demonstration of individual applicability combined with potential consequences of not following recommendations for screening, the goal is for early and late majority participants to commit to cervical cancer screening and health promotion activities.

Based on these concepts, incorporation of a question and answer discussion period after the presentation allows participants to exchange views regarding cervical cancer, perceived susceptibility, and screening experiences, thereby facilitating applicability and acceptance among group members. Furthermore, participants were encouraged to share newly acquired information regarding cervical cancer screening with friends and relatives who did not participate in the educational session. This activity promotes informal education and is an invaluable source of diffusion of information among sub-communities and networks within the region. Finally, laggards require extended time and resources to accept change and may even resist change at all. This subgroup may be hesitant to participate in cervical cancer screenings despite multiple educational sessions. Incremental increases in knowledge, understanding, and empowerment will facilitate progression along the trajectory toward change. Participants were invited to return to further educational sessions for reinforcement of cervical cancer concepts and were encouraged to invite others to attend and glean from the educational opportunity. Brochures were provided for reinforcement of information that was discussed as well as for

distribution within individual networking groups. Open access to healthcare resources was stressed.

**Strengths and limitations of the EBP model for the EBP project.** Strengths inherent in the DOI model as applied to the EBP project include the clarity and identifiability of innovator characteristics and motivators for change within each innovator category. A weakness of the DOI model as applied to the EBP project is the time frame needed for change. In relation to the majority of the population, specifically the 68% of the population that fall into the early and late majority categories, this population will likely adapt healthy behaviors but the laggards will likely not alter previous behaviors prior to the conclusion of the study. Other weaknesses of the DOI model are the inability to predict the meaning that the innovation will have for participants and the inability to address the complexities associated with behavioral change.

It is anticipated that this educational project could help current initiatives to increase Pap smear compliance rates as well as long-term initiatives to expand and grow the number of people in the community served at the Patient-Centered Medical Home. Sustainability of this educational project is influenced by community response and data outcomes. Measures to promote sustainability include the provision of presentation resources, training, and mentoring in an effort to create a seamless transition between different presenters. This presentation and project could be duplicated at satellite Community Health Center sites in Northwest Indiana. Allocation of human and financial resources would be required to sustain educational offerings.

### **Literature Search**

A literature search to find relevant evidence of best practice regarding interventions to improve cervical cancer screening adherence was performed. The EBP project focuses on these interventions.

**Sources examined for relevant evidence.** Search engines utilized for relevant evidence included the following: Cochrane, JBI, CINAHL, National Guideline Clearinghouse, MEDLINE, UPFTS, and the Virginia Henderson International Nursing e-Repository. Keywords

utilized in the search included combinations of the following: health promotion, disease prevention, cervical cancer, screening, and behavior. Truncation was implemented to enable the inclusion of associated words with the same key root word.

**Inclusion and exclusion criteria.** Inclusion criteria were articles in English, dated 2007-2014, with evidence-based data. Academic, peer-reviewed journal and electronic research articles, clinical guidelines, and national guideline recommendations were included.

Exclusion criteria were languages other than English, dated prior to 2007, poor quality of evidence, articles not specific to cervical cancer screening, or articles with a focus on specific ethnic subgroups not present in Northern Indiana. Articles focused on cervical cancer screening among rural Appalachian, Hmong, American Indian, and Alaskan Native women were not included due to the regional lack of applicability for the DNP project. However, articles focused on cervical cancer screening in Latinas or African American women were included due to high local populations of these ethnic groups in Northern Indiana. Citation chasing and hand search were conducted from available literature. Search result abstracts were reviewed for project relevance; applicable full-text reviews were then further examined for suitability for inclusion.

A Cochrane search using keywords cervical cancer and screening with publication dates in the last 5 years yielded a total of 13 results from 8584 records: 1 review was specific toward cervical screening and was considered relevant. All of the included articles were randomized control trials (RCTs). Johanna Briggs Institute EBP Database yielded 124 initial hits utilizing the key word, cervical as well as a subject search. After duplication, 1 evidence summary regarding the Papanicolaou (Pap) Smear and Cervical Screening remained for inclusion. Excluded articles pertained to cervical spinal concepts or concerns post-cervical cancer diagnosis. CINAHL was searched utilizing keywords of cervical cancer screening and the inclusion criteria yielded 20 hits. After eliminating duplicates and applying inclusion and exclusion criteria, three articles reflective of the greatest relevance were critiqued for inclusion. The National Guideline Clearinghouse (NGC) was searched for an evidence-based practice guideline synthesizing

cervical cancer screening recommendations. One guideline was found to be relevant for this project. The Agency for Healthcare Research & Quality (AHRQ) provided one clinical practice guideline in regards to cervical cancer screening. A search in MEDLINE utilizing keywords of cervical cancer and screening yielded 8,465 initial hits, with the addition of behavior and the inclusion criteria this was reduced to 231 hits. After eliminating duplicates and reviewing full-text reviews, 3 articles met the criteria for inclusion. The U.S. Preventative Services Task Force provided one recommendation summary for cervical screening with supporting evidence as well as one systematic review for using cytology for screening; both of these met the criteria for inclusion. The Virginia Henderson International Nursing e-Repository was searched using key terms cervical cancer and screening yielded 101 results; none were chosen for inclusion. Exclusion criteria included those articles that were specific to populations outside of the United States. Seven articles per hand search were reviewed, one of which was found to be relevant for inclusion. This evaluated effectiveness of an educational program in regards to behavior change for Pap screening. Of the 24 articles given a full review, 13 were used in the final project. Table 2.1 summarizes the results of the literature search.

**Expert opinions.** Expert opinions were integrated into the data and evidence in construction of the EBP recommendations.

Table 2.1 Summary of evidence

Database	Total results	Initial review	Duplicates	Full text review	Included in analysis
Cochrane	12	2	0	2	2
JBI	124	3	2	3	1
CINAHL	20	9	1	5	3
National Guideline Clearinghouse	1	1	0	1	1
MEDLINE	231	33	4	6	3
UPFTS	2	2	0	2	2
Virginia Henderson International Nursing e-Repository	101	7	0	2	0
Hand search	7	7	0	3	1
Total	498	64	7	24	13

### Levels of Evidence

Thirteen studies met the criteria for best evidence on this topic. Each study was appraised using one of two John Hopkins Nursing Evidence-Based Practice (JHNEBP) appraisal tools. These tools were utilized based on the direct and concise applicability to various types of research and non-research evidence. All articles in this review were evaluated via the JHNEBP appraisal tools and received strength of evidence as well as quality rating scores. The JHNEBP evidence appraisal tool stratifies evidence into three different levels. Level one constitutes the strongest level of evidence and includes randomized controlled trials or meta-analysis of randomized control trials. Level two is comprised of quasi-experimental studies whereby an independent variable is manipulated. The third level among research evidence appraised contains non-experimental and qualitative studies as well as meta-synthesis of qualitative research.

Each scientific evidence is also assigned a quality rating of A, B, or C. High quality evidence, or an A rating, reflects consistent and definitive results, adequate sample size, and extensive review of literature reflecting scientific evidence. Good quality evidence, or a B rating, reflects conclusions that are fairly definitive, a sample size that is adequate, and a literature review that partially reflects scientific evidence. Low quality, or a C rating, reflects inconclusive results, inadequate sample size, and flawed or poor evidence.

The JHNEBP non-research evidence appraisal tool stratifies evidence into two different levels. Level four is comprised of systematic reviews, which compile and summarize research studies pertaining to a specific topic. Level four also contains clinical practice guidelines that synthesize data from research, clinical practice, and patient preference to develop decision-making guides for use in specific clinical settings. Level five is comprised of organizational studies for quality improvement or financial analysis. Level five also includes expert opinions or literature review and case studies that are non-research based.

Each summative review is also assigned a quality rating of A, B, or C. High quality evidence, or an A rating, reflects reproducible searches with consistent and definitive results and an evaluation of the quality of included studies. Good quality evidence, or a B rating, reflects searches that are thorough and demonstrate consistent results and an evaluation of weaknesses and strengths of the included studies. Low quality, or a C rating, reflects poor searches with inconsistent conclusions.

The hierarchy of evidence and corresponding levels for articles included in this project are presented in Table 2.2.

Table 2.2 Hierarchy of Evidence

Author(s), Publication, Level of Evidence	Purpose	Population, Setting	Design, Intervention(s) Comparisons	Outcome and Effect Measures
<p><b>Ackerson &amp; Preston (2009)</b></p> <p>A decision theory perspective on why women do or do not decide to have cancer screening: systematic review</p> <p><i>Journal Of Advanced Nursing</i></p> <p>Level 4 Quality A</p>	<p>A report of a review in which decision theory from economics and psychology was applied to understand why some women with access to care do not seek cancer screening</p>	<p>19 research papers between January 1994- November 2008</p>	<p>Systematic review to create a qualitative synthesis. Content analysis was used to discover recurring words and themes (emotions, Prospect Theory, optimism bias, and framing)</p>	<p>All women have fears: fear of medical exams, providers, tests, and procedures leads to non-adherence. Fear of cervical cancer leads to adherence when providers are trusted, knowledge is sought, risks are understood and routine care is status quo.</p>
<p><b>Corcoran &amp; Crowley (2014)</b></p> <p>Latinas' attitudes about cervical cancer prevention: a meta-synthesis</p> <p><i>Journal of Cultural Diversity</i></p> <p>Level 3 Quality A</p>	<p>To obtain information about Latinas' knowledge, attitudes, and perceptions regarding cervical cancer and its screening</p>	<p>9 qualitative studies published any date until Spring 2009 comprising 668 participants from 16-85 years old and typically of low socio-economic status</p>	<p>Meta-synthesis to systematically review primary qualitative studies conducted on a similar topic using qualitative methods</p>	<p>Culturally appropriate education and improved access to health care were important themes for improving screening rates</p>

<p><b>Coughlin &amp; King (2010)</b></p> <p>Breast and cervical cancer screening among women in metropolitan areas of the United States by county-level commuting time to work and use of public transportation</p> <p><i>BMC Public Health</i></p> <p>Level 3 Quality B</p>	<p>To examine the relationship between ecologic measures of commuting time and use of public transportation in relation to breast and cervical cancer screening among women in U.W. metropolitan areas who participated in the BRFSS surveys</p>	<p>76,453 women aged <math>\geq 40</math> years for mammogram, <math>\geq 18</math> years for Pap testing-no hysterectomy (n=80,959) who responded to a state-based system of telephone health surveys in 50 states. Data from 2004-2006 were included.</p>	<p>Multivariate contextual analysis of telephone health surveys</p>	<p>Women in counties with at least 4% of residents using public transportation were likely to have had Pap test compared with women where <math>&lt; 4\%</math> used public transportation. Women in counties where <math>&lt; 2\%</math> had no access to car were more likely to have had Pap than areas where <math>\geq 3\%</math> had no access to car. Transportation may play a part in screening.</p>
<p><b>Duffett-Leger et al. (2008)</b></p> <p>Cervical cancer screening practices among university women</p> <p><i>Journal Of Obstetric, Gynecologic &amp; Neonatal Nursing</i></p> <p>Level 3 Quality A</p>	<p>To assess predictors of young women's intentions to be screened for cervical cancer</p>	<p>904 young women (mean age = 20.7 years; SD = 1.77) participated in an online cervical cancer screening survey</p>	<p>Descriptive, correlational, cross-sectional web-based study</p>	<p>Perceptions of peer values of screening and behavioral control were significantly related to screening intentions. Social norms and perceived barriers are important considerations. Education to begin prior to college. Theory of Planned Behavior (TPB) is useful in predicting intentions.</p>

<p><b>Everett et al. (2014)</b></p> <p>Interventions targeted at women to encourage the uptake of cervical screening</p> <p><i>Cochrane Database of Systematic Reviews</i></p> <p>Level 4 Quality A</p>	<p>To assess the effectiveness of interventions aimed at women, to increase the uptake of cervical cancer screening</p>	<p>38 RCTs within Cochrane Gynaecological Cancer Group Trials Register, CENTRAL, MEDLINE, EMBASE, and LILACS databases up to March 2009</p>	<p>Intervention Review</p>	<p>Invitations and educational interventions appear to be most effective in increasing uptake, further research needed for relative effectiveness of specific educational interventions</p>
<p><b>Fong, E. (2013)</b></p> <p>Papanicolaou (Pap) Smear: Cervical Screening</p> <p><i>JBI Database</i></p> <p>Level 4 Quality B</p>	<p>To synthesize the evidence regarding cervical screening with the Papanicolaou (Pap) Smear test</p>	<p>3 guidelines, an RCT, evaluation of guidelines based on review of 33 studies, and a systematic review of 6 RCTs</p>	<p>Systematic review</p>	<p>Pap smears are important to detect abnormalities of the cervix, without early detection it is too late to be cured. High-risk ages for screening are between 25-49 years old.</p>
<p><b>Gonzalez et al. (2012)</b></p> <p>Determinants of breast, cervical and colorectal cancer screening adherence in Mexican-American women</p> <p><i>Journal Of Community Health: The Publication For Health Promotion And Disease Prevention</i></p> <p>Level 3 Quality B</p>	<p>To examine current adherence to breast, cervical, and colorectal screening (self-reported) and to examine associations of screening behaviors with theoretically guided predictors of cancer screening adherence</p>	<p>319 Mexican – American women from a range of socioeconomic backgrounds, sample was randomly selected from the South Bay area of San Diego community.</p>	<p>Cross-sectional study</p>	<p>A direct correlation between cervical cancer screening adherence and other screenings. 86% of women were adherent to Pap screening, 82% with mammograms, and 43% with colorectal screening. Behavior Model for Vulnerable Population framework</p>

<p><b>Han et al. (2011)</b></p> <p>Interventions that increase use of Pap tests among ethnic minority women: a meta-analysis</p> <p><i>Psycho-Oncology</i></p> <p>Level 1 Quality A</p>	<p>To examine the overall effectiveness of interventions in increasing Pap test use by ethnic minority women in the U.S.</p>	<p>18 randomized and non-randomized controlled trials published between 1984-2009. Study outcome compared the difference in proportion of Pap tests between the treatment and comparison groups</p>	<p>Meta-analysis</p>	<p>Access enhancement yielded the largest effect followed by community education and individual counseling</p>
<p><b>Hughes et al. (2010)</b></p> <p>Health Behaviors of Employed and Insured Adults in the United States</p> <p><i>American Journal Of Health Promotion</i></p> <p>Level 3 Quality A</p>	<p>To examine the prevalence of health behaviors, including clinical preventive services and lifestyle risk behaviors, among insured workers and to determine whether disparities in health behaviors based on demographic factors exist among this group.</p>	<p>Representative sample of non-institutionalized employed and insured adults in the U.S. aged 18-64 years based on 2004-2005 Behavioral Risk Factor Surveillance System data, (N=139,738 in 2004 and 159,755 in 2005)</p>	<p>Cross-sectional analysis</p>	<p>Multivariate analysis determined that lower income, lower education, and cost are a barrier to health care and no health care provider was associated with significantly decreased preventive service utilization (<math>p &lt; .01</math>). Lower education and no health care provider were associated with lifestyle-related risks.</p>

<p><b>Kessler, T. A. (2012)</b></p> <p>Increasing Mammography and Cervical Cancer Knowledge and Screening Behaviors With an Educational Program</p> <p><i>Oncology Nursing Forum</i></p> <p>Level 2 Quality A</p>	<p>To evaluate effectiveness of an educational program based on self-efficacy to increase knowledge and create behavioral change for mammography and pap screenings</p>	<p>56 women in an urban county in northern Indiana who attended one of 4 educational programs and 47 women who responded 15 months later</p>	<p>Pretest and post-test, prospective</p>	<p>Knowledge of risk and screening guidelines increased significantly immediately following the educational program and did not decrease 15 months later. Participants reported increased Pap and breast screening rates at 15 months</p>
<p><b>Saad-Harfouche et al. (2011)</b></p> <p>Training lay health advisors and cancer survivors to promote breast and cervical cancer screening in Latinas</p> <p><i>Journal Of Community Health: The Publication For Health Promotion And Disease Prevention</i></p> <p>Level 2 Quality B</p>	<p>To determine the effectiveness of a teaching intervention on knowledge of breast health and cervical cancer knowledge among lay health advisors</p>	<p>74 volunteers from AK, NY City, and Buffalo, NY consisting of cancer survivors role models and Latino Lay health advisors (LHA)s- (men and women over 18 years old) who were recruited through word of mouth and through flyers posted at local Latino community sites as well as direct invitation after an educational presentation</p>	<p>Retrospective Pre- and Post-test</p>	<p>Lay health advisors can be successfully trained to promote community-based health education programs as an effective way to reach underserved communities to increase breast and cervical cancer screening for diverse Latinas. Pre/post testing indicated a significant increase in breast and cervical cancer knowledge after training</p>

<p><b>Saraiya et al. (2013)</b></p> <p>Cervical Cancer Screening Among Women Aged 18-30 Years -- United States, 2000-2010</p> <p><i>MMWR: Morbidity &amp; Mortality Weekly Report</i></p> <p>Level 3 Quality A</p>	<p>To assess trends in Pap testing before new guidelines were introduced</p>	<p>125,297 women 18-30 years old during 2000-2010 who participated in the Behavioral Risk Factor Surveillance System (BRFSS)</p>	<p>Survey analysis, secondary analysis</p>	<p>Trends identify that the rate of women 18-21 years never screened increased from 26.3% to 47.5% between 2000-2010; age 22-30 women with Paps within 12 months decreased from 78.1 to 67%; and those 22-30 never screened increased from 6.6-9.0%</p>
<p><b>Stacey et al. (2014)</b></p> <p>Decision aids for people facing health treatment or screening decisions</p> <p><i>Cochrane Database of Systematic Reviews</i></p> <p>Level 4 Quality A</p>	<p>To assess the effects of decision aids for people facing treatment of screening decisions</p>	<p>33 new RCTs updating of a previous analysis, for a total of 115 studies and 34,444 participants</p>	<p>Intervention Review update</p>	<p>Decision aides improve patient knowledge and understanding of options, bring clarity from a personal perspective, increase accuracy of expectations regarding harms and benefits, increase participation, improve patient/practitioner communication, decrease decisional conflict, and do not negatively impact health outcomes.</p>

### **Evidence Appraisal**

The search strategy for this project resulted in 498 initial articles. Seven of the articles were duplicates. Inclusion and exclusion criteria as well as full text review of the remaining articles resulted in 13 articles that were appraised for inclusion in the study. Table 2.2 provides a summary of the author(s), publication, level of evidence and quality rating, purpose, population/setting, design/intervention/comparison, and outcome and effect measures. A summary of the appraisals is provided.

Ackerson and Preston (2009) applied a decision theory perspective in studying why women with access to health care either do or do not participate in cancer screening. Research papers published between 1994 and 2008 were included in the systematic review. Databases included MEDLINE, PsychINFO and the Cumulative Index to Nursing and Allied Health Literature. Reasons for screening or lack of screening were categorized into four main principles including: emotions, optimism bias, Prospect Theory, and framing. Findings indicate that emotions can produce either a fear to, or a fear not to screen. Healthcare providers play an important role in anticipating needs and providing education in an active manner.

A meta-synthesis by Corcoran and Crowley (2014) organized results of 9 qualitative studies to build knowledge of the views, perceptions, and attitudes of Latinas in regards to cervical cancer. False beliefs regarding cervical cancer etiology include rough sex, sex too near childbirth, having multiple children, use of vaginal contraceptives, and abortion. Screening as a means of prevention was largely understood but was hampered by lack of knowledge regarding the asymptomatic phase of cervical cancer. Barriers included fear of pain and the fatalism of cancer, along with the Pap representing indecorous behavior and awkwardness with the use of interpreters. Support for cervical screening arose from trust in providers, encouragement from a spouse, low-cost screening rates, and Spanish pamphlets. Cultural implications are an important consideration in promotion of Pap screenings.

A multivariate contextual analysis of telephone health surveys by Coughlin and King (2010) considered the impact of transportation issues affecting breast and cervical cancer screening behaviors. In a U.S. city with public transportation, analysis based on self-reported county of residence revealed that women were more likely to have a Pap smear in metropolitan areas where <2% of residents had cars as compared with areas in which >3% had cars. Additionally, areas in which >4% of residents used public transportation were more likely to have had Pap screening than areas where <4% used public transportation. Access to transportation can be a factor in screening.

In the descriptive, correlational, cross-sectional study by Duffett-Leger, Letourneau, and Croll (2008), over half of the 904 subjects were sexually active by the age of 17 years. A statistically significant relationship existed between the age of learning about Pap screening and the intention to have a Pap test. Thus, providing early accurate information to young sexually active women may increase Pap screening behaviors. Knowledge, attitudes, beliefs, and practices are important components in considering interventions. Most of the young women reported positive attitudes regarding Pap testing (mean attitude score of 39.09, SD = 5.61, range = 11-55). Knowledge scores revealed moderate knowledge regarding the Pap test but poor knowledge regarding the significance of HPV. Behaviors of family and close friends were very influential.

Everett et al. (2014) compiled a review based on a search of Cochrane Gynaecological Cancer Group Trials Register, CENTRAL, MEDLINE, EMBASE, and LILACS databases through March 2009 for RCTs of interventional methods instituted to increase cervical cancer screening rates. The search strategy was specific and reproducible with pertinent studies assessed by two review authors independently. Inclusion and exclusion criteria of studies were specified with targeted interventions focusing on invitations, reminders, education, message framing, counseling, risk factor assessment, procedures, and economic incentives. Detailed characteristics of the included studies were presented. Methodological limitations were

disclosed and graphically displayed. Evidence supported the use of personal written invitations as well as telephone invitations to increase cervical screenings. Conclusions were based on the evidence presented and are applicable to the DNP project based on the review objective to identify effective interventions for the promotion of cervical cancer screening. One weakness of the review is the heterogeneity of the studies, which limited pooling of statistical data, however, when possible, meta-analysis was performed. Additionally, studies from developing countries were included and may be less relevant to the DNP project performed in a developed country.

A systematic review by Fong (2013) summarized evidence regarding the Papanicolaou smear test for cervical cancer screening. The Pap smear was determined to be crucial in detecting abnormalities of the cervix and reducing mortality, as well as being an integral part in routine healthcare. When resources or access are limited, women between the ages of 35-45 should be targeted for screening. Education and sensitive communication were noted to increase screening compliance.

A study by Gonzalez et al. (2011) identified influential factors affecting cancer screening adherence among underserved groups, particularly, the Mexican-American women. The Behavioral Model for Vulnerable Populations was utilized as a theoretical framework. Unfamiliarity with the screening process, fear, and embarrassment were barriers to screening adherence. The study also demonstrated a direct correlation between cervical cancer screening adherence and participation in other preventative screenings. These findings were consistent with other findings that support adherence to cervical cancer screening with participation in all preventative services, regular healthcare visits, and having insurance coverage.

Han et al. (2010) conducted a meta-analysis of 18 randomized and non-randomized controlled trials to examine methods of intervention to promote cervical cancer screening among ethnic minorities. The study outcome compared results in the proportion of Pap screens of treatment versus comparison groups. As an intervention, access enhancement had the greatest effect followed by community education and individual counseling. Cultural matching of material

as well as the implementation of multiple strategies as compared to one single strategy was beneficial.

The cross-sectional analysis by Hughes, Hannon, Harris, and Patrick (2010) identified significant disparities associated with socioeconomic status and preventative services. Households earning less than \$15,000 per year were significantly associated with not using preventative services ( $p < .01$ ). In addition, risky lifestyle behaviors were related to not having a healthcare provider and having a lower education ( $p < .01$ ). These findings were consistent with other studies reflecting disparities of behaviors based on demographic factors.

A study by Kessler (2012) was conducted in northern Indiana and evaluated the role of self-efficacy on breast and cervical cancer screening behaviors. This research met the criteria for level 2 strength of evidence with a quality rating of A. The prospective study employed a pre- and post-test design to identify if a one-hour self-efficacy-based educational program had an effect on knowledge regarding risk and guidelines for screening. A convenience sample ( $n = 56$ ) was used. The *Breast and Cervical Health (BACH)* survey scores were analyzed using a t test. Findings demonstrated statistically significant ( $p < 0.001$ ) increases in self-efficacy immediately as well as 15 months later ( $p = 0.57$ ). Only 38% of women knew the frequency of cervical cancer screening recommendations and only 57% understood the role of the Pap test in detecting precancerous cervical changes. Use of a longitudinal survey decreased the bias of differing responders other than the original participants. Forty-seven women participated in the 15-month survey with no statistically significant change in BACH test scores as compared to the immediate post-intervention scores. Corresponding self-reported increases in screening behaviors for both mammography (100%) and Pap test (84%) 15 months after the educational intervention were also identified. These results were in contrast to one previous research that demonstrated a decrease in knowledge after 12 months. However, the setting and focus of the framework may contribute to the differences in results. Based on the findings, the author supports strategies that enhance knowledge and clarify misconceptions about screening

practices. Vicarious experiences as well as verbal persuasion were integral components in the educational program and may have had a compounding effect on the results and should be researched further. The study identified the importance of the healthcare provider recommendation in contributing to intention to screen (Kessler, 2012).

Saad-Harfouche et al. (2011) researched the effectiveness of training lay health advisors as outreach educators and advocates as means of reaching underserved Latinas. This research built upon previous research involving African American cancer survivors as advocates within the community. Latino males were also included in the training as a means of supporting the cultural family dynamics with regards to decision-making. Comparison of pre-post-test scores of knowledge surveys demonstrated significant increases in LHA scores on the post-test ( $t[32] = 4.69, p = /< 0.001$ ). Cancer survivors as credible messengers play an important role in sharing their story as well as sustaining the program.

In assessing trends of behavior regarding Pap smears, the Centers for Disease Control and Prevention (CDC) analyzed data from the Behavioral Risk factor Surveillance System for women 18-30 years old. While findings supported the new guidelines to decrease the frequency of cervical cancer screening and to increase the age for the initial Pap smear, an unfavorable result indicated a decrease from 6.6-9.0% in the proportion of women ages 22-30 years who ever reported having a Pap smear. Public health interventions are needed to focus on women in these high-risk age categories.

Stacy et al. (2014) updated a review of published RCTs to determine the impact of decision aids in assisting people with screening decisions. The search included MEDLINE, EMBASE, CENTRAL, PsychINFO, as well as grey literature from 2009 through June 2012 and built upon a previous analysis of RCTs from earlier years. The update added 33 studies for a total of 115 included studies and 34,444 participants. The review was determined to be level 4 evidence with a quality rating of A. Decision aids are used to facilitate the decision-making process through clarification of options and outcomes. The study evaluated outcomes with the

use of decision aids versus standard of care. Relative risk (RR) and mean difference (MD) were used to pool results. High bias risk was reported for 8 of the 115 studies; however, a post-hoc analysis excluding studies with a high or unclear bias risk produced results of similar findings. Moreover, comparison of fixed-effect versus random-effect models produced similar findings. In 42 studies involving 10,842 participants, the mean knowledge score was 13.34 higher in the group using decision aids compared with the control group. Evaluation of risk perception in 5868 participants of 19 studies indicated that the participants who used the decision aid were 1.82 times as likely as those who did not use the decision aid to have an accurate perception of risk and were 1.51 times as likely to have congruence between their decision and personal values. While the review supports positive patient-practitioner relationships through the use of decision aids, controversy regarding potentially negative influences is also identified. One limitation of the systematic review was the diversity of clinical studies thereby limiting applicability to specific conditions (Stacey et al., 2014).

Another level 4 study utilized in this review was the U.S. Preventative Services Task Force (USPSTF) recommendation for cervical cancer screening. The National Guideline Clearinghouse met the criteria for a quality rating of A. The purpose of this guideline was to provide recommendations based on effectiveness of cervical cancer screening interventions prior to individuals being symptomatic. Recommendations apply to women with a cervix who are 21-65 years old. Women previously diagnosed with precancerous lesions, previous exposure to diethylstilbestrol (DES) in utero, or those in an immunocompromised state are excluded. Potential benefit and harm secondary to the preventative service was taken into consideration. Definitions for the USPSTF grading scale were provided with suggestions to provide services for grades A and B and to discourage use of the services for grade D. The recommendation statement includes two grade A recommendations and 4 grade D recommendations. Additionally, net benefit of services was evaluated based on levels of certainty and likelihood of replication of results based on future research. One limitation of the guideline acknowledged the

partial role of evidence and the complimentary roles of the clinician and individual in the clinical decision-making process and implementation.

### **Construct Evidence Based Practice**

After critical appraisal and analysis of the included literature regarding interventions that increase adherence to cervical cancer screening per guideline recommendations, the foundation of the EBP project was established.

**Synthesis of Literature.** The relevant literature supports (a) education and counseling by healthcare providers, (b) enhanced access to screenings, and (c) personal invitations as interventions to increase cervical cancer screening adherence.

**Education.** A recurring theme within the literature focuses on empowerment of the individual through acquisition of knowledge (Ackerson & Preston, 2009; Corcoran & Crowley, 2014; Fong, 2013; Gonzalez et al., 2011; Kessler, 2012). Although knowledge alone is not sufficient for change, knowledge is a vital component in the decision-making process. Pertinent educational themes include: cervical cancer, screening recommendations, the purpose of the Pap smear, and the implications of late cervical cancer diagnosis (Fong, 2013). Behaviors of family, partner, and friends were found to be influential in cervical screening behaviors. Extending the education to wider circles of influence supports individual cervical screening through removal of misinformation or misconceptions that hinder screening behaviors (Ackerson & Preston, 2009; Corcoran & Crowley, 2014; Duffett-Leger, Letourneau, & Croll, 2008). Integrating cultural sensitivity and awareness of cultural norms through provision of pamphlets written in Spanish or use of Spanish speaking translators contributes to effective education within sub-populations (Corcoran & Crowley, 2014; Han et al., 2010; Saad-Harfouche et al., 2011). Integrating multiple educational strategies was found to be more effective than any one single strategy (Han et al., 2010). Incorporating personal messages from cancer survivors lends to the credibility of the educational message (Saad-Harfouche et al., 2011).

**Enhanced access to screenings.** Possessing knowledge of cervical cancer and the Pap smear process, individuals begin to evaluate options to follow through on recommended screenings. Enhanced access to screenings may include limiting financial costs or transportation barriers (Corcoran & Crowley, 2014; Coughlin & King, 2010; Fong, 2013; Gonzalez et al., 2011; Han et al., 2010; Hughes, Hannon, Harris, & Patrick (2010).

**Personal invitations.** Personal invitations, whether in written or verbal form, were shown to increase cervical screening rates (Everett et al., 2014). Recommendations by the healthcare provider were important factors that influenced screening intention (Kessler, 2012). The effectiveness of written invitations is hampered in transient populations. Limited telephone access or pre-paid cell phone minutes may alter the effectiveness of this intervention.

**Limitations.** Studies were limited to those reflective of the population in Northwest Indiana and may not be generalizable to all demographic regions. One barrier in reaching Healthy People 2020 cervical cancer screening targets lies in the accountability of the individual to access available resources; outcomes are influenced by individual input. Social marketing campaigns directed toward community wide health promotion may facilitate changes in health behavior.

**Best practice recommendation.** Therefore, the best practice model recommendation is the provision of a multi-modal education session to individuals, partners, family, and friends to provide accurate information and eliminate previous misconceptions. Healthcare providers should anticipate knowledge gaps and actively educate within the clinical practice as well as within the community. Educational themes include: cervical cancer, screening recommendations, the purpose of the Pap smear, and the implications of late cervical cancer diagnosis. Research also supports enhanced access to cervical cancer screenings that are economically feasible, transportation accessible, and culturally congruent. Personal invitations were also shown to increase cervical screening rates. Each individual, empowered with

knowledge and enabled with access, has the ability to change behavior and take action to decrease the risk of late diagnosis of cervical cancer and unnecessary mortality.

**Answering the clinical question.** The best practice recommendation answered the clinical question: *Among females ages 21-65 years, what is the effect of a multi-modal educational presentation on cervical cancer knowledge, screening intention, and clinic Pap smear rates over a 3-month period as compared with the previous standard of care?*

## **CHAPTER 3**

### **IMPLEMENTATION OF PRACTICE CHANGE**

This chapter reviews the details of implementation for the EBP project. Participants and setting, outcomes, intervention, planning, recruitment of participants, data, and protection of human subjects will be discussed.

#### **Participants and setting**

The purpose of the EBP project was to increase community awareness of cervical cancer and to improve adherence to cervical cancer screening per recommendations. Previous misconceptions and health literacy barriers regarding knowledge and appropriateness of cervical cancer screening were reduced through the provision of accurate information. A multi-modal educational presentation developed by the DNP student was open to individuals, partners, family, and friends within the community. The presentation included a power point covering cervical cancer statistics, cervical cancer development, risk factors, the cervical screening process, and UPSTF screening recommendations. Pap smear instruments were displayed, discussed, and passed among the participants for hands-on assessment. A legacy video of a woman who succumbed to cervical cancer was incorporated into the presentation. Community Health Center staff members were available to assist with scheduling a Pap appointment throughout the presentation.

Participants in the educational project were members of the community invited to attend the educational presentation via verbal invitation by the DNP student or staff members at the site or through informal communication via friends, relatives, or acquaintances. Additionally, poster information and brochures were displayed in the clinic waiting area and in public areas throughout the community. Visual prompts were placed in the clinic examination areas. Current patients of the clinic who were either due or past due for a pap smear according to recommended guidelines were given a telephone invitation regarding the educational

opportunity. Educational presentations were held monthly during October, November, and December in the Community Room of the Community Health Center clinic site, a room normally used for community activities and education. Times for the educational presentations were 10:30am in October, 4:00pm in November, and 8am in December, for a total of 3 educational presentations. The time frame for each educational presentation was 30 minutes with additional availability of the presenter/researcher to facilitate and answer group or individual questions for an additional 30 minutes. Current cervical cancer screening recommendations include women ages 21-65; therefore, all research participants were adults female in the corresponding age range. Children were allowed to be in attendance at the educational session but they were not included in the EBP research project. All participation was voluntary and fully informed consent was obtained prior to inclusion in the DNP project.

### **Outcomes**

Participants provided demographic information and completed a coded pre- and post-questionnaire. Post-questionnaire responses rated perceived knowledge gained through the educational presentation and individual intent to proceed with cervical cancer screening during the subsequent 12 months. Statistical analysis of pre- and post- intervention data was performed. Data regarding rates of cervical cancer screening compliance for patients of the Community Health Center prior to and after the educational presentations was also compared.

Expected outcomes in regards to the educational presentation were the following: increased knowledge of cervical cancer and means of prevention (specifically, cervical cancer screening recommendations as evidenced by post-presentation self evaluation), intention among participants to follow through with pap screening as indicated on the post-presentation evaluation, and improvement in the PCMH quality indicator rates for cervical cancer adherence among current patients of the clinical site.

**Intervention**

An educational presentation led by the DNP student was held monthly in the community room at the clinic site during October, November, and December. Additional time each month was spent promoting the educational presentations via one on one conversations, personal invitation via phone calls, and distribution of promotional material throughout the community. Teaching strategies included 3 face-to-face educational presentations with participants from the community who attended on a voluntary basis. The multi-modal educational presentations included an oral and power point presentation, a display of Pap smear instruments for hands-on teaching, a video of a victim of cervical cancer, and a question and answer discussion period. Access to scheduling staff was available to set up a cervical screening appointment at anytime during or after the educational presentation. Spanish translation through an in-person translator was available throughout and after the presentation. Access to the DNP student via email or phone was provided for additional expert consultation as needed. An onsite nurse practitioner served as an additional point of contact.

**Planning**

Participants were offered free V-Line bus tokens to cover the expense of travel to and from the clinical site, thereby decreasing potential financial barriers associated with attending the educational presentation.

Prior to the DNP project, current practice regarding cervical cancer screening included computer-generated reminders attached to patient charts. Providers were encouraged to address these reminders during patient visits and to encourage patients to schedule a follow up appointment for a Pap smear.

**Recruiting participants**

At the time of the educational session, informed consent was obtained from all voluntary participants from whom data was drawn.

### **Data management**

**Measures and their reliability and validity.** Pre- and post-presentation questionnaires were used to measure perceived growth in knowledge and intent for cervical cancer screening during the following 12 months.

**Collection.** The DNP student collected questionnaire forms upon completion of the educational presentations.

**Management and analysis.** Data included demographic information obtained for the purpose of analysis. This data was kept confidential. Each participant was assigned a code number that corresponded to a random code number written on the pre- and post questionnaires. Participant codes were secured in a locked location accessible only to the DNP student.

Analysis of the impact of the educational sessions on perceived knowledge and understanding of cervical cancer and associated intent to participate in screening was based upon the analysis of pre- and post-presentation questionnaires written at an 8<sup>th</sup> grade level or lower. The weakness of this methodology lies in the reliability of self-reporting. In assessing behavior change, the complexity of factors associated with decision-making is also a consideration. No one single strategy will be effective for all populations across all geographical areas. To this extent, a multi-modal strategy was implemented so as to increase the effectiveness of the educational intervention. The SPSS statistical package was used to describe demographic characteristics of participants.

### **Protection of human subjects**

Potential risks and benefits of participation were explained to participants in both written and verbal form. All personal data was kept secure in a locked location. Responses were held confidential at all times. Informed consent was obtained from all participants prior to inclusion in the project. Participants attended the educational sessions voluntarily and were informed of the opportunity to withdraw from participation at any time without consequences or penalties,

including current or future access to care within the clinical site. Participants were limited to female adults aged 21-65 years in correlation with current cervical cancer screening recommendations. Female attendees outside of the 21-65 year old screening age range as well as males or children who play an integral part of the support system of the participant were invited to attend the educational sessions but were not included in data analysis.

Approval for the project was obtained through the Valparaiso University Institutional Review Board prior to collection of data. An exempt review was appropriate due to minimal risk and high potential benefit to participants.

## CHAPTER 4

### FINDINGS

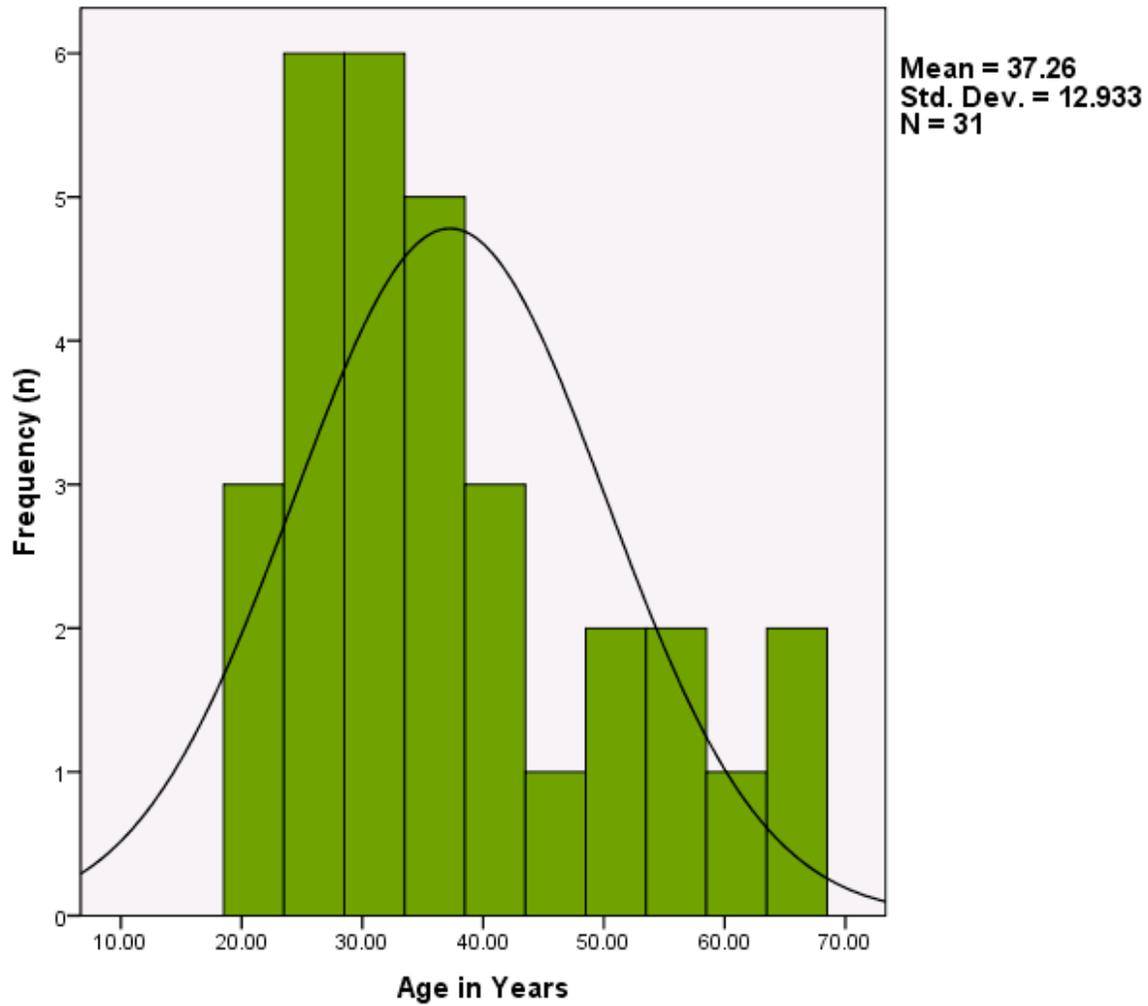
The purpose of this EBP project was to identify interventions that increase adherence to cervical cancer screening and to implement best practices to reduce unnecessary deaths related to late diagnoses of cervical cancer. The EBP project answered the following PICOT question: *Among females ages 21-65 years, what is the effect of a multi-modal educational presentation on cervical cancer knowledge, screening intention, and Pap smear rates over a 3-month period as compared with the previous standard of care?* This question was answered through statistical analysis of data collected from pre- and post- intervention questionnaires. Findings will be discussed in this chapter.

#### Sample Characteristics

The sample characteristics are described in this section. Demographic data was collected on 31 individuals who participated in the project and provided informed voluntary consent for participation. One male attended the presentation but was not included in the project. Characteristics of the sample are presented in Figure 4.1 and Table 4.1. The participants (N = 31) were all females with a mean age of 37.26 years (range 21-67, SD = 12.93). A majority (61.3%) of the participants were in the 25 to 41 year range (n = 19). Ethnic composition consisted primarily of Caucasians at 61.3% (n = 19), followed by Hispanics at 25.8% (n = 8), African-Americans at 9.7% (n = 3), and other ethnicities at 3.2% (n = 1). Regarding educational levels, one participant (3.2%) did not indicate the highest level of education received. Of the remaining respondents (n = 30), 48.4% (n = 15) had two years of college, 22.6% (n = 7) had a high school education, 16.1% (n = 5) had four years of college, and 9.7% (n = 3) had a Masters Degree. Income levels were categorized according to income ranges. Three participants (9.7%) omitted income information on the pre-intervention questionnaire. Of the remaining respondents (n = 28), 38.7% (n = 12) had an annual income of

\$26,000-\$35,000, 29.0% (n = 9) earned \$10,000-\$25,000, 16.1% (n = 5) earned over \$46,000, and 6.5% (n = 2) earned under \$10,000 annually. A majority (96.8%) of the participants (n = 30) carried insurance while one participant (3.2%) did not have insurance. One participant (3.2%) did not respond to the question of having a primary care provider. Of the remaining 30 participants (96.8%) who responded, 26 participants (83.9%) were established with a provider while four participants (12.9%) did not have a provider for health care needs. According to questionnaire responses, neither transportation (n = 0) nor language difficulties (n = 0) hindered any participants from having regular health checkups. However, four respondents (12.9%) identified cost as a limiting factor, one respondent (3.2%) identified not having a provider as hindering, and one respondent (3.2%) identified not knowing what was needed as a barrier to regular health checkups. Overall, 25 participants (80.6%) responded that nothing was stopping them from regular health checkups. Of the participants (N = 31), 19 subjects (61.3%) had a Pap smear for cervical cancer screening performed within the last year, while 12 subjects (38.7%) did not have a Pap within the last year. Twenty of the participants (64.5%) did not know anyone who has had cervical cancer while 11 of the participants (35.5%) had personal knowledge of someone with cervical cancer. Nine participants (29%) thought yes, there was a possibility of them getting cervical cancer, 13 participants (41.9%) thought maybe there was a possibility of them getting cervical cancer, 8 participants (25.8%) thought there was no possibility of them getting cervical cancer, and one subject (3.2%) did not answer the question.

**Figure 4.1**  
**Sample Characteristics for Age (N = 31)**



**Table 4.1**  
**Sample Characteristics (N = 31)**

Variable	Frequency (n)	Percent (%)
Ethnicity		
Caucasian	19	61.3
Hispanic	8	25.8
Africa-American	3	9.7
Other	1	3.2
Education		
High School	7	22.6
College 2 yrs	15	48.4
College 4 yrs	5	16.1
Masters Degree	3	9.7
Missing Data	1	3.2
Income		
Under \$10,000	2	6.5
\$10,000-\$25,000	9	29.0
\$26,000-\$35,000	12	38.7
Over \$46,000	5	16.1
Missing Data	3	9.7
Provider		
Yes	26	83.9
No	4	12.9
Missing Data	1	3.2
Insurance		
Yes	30	96.8
No	1	3.2
Checkup barriers		
Cost	4	12.9
No Practitioner	1	3.2
Don't know what I need	1	3.2
None	25	80.6
Had Pap screening in last year		
Yes	19	61.3
No	12	38.7
Know anyone with cervical cancer		
Yes	11	35.5
No	20	64.5
Think you could get cervical cancer		
Yes	9	29.0
Maybe	13	41.9
No	8	25.8
Missing Data	1	3.2

### Statistical Analysis

Further statistical analysis was performed to answer the PICOT question and to evaluate the effect of the educational intervention on cervical cancer knowledge and screening intention. Each participant was asked to complete a pre-intervention questionnaire prior to the educational presentation as well as a post-intervention questionnaire. Cronbach's Alpha reliability score was .730. Paired samples *t* tests were calculated using SPSS to compare pre- and post- intervention total scores within the same group of participants. Incomplete data was excluded from analysis.

A paired-samples *t* test was calculated to compare the mean pre-intervention total score of knowledge to the mean post-intervention total score of knowledge. The mean pre-intervention score was 5.10 (*SD* = 1.33), and the mean post-intervention score was 5.35 (*SD* = 1.23). An increase in knowledge occurred as evidenced by the higher mean post-intervention score. However, the difference between pre- and post-intervention scores of knowledge was not statistically significant ( $t(30) = -1.072, p > .05$ ).

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 TotalPRE - TotalPOST	-.25806	1.34084	.24082	-.74989	.23376	-1.072	30	.292

A paired-samples *t* test was calculated to compare the mean pre-intervention score of Pap screening intent to the mean post-intervention score of Pap screening intent. The mean pre-intervention score was 2.30 (*SD* = 1.62), and the mean post-intervention score was 2.00 (*SD* = 1.53). Participants were more likely to have a Pap smear in the following 12 months based on the lower post- intervention mean score that correlates with a higher likelihood of having a Pap. However, the difference between pre- and post-intervention scores of Pap screening intent was not statistically significant ( $t(29) = 1.394, p > .05$ ).

		Paired Differences							
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	LikelyPap PRE - LikelyPap Post	.30000	1.17884	.21523	-.14018	.74018	1.394	29	.174

The percentage of clinic patients with completed Pap smears according to recommended guidelines in the 2 months preceding the educational intervention was 50.7% and 51.0% respectively. During the 3 months of the educational intervention, rates remained consistent at 50.3%, 50.1%, and 50.6%. One month after the educational interventions have ended the percentage of completed Pap smears was 49.2%.

### Outcomes

After a thorough search of the literature, the best practice recommendation was defined and implemented in the DNP project. Research supports the integration of knowledge and personal applicability in influencing behaviors toward health and wellness through screening efforts. The DNP student held 3 community educational presentations regarding cervical cancer and screening recommendations. Outcomes based on the pre- and post- intervention questionnaires evaluated cervical cancer knowledge and screening intention. The percentage of clinic patients with Pap smears performed per recommended guidelines prior to the educational intervention as compared to post-intervention was also compared. While analyses demonstrated an increase in cervical cancer knowledge and likelihood of participating in Pap screening in the next 12 months, these statistics were not at a level of significance. Difficulty in attributing behavioral change to one specific intervention is a methodological issue in which not all contributing factors can be isolated for each individual. Time constraints in measuring the longitudinal effect of the intervention may have also impacted outcomes. The significance and interpretation of results will be fully discussed in Chapter 5.

## CHAPTER 5

### DISCUSSION

The results of this DNP project indicated that among females ages 21-65 years, there was no significant effect of a multi-modal educational presentation on cervical cancer knowledge, screening intention, and Pap smear rates over a 3-month period as compared with the previous standard of care.

#### Explanation of Findings

Differences in pre- and post- intervention scores reflected an increase in cervical cancer knowledge but not at a level of significance. Six knowledge questions were evaluated with each correct answer accounting for one point, a perfect knowledge score being six. The mean pre-intervention score of knowledge (N = 31) was 5.10. The mean post-intervention score of knowledge (N = 31) was 5.35. This difference reflects an improvement in knowledge based on the intervention, but the difference was not at a level of significance. The high pre- intervention scores may be reflective of the high level of education among the participants, as 98.6% (n = 30) had at least a high school education, and 74.2% (n = 23) had at least 2 years of college education. One participant (3.2%) did not provide an answer to the highest level of education acquired. The intervention addressed some gaps in cervical cancer knowledge as reflected by score improvement. The DNP student anticipates that knowledge scores would have improved significantly if the participant population had less formal education and lower baseline scores on the pre- intervention questionnaire. A Pearson correlation was calculated examining the relationship between participants' age and pre- intervention knowledge scores. A weak correlation that was not significant was found ( $r(29) = .205, p > .05$ ). A Pearson correlation was also calculated examining the relationship between participants' age and post- intervention knowledge scores. A weak correlation that was not significant was found ( $r(29) = .154, p > .05$ ). Thus, age was not a factor in knowledge scores.

Cervical cancer screening intent was evaluated utilizing a five-point Likert scale. Response options ranged from very likely (1) to definitely not likely (5) to have a Pap smear in the next 12 months. Statistical analysis demonstrated that participants were more likely to have a Pap smear in following 12 months based on mean post- intervention scores (mean = 2.0) as compared with mean pre- intervention scores (mean = 2.3). However, the difference in scores was not at a level of significance. Nineteen participants (61.3%) had a Pap smear within the last year. Based upon normal Pap results, these participants would not be expected to have another Pap in the next 12 months. The remaining 12 participants (38.7%) may be due for a Pap smear in the following 12 months or may not need a Pap based on the 3 – 5 year recommended cervical cancer screening interval contingent upon age and inclusion of HPV testing. Of the 12 participants who had not had a Pap within the last year, post- presentation data reflects that 7 were very likely, 1 was likely, 1 was unsure, 2 were not likely, and 1 was definitely not likely to have a Pap in the next 12 months. The questionnaire format could be improved to better differentiate participants due for a Pap smear and those who are not due for a Pap smear as well as the time interval for the next recommended screening. The DNP student anticipates that scores for screening intent would be significant with increased questionnaire specificity.

In a frequency distribution of nominal data reflecting insurance status and having had a Pap smear within the last year, 100% of participants without insurance (n = 1) did not have a Pap compared with 36.7% (n = 11) of the participants that did have insurance. A Spearman *rho* correlation coefficient was calculated for the relationship between insurance status and having had a Pap. A weak correlation that was not significant was found ( $r(29) = .230, p > .05$ ). Thus, insurance status is not related to having had a Pap smear within the last year.

In a frequency distribution of nominal data, 38.7% (n =12) of participants had not had a Pap within the last year. Within this subgroup, 45.5% (n = 5) knew someone and 35.0% (n = 7) did not know anyone who has had cervical cancer. A Spearman *rho* correlation coefficient was

calculated for the relationship between having had a Pap and knowing anyone who has had cervical cancer. A weak negative correlation that not significant was found ( $r(29) = -.103, p > .05$ ). Personally knowing someone who has had cervical cancer was not related to Pap screening behaviors.

Several participants expressed great appreciation for the clarification of details regarding the Pap smear procedure and the interpretation of resultant findings. Visual illustrations of obtaining cell samples from the transformation zone of the cervix aided in the understanding of an event that most of the participants had only experienced from a patient's perspective. With the addition of the medical provider perspective, participants began to embrace the role of facilitator in reaching out to other women with the important message of cervical cancer screening. A visual display of the cervix with various stages of cancer involvement demonstrated the subtle onset and progression of a disease that has the power to eliminate life. This reality was solidified through personal narrative video clips of a young cervical cancer victim who left behind a motherless child. Participants in attendance at the educational presentations were emotionally moved at the mother's parting words for her child. A unified sense of purpose and passion arose among the participants. Equipped to share the facts and to eliminate misconceptions regarding cervical cancer screening, participants zealously dispersed to reach friends, family, and new acquaintances in the hope of preventing unnecessary loss of life. This qualitative evidence was supported by post- intervention questionnaire responses reflecting 67.7% ( $n = 21$ ) of respondents indicated they are very likely and 25.8% ( $n = 8$ ) are likely to share the information learned during the presentation with another person.

**Implications for clinical practice.** The power of knowledge and understanding cannot be underestimated regardless of the lack of statistical significance in this DNP project. The overwhelmingly positive participatory response to the educational presentations reflects satisfaction of a need that was met, albeit not fully captured, by the analysis conducted. Future inclusion of qualitative data as well as additional interval and ratio levels of quantitative data

would increase statistical analysis options. Longitudinal statistics may also provide additional insight into the impact of this DNP project as diffusion of cervical cancer screening awareness occurs. From a practical standpoint, clinic inquiries regarding possible future presentations have occurred. Additionally, it has been suggested that clinic staff may benefit by participation in this multi-modal educational presentation. Through reiteration of cervical cancer screening facts and reduction of misconceptions, staff may be more confident in promoting screening behaviors.

**Implications for the APN role.** The results of the data analysis demonstrated that knowledge scores improved after implementation of a multi-modal presentation even though pre- intervention scores were unexpectedly high, and 96.8% of the participants had a minimum of a high school education. Empowerment through knowledge is a vital component at all levels of screening awareness. The APN has a responsibility to educate community members, patients, and staff to ensure understanding and eliminate misconceptions. The advanced practice nurse acts as the change agent to guide and promote self-actualization and personal responsibility of healthy behaviors that decrease the risk of late diagnosis of cervical cancer.

#### **Evaluation of applicability of the theoretical framework**

The Health Promotion Model (HPM) developed by Nola Pender provided the theoretical framework and Rogers' Diffusion of Innovation (DOI) provided the change theory for this project. Both of these frameworks were congruent with this project and acknowledge the factor of time in altering attitudes and behaviors. In application of the HPM, the educational intervention promoted knowledge and health and addressed the unique barriers and concerns of the individual participants. Health promotion integrated individual responsibility as well as the importance of reaching out to promote healthy behaviors among other members of society. Personal confidence levels soared as evidenced by 100% (n = 31) of participants answering that they learned very much or some information at the educational sessions and over 93% (n = 29) of respondents indicated they were very likely or likely to share the information learned

during the presentation with another person. Following the presentation, participants were committed to a plan of action and a desire to make a difference.

In regards to the DOI, characteristics of adopters were noted during the presentations. Vocal opinion leaders emerged as the first individuals to ask questions and offer suggestions for innovative diffusion. Early adopters clarified concepts during the presentation and led the question/answer period with issues related to personal experiences. The early majority participated quietly and were engaged and focused. The late majority completed the questionnaire hastily with little post-presentation interaction with fellow participants. The laggards never attended. The face-to-face encounters were reported by many of the participants to be persuasive and compelling. Diffusion of the information regarding cervical cancer screening has begun, additional informational flyers continue to be distributed, and future community events are being planned. Momentum will influence the rate of diffusion.

### **Strengths of the EBP project**

This project had several strengths. Staff members at the Community Health Center were among the participants in the educational presentations and verbalized appreciation for the clarity of information received. Being able to examine the Pap instruments and visualize the Pap procedure from the perspective of the medical provider was reported as “enlightening.” Several participants acknowledged a comfortable rapport with the presenter and asked personal questions and concerns regarding cervical cancer. A sense of unity pervaded the room as participants identified with one another and shared these personal aspects of their lives. Several participants expressed a personal commitment to convey the importance of cervical cancer screening to all female friends, family, and acquaintances; taking on the role of educator with a focus on preventing unnecessary loss of life due to lack of cervical cancer screening and late diagnosis of cervical cancer.

**Limitations and potential solutions**

This project had several limitations. As initially identified in discussion of Pender's HPM, outcomes of interventions depend on individuals to access resources for promotion of health and removal of barriers. Community attendance at the first educational presentation was less than the DNP student expected. To promote awareness and encourage attendance, informational posters were hung within the clinic and community and flyers were distributed within the clinic, to a local food pantry, and to a local Hispanic church congregation. Pre-presentation phone calls were made to women in the clinic who were due for a Pap smear encouraging attendance at the free event that included bus tokens to cover the cost of transportation and provision of refreshments. Presentation times were varied between morning, afternoon, and evening to accommodate a wide-range of schedules. An in-person Spanish interpreter was also available during and after the presentations to eliminate language barriers. Clinic staff were available to assist with scheduling cervical screening appointments. Additionally, a one-hour live local radio program featuring the DNP student discussing cervical cancer screening aired. Despite these interventions, community response remained low. Insufficient incentives may have impacted the response as several community events often offer large gift giveaways for attendees. Participants suggested semi-professional baseball tickets, monetary raffles, or I-pads as enticing motivators for presentation attendance. Individuals from the community may have previously received information regarding cervical cancer and Pap screening through educational offerings sponsored by local hospitals, universities, and cancer organizations.

Another limitation is the short time period for evaluation of the impact of the intervention. Cervical cancer screening recommendations are from 3 - 5 years depending on age and the mode of laboratory testing. As such, individuals may not have been due for Pap screening during the data collection time frame and intentions to complete the Pap screening in 24 - 36 months may not have been captured through the questionnaire responses. A third limitation is

the inability to predict the complete meaning the presentation had for participants and the inability to address the complexities associated with behavioral change within the constraints of the DNP project.

### **Implications for the future**

Health promotion involves a change in attitude with cultural shifts requiring time. Several comments from participants reflected an increase in personal confidence and efficacy in their ability to promote cervical cancer screening to others. The DNP project ignited an enthusiasm and unified diverse individuals in sharing a cohesive message of early detection through screening. Valuable data was gleaned regarding the synergistic potential of the DNP intervention. Qualitative studies addressing the impact of self-efficacy and health promotion may be insightful. Also, additional interval and ratio levels of quantitative data would increase statistical analysis options.

### **Conclusions**

The best practice model recommendation to increase adherence to cervical cancer screening per guideline recommendations was obtained through a search of the literature. The relevant literature supports (a) education and counseling by healthcare providers, (b) enhanced access to screenings, and (c) personal invitations as effective interventions. The DNP student implemented three multi-modal educational presentations on cervical cancer at a Community Health Center in northern Indiana. Among females ages 21-65, measurements of knowledge, screening intention, and clinic Pap smear rates over a 3-month period as compared with the previous standard of care were obtained. Mean scores of knowledge and Pap screening intent both increased, with 74.2% (n = 23) of participants answering that they learned very much information and 25.8% (n = 8) of participants answering that they learned some new information at the educational sessions. Coupled with these new insights, over 93% (n = 29) of respondents indicated they were very likely or likely to share the information learned during the presentation with another person. Diffusion of this information is an important link in the prevention of cervical

cancer through early detection. Pap smears rates remained stable during the course of the project and will continue to be monitored by the Community Health Center to capture the impact of health promotion interventions.

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### **BIOGRAPHICAL MATERIAL**

Ms. Trapp received her RN diploma at St. Francis School of Nursing in Peoria, Illinois in 1986 and completed requirements for a BSN while working as a Medical/Surgical hospital staff nurse. She took time off to raise her 5 children and returned to Valparaiso University to complete a BA with a major in German, an MSN, a Post-Masters FNP, and is completing her DNP in May 2015. Ann is board certified as both a gerontological clinical nurse specialist and a family nurse practitioner through ANCC. Ann worked for the Visiting Nurse and Hospice Association for 8 years and was awarded the Caregiver of the Year Award in 2011. Ann was also active in the palliative care program and served on the Hospice and Visiting Nurse Association advisory boards. She presented a poster on Intimacy at End of Life at the Midwest Nursing Research Society Annual Conference in Columbus, Ohio, as well as at the National Gerontological Nursing Association Annual Convention in Louisville, Kentucky in 2011. Ann has served as a Clinical Nursing Instructor and guest speaker for Valparaiso University. She is currently working as an FNP at a Patient-Centered Medical Home and a Community Mental Health Center. Her DNP project examined the effect of a community education intervention on knowledge of cervical cancer and cervical cancer screening intentions. Ann strives to remove barriers that create disparity in health care.

**ACRONYM LIST**

AHRQ: Agency for Healthcare Research and Quality

APN: Advanced Practice Nurse

BACH: Breast and Cervical Health survey

BRFSS: Behavioral Risk Factor surveillance System

CDC: Centers for Disease Control and Prevention

CONHP: College of Nursing and Health Professions

DES: Diethylstilbestrol

DNP: Doctorate of Nursing Practice

EBP: Evidence-Based Practice

HPM: Health Promotion Model

IRB: Institutional Review Board

JHNEBP: John Hopkins Nursing Evidence-Based Practice

LHA: Lay Health Advisor

MD: Mean Difference

MSN: Master of Science in Nursing

NGC: National Guidelines Clearinghouse

NHIS: National Health Interview Survey

PCMH: Patient-Centered Medical Home

PICOT: Population, Intervention, Comparison, Outcome, Time

RCT: Randomized Controlled Trials

RR: Relative Risk

UPSTF: U.S. Preventative Services Task Force

US: United States

## Appendix A

### **Informed Consent**

#### **Introduction**

The purpose of this form is to provide information about an Evidence-Based Practice research project to be held at HealthLinc. The project used evidence-based information to determine the best approach for improving adherence to cervical cancer screening recommendations. This project will evaluate the effects of education on cervical cancer knowledge and intent to participate in Pap smears.

#### **Project Manager**

The project manager is Ann Trapp, MSN, RN, GCNS-BC, FNP-BC.

#### **Procedure**

You will complete a brief questionnaire before and after attending a 30-minute educational presentation. The presentation will include oral and video presentations as well as hands-on display of items used in the cervical cancer screening procedure. There will also be a time for specific questions and answers after the presentation. Participants will be offered a V-Line Bus token for travel to and from the presentation.

#### **Risks**

There is minimal risk involved in the project and participation is voluntary. One can refuse to participate at any time, even after the informed consent is signed, and is under no obligation to have a Pap smear. There is no penalty for refusing to participate. It will not affect one's status as a potential or current HealthLinc client.

#### **Benefits**

The desired benefit of this presentation is to empower individuals through knowledge of cervical cancer. The research information will help to identify the effectiveness of the intervention to determine if it should be repeated. The HealthLinc organization may benefit through increased outreach into the community.

#### **Confidentiality**

Personal information will be coded to maintain confidentiality and documents will be kept in a locked location only available to the DNP student.

#### **Questions**

Questions concerning the project may be directed to Ann Trapp at (219) 707-9501, or by email at [Annie.trapp1@valpo.edu](mailto:Annie.trapp1@valpo.edu). Further questions about the study may be directed to the DNP student advisor at Valparaiso University, Dr. Kris Mauk at [Kris.mauk@valpo.edu](mailto:Kris.mauk@valpo.edu) or (219) 464-5282, or the Institutional Review Board chairman at Valparaiso University, Allison Cath at [Allison.Cath@valpo.edu](mailto:Allison.Cath@valpo.edu)

The project has been explained and my questions have been answered. I have read and understand this consent form and may request a copy. By signing this form, I agree to join the project.

\_\_\_\_\_  
Signature of Subject

\_\_\_\_\_  
Date

\_\_\_\_\_  
Investigator

\_\_\_\_\_  
Date

**Appendix B**  
**Effect of Education on Cervical Cancer Screening Code Sheet**

<b>Code #</b>	<b>Name of Participant</b>
1	
2	
3	
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## Appendix C

Code: \_\_\_\_\_

## EBP Project Pre-Education Self-Evaluation

**Directions:** Please circle your response to each question or write your response in the blank

1. What is your age? \_\_\_\_\_ years

2. What best describes your ethnicity? Caucasian Hispanic African American Asian Other

3. What is your highest level of education? Middle School High School College 2-years College 4-years Masters Degree

4. What is your annual income? Under \$10,000 \$10,000-25,000 \$26,000-35,000 \$36,000-45,000 Over \$46,000

5. Do you have a Primary Care Provider for your health care? Yes No

6. Do you have insurance? Yes No

7. Which of these things stop you from getting regular health checkups?

Transportation Cost Language difficulties Don't have a Dr./Nurse Practitioner Don't know what I need None

8. Have you had a Pap smear for cervical cancer screening within the last year? Yes No

9. How likely are you going to have a Pap smear in the next 12 months?

Very likely Likely Unsure Not likely Definitely not

10. Do you know anyone who has had cervical cancer? Yes No

11. Do you think you could get cervical cancer? Yes Maybe No

12. Do the following activities increase the chance of getting cervical cancer?

Exposure to the Human Papillomavirus Yes No

Having an impaired immune system Yes No

Having several sexual partners Yes No

Having an abnormal Pap smear result Yes No

Smoking Yes No

Getting the HPV vaccination Yes No

## Appendix D

Code: \_\_\_\_\_

## EBP Project Post-Education Self-Evaluation

*Please circle your response to the following questions***1. How important is cervical cancer screening to you?**

Very much      Somewhat      A little      Not at all

**2. Is a Pap smear an effective way to detect early changes leading to cervical cancer?**

Yes      No

**3. How much new information did you learn at this educational session?**

Very much      Some      A little      None at all

**4. Was the information clearly presented?**

Yes      No

**5. How likely are you going to have a Pap smear in the next 12 months?**

Very likely      Likely      Unsure      Not likely      Definitely not

**6. How likely are you going to share the information you learned with another person?**

Very likely      Likely      Unsure      Not likely      Definitely not

**7. How likely are you going to schedule a Pap appointment today?**

Very likely      Likely      Unsure      Not likely      Definitely not

**8. Do the following activities increase the chance of getting cervical cancer?**

Exposure to the Human Papillomavirus      Yes      No

Having an impaired immune system      Yes      No

Having several sexual partners      Yes      No

Having an abnormal Pap smear result      Yes      No

Smoking      Yes      No

Getting the HPV vaccination      Yes      No

**9. What changes would you suggest for the presentation?**

Appendix E

Educational Power Point Presentation Slides

## Cervical Cancer Screening

Ari Trapp, Nurse Practitioner  
Valparaiso University



## Objectives

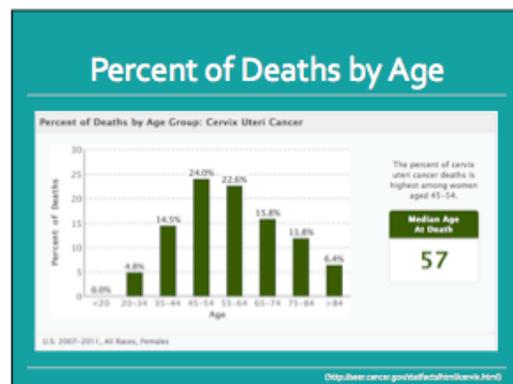
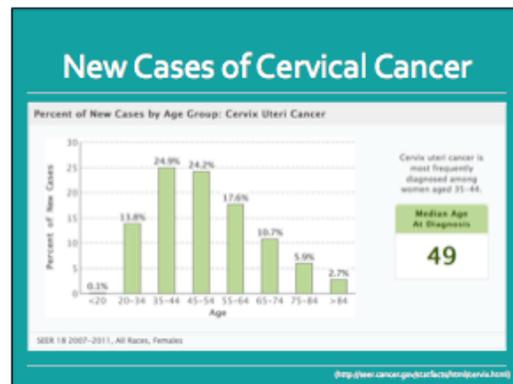
- Discuss cervical cancer statistics
- Describe cervical cancer
- Identify risks for cervical cancer
- Describe process for obtaining cervical screening sample
- Review cervical cancer screening recommendations
- Describe process for scheduling a Pap smear

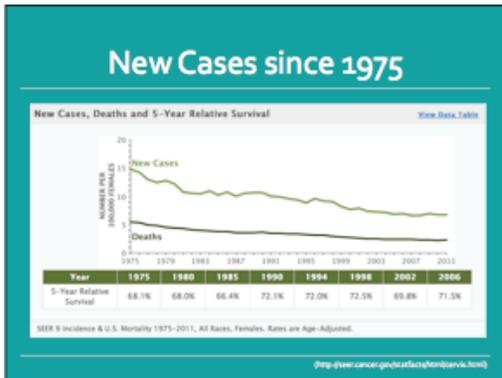
## Why educate?



*Mothers ♥ Daughters ♥ Sisters ♥ Friends  
We're In This Together*

Designed by Kirby Miller





### Cervical Cancer

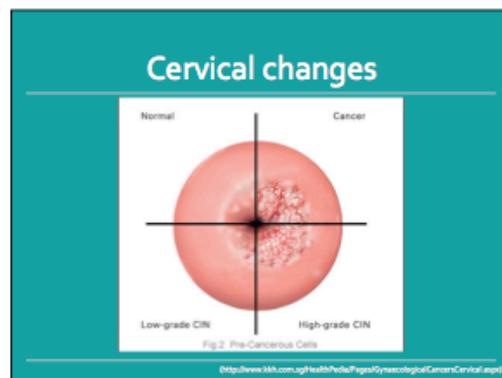
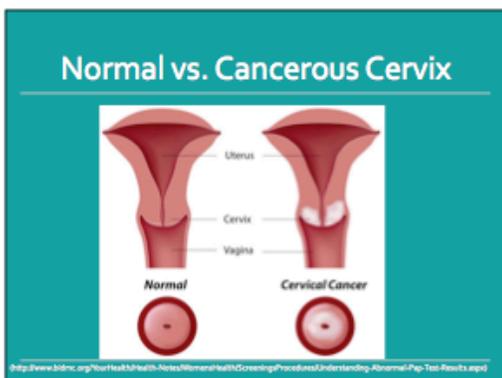
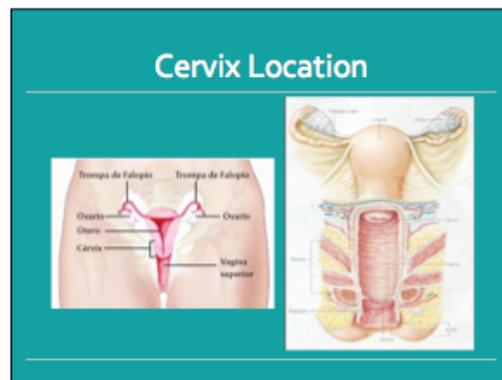
- Begins on the surface of the cervix with abnormal cells
- Invades deeper into cervical and surrounding tissue
- Pap smears detect early cell changes before they turn into cancer

**50%** OF WOMEN DIAGNOSED WITH CERVICAL CANCER HAVE **NEVER** HAD A PAP TEST

**10%** OF WOMEN DIAGNOSED WITH CERVICAL CANCER HAVE NOT HAD A PAP TEST IN **5 YEARS**

<http://www.nccctc.org/index.php/screening>

- ### Risks
- HPV (Human Papillomavirus) infection
  - HIV infection
  - Compromised immune system
  - In utero exposure to diethylstilbestrol (1940-1971 was given to pregnant women)
  - Previous treatment of precancerous lesion
  - Smoking
- USPTF, 2012





### Cervical Cancer Screening Recommendations

- Ages 21-65 = Every 3 years with Pap
- Ages 30-65 may choose a Pap with HPV testing every 5 yrs

(USPSTF, 2012)

### DO NOT...

- Screen before age 21
- Screen after age 65
- Screen women with a hysterectomy who did not have pre-cancerous lesions or cervical cancer
- Screen women whose cervix was removed & are not high risk
- Use HPV testing before age 30

(USPSTF, 2012)

### Scheduling a Pap

- Make an appointment at the front desk
- New patients may need to complete intake paperwork
- Arrive for your scheduled appointment
  - Reschedule if you are on your period
  - Avoid sexual intercourse for 48 hours prior to the Pap
  - Do not douche 48 hours prior to the Pap
  - Do not use spermicides, tampons, or vaginal medications 48 hours prior to the Pap
- Will be notified with results by phone or next visit, may also call for results

### Questions?

**WE'RE IN THIS TOGETHER!**