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Influencing College Influenza Vaccination Through a Multi-Component Campaign

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INFLUENCING COLLEGE INFLUENZA VACCINATION THROUGH A MULTI-COMPONENT CAMPAIGN

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DEDICATION

There are several important people I would like to dedicate this project to. My family who has been a constant support. You all have impacted me in so many ways and been there every step of the way this last three years, so thank you. Lastly to my husband Tyler, this last three years I am not the only one who deserves this project completion and degree, you do. To say you have been my rock would be an understatement. My dad said on our wedding day three words that will always define you which I am forever rich in life because of which is “everyday sincere devotion.” Thank you for being devoted to me everyday before and through this last three year journey, and being just as devoted in my dreams, goals, and aspirations. I have achieved being a better person everyday and doctorate degree because of you.

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TABLE OF CONTENTS

Chapter **Page**

LIST OF TABLES

Table **Page**

LIST OF FIGURES

Figure **Page**

ABSTRACT

Multiple influenza strains exist and college aged students are the most affected population from the H1N1 strain. The H1N1 influenza pandemic had high attack rates reported on campuses from 25% to 73% (Benjamin et. al., 2016; Uddin et. al., 2009). Only 8% to 40% of college students are vaccinated against influenza despite a target goal of 50% set by the American Healthy Campus 2020 (Benjamin et. al., 2016; Poehling, et. al., 2012). The purpose of this evidence based project was after implementing a multi-component influenza vaccination campaign to determine changes in intent to receive the vaccine among college students. To help guide the change for the project, the Health Belief Model and Stetler's model was used. A private university in Northwest Indiana was chosen for implementation. In collaboration with the nurse practitioner at the university's student health center and approval from the IRB at the college, the project took place from October to January. Best practice recommendations determined EBP components would includ educational tools and immunization clinics on campus. Educational components were provided through social media, electronic campus media, flyers, and posters. In collecting the data for analysis, non matching pre and post-surveys were sent through the university email system to all undergraduate and graduate students meeting the study criteria. The data was analyzed using a chi-square test of independence to determine changes for the primary objective and secondary objectives. The primary objective of intention to receive the influenza vaccination among college students found no significant relationship ($x^2(1) = 0.089$, $p>0.05$), however changes were present between survey participants at 45.1% in the pre-survey and 51.6% in the post-survey. None of the secondary objectives of the college students' influences and motivations about vaccination were found to be significant. With no statistical differences found in the EBP but subtle positive changes noted in all outcomes after implementation, further efforts should occur to utilize and research multi-component influenza campaigns in college students to change the acceptance and receipt of the vaccine.

CHAPTER 1

INTRODUCTION

A significant component to providing high quality care with the best outcomes is evidence-based practice (EBP). EBP is defined as a problem solving approach in clinical practice that integrates best available evidence, one's own clinical expertise, and patient's preferences and values to achieve the desired patient outcomes (Melnyk & Fineout-Overholt, 2011). Through the use of EBP, many practices in healthcare are changed and implemented through evidence to improve health risk factors and outcomes. Preventative health interventions provide healthcare professionals an opportunity to modify important health risks before becoming problematic including social risks and disease processes. Influenza is a disease process affecting the overall general population with no bias towards gender, ethnicity, or age. In order to make a positive change, an EBP project was implemented to determine the best practice for influencing influenza vaccination receipt among college students. Both an EBP model and nursing theory was applied for project development and implementation. This chapter will discuss the background, problem statement, purpose, and significance of the EBP project.

Background

Upper respiratory infections (URI) are unlike other viral illnesses and do not discriminate against gender, ethnicity, or age. Two of the illnesses categorized within URIs includes influenza like illness (ILI) and influenza which annually impacts the health of numerous people. The primary time for these illnesses occur in the United States is October through March. Influenza is a virus which impacts and affects individuals with chronic health conditions, children, the elderly, and the healthy. Every year, influenza can effect from 5% to 20% of the general population (Grohskopf et. al., 2016). ILI or influenza can cause short term, non impacting illness or cause severe disability and even death. Influenza is annually estimated to

cause 3 to 5 million cases of severe illness worldwide with approximately 250,000 to 500,000 deaths (WHO, 2016). The estimated annual medical costs for influenza in the United States is 10.4 billion dollars (Nowak et. al., 2015). Over 200 strains of influenza exist including H1N1, influenza A, and influenza B. When the pandemic of H1N1 influenza 2009-2010 occurred, numerous populations were affected, and a new light was shed on how the illness affects all people resulting in a change in the culture of vaccination recommendations. The Centers for Disease Control and Prevention (CDC) recommends anyone older than 6 months receive an annual influenza vaccination as the best way to prevent influenza (Grohskopf et. al., 2016).

One of the populations particularly affected by the 2009-2010 H1N1 influenza virus involved young adults, including college students. The H1N1 influenza virus affects more individuals 25 years or younger with the highest hospitalization and mortality rates (Bednarczyk, et. al., 2015; Katz et. al., 2012; Lau et. al., 2012; Sunil & Zottarelli, 2011; Wilson & Huttlinger, 2010; Yang, 2012; Yang, 2015). When the H1N1 influenza virus began affecting healthy young individuals, a change in research occurred to understand why this population was susceptible when they are otherwise healthy. The healthy young college population is unique because they do not suffer from chronic diseases, however they are at an increased susceptibility to contract influenza. The first factor that affects susceptibility within their population is proximity. Close proximity, including dormitory living, social gatherings, and classrooms increase the risk of contracting influenza compared to the general population (Monn, 2016; Nichol et. al., 2008; Ramsey & Marczinski, 2011; Rodas et. al., 2012; Uddin et. al., 2009; Yang, 2012; Yang, 2015). Due to their close proximity, higher mortality rates during pandemics are associated with young adults who quickly spread the illness (Hart, 2015). Currently in the United States, there are 3,026 four-year college campuses and 1,700 two-year degree colleges housing several thousand students (U.S. Department of Education, 2016). The close proximity among multiple colleges in the United States creates an increased number of people within this population as a source of transmission spreading the virus to not just college students, but family and the

general public. Many of these students are asymptomatic carriers of the illness. Another factor to college students increasing their susceptibility compared to the general population is how new or altered strains of influenza affect their population. During an influenza pandemic, like the H1N1 2009 pandemic, young adults of college age were affected more due to being less exposed to the influenza subtype that emerged (Hart, 2016; Ramsey & Marczinski, 2011; Wilson & Huttlinger, 2010). With younger adults not being exposed to influenza strains due to a shorter life span and because they do not receive vaccinations annually, their bodies are more vulnerable to new or altered strains of influenza. In the younger populations, antibodies are not developed, whether from vaccination or actual illness, and a higher likelihood of pandemic influenzas can occur in these individuals due to decreased immunity protection (Wilson & Huttlinger, 2010). Healthy college students are predominantly susceptible to H1N1 and new influenza strains which has associated to the highest rates of hospitalization and morbidity (Agarwal, 2014; Bednarczyk, et. al., 2015; Katz et. al., 2012; Lau et. al., 2012; Ramsey & Marczinski, 2011; Sunil & Zottarelli, 2011l; Wilson & Huttlinger, 2010; Yang, 2015). The higher rates of hospitalization and morbidity to H1N1 still continue for this younger population as non-compliance to vaccination and less exposure to influenza continues.

Lastly, young adults in the college population have been identified as non-seeking for preventative health behaviors including receiving immunizations that are not required to keep them in school, work, or other settings, like the influenza vaccine. Several reasons have been found by multiple research studies for not seeking preventive health behaviors linked to vaccinations including a decreased perception to severity of the influenza illness (Agarwal, 2014; Bednarczyk, et. al., 2015; Shropshire et. al., 2013; Wilson & Huttlinger, 2010). When the perceived threat of contracting an illness is not present or the illness is seen as not harmful, vaccination is not received. Currently, these two perceptions are happening in the young healthy population, including college students. Through research, young adults have been found to ignore the risks due to a sense of invulnerability to an illness (Agarwal, 2014; Wilson &

Huttlinger, 2010). These two major barriers make intentions to receive a vaccine for influenza difficult within the young healthy population due to a preconception already formed.

Influenza affects college students in multiple ways. URIs are a common illness that plague college campuses creating increased sick days. On college campuses, categorized together, the cold, flu, and sore throat have been identified as the second leading cause in reduction of academic performances (Nichol et. al., 2008). When college students become sick, this affects the amount of time spent in the classroom and on academic requirements. College students who experience influenza or ILI spend on average 8 or more sick days away from school (Nichol et. al., 2008; Nichol et. al., 2010). Time away from school for students results in extra communication with professors and time spent catching up on school work. Influenza and ILI in the college population shows a significance association with a decrease in academic performance (Bednarczyk, et. al., 2015; Benjamin et. al., 2016; Merrill et. al., 2010; Monn, 2016; Nichol et. al., 2008; Nichol et. al., 2010; Uddin et. al., 2009). When a student is spending time making up college work and lost classroom time, the significance of the association that exists for college students between influenza or ILI and academic performances is understandable.

Even with CDC recommendations, susceptibility to influenza, and associated school outcomes, the college population is difficult to influence receipt of the influenza vaccine. The American College of Health Association (ACHA) proposed the Healthy Campus 2020 setting a target goal for college students' influenza vaccination rates to achieve 50% nationwide (ACHA, 2012). Nationwide on college campuses, numerous campaigns of varying interventions have been implemented and occur in the months of October and November to improve influenza vaccination. Through multiple studies, variable rates have been reported and due to this, the CDC recommends vaccination programs to be implemented through January when peak influenza season is occurring with 60% of diagnosis (Fiore et. al., 2008; Nichol et. al., 2010). The U.S. Department of Health and Human Services has also taken part in improving influenza vaccinations nationwide and revised the Healthy People 2020 goals. The revised Healthy

People 2020 influenza vaccination goal nationwide is to increase receipt of the influenza vaccine percentage among adults who are 18 and older to a target goal of 70% (U.S. Department of Health and Human Services, 2013). Overall, influenza is an illness which does not discriminate and vaccination among healthy young individuals in the college setting must continue to be addressed.

Statement of the problem

Among college students, the influenza vaccine consistently shows a need to be addressed due to the populations' increased risk of contracting influenza and spreading the disease. When the different factors including close proximity and susceptibility to new or altered strains are present, the incidence for high attack rates can occur on a college campus. With influenza vaccination rates for the college population still below targeted goals, the evidence based project plans to address this issue at a clinical agency with no current facilitation of an influenza vaccination program which is endorsed by the ACHA and CDC.

Data from the literature. Influenza vaccination rates are still statistically substandard compared to the goals which are set by multiple recommending health governing bodies. Nationwide, the population aged 18 and older are achieving an influenza vaccination rate of 42.6% as of the 2012-2013 influenza season (U.S. Department of Health and Human Services, 2013). The 42.6% is well below the target goal of 70% set by the Healthy People 2020 standards. The CDC statistically further breaks the influenza vaccination rates from age 18 to 49, which is closer to the age group in the college population. During the 2015-2016 influenza season, the CDC reported the population aged 18 to 49 received the influenza vaccination at a rate of 32.7% (CDC, 2016). When the CDC is reporting data, they also categorize influenza vaccination receipt rate into high risk and not high risk groups within the population categories. The population of not high risk individuals includes the general healthy population. In the same influenza season of 2015-2016, the age group of 18 to 49 not at high risk only received the vaccine at a 31.5% rate compared to the high risk group receiving it at 39.5% (CDC, 2016).

When the population is broken down and the targeted age group is closer to the diverse population of a college, the overall population of aged 18 to 49 who were not at risk with a vaccination rate at 31.5% are still below the healthy people 2020 goal of 70% and the ACHA goal of 50% on college campuses.

Data from the agency. The clinical agency where the evidence based project was implemented was at a university in northwest Indiana that serves diverse students with varying ages. In 2015, a total of 4,544 students were enrolled at the university with 3,183 undergraduate students (Valparaiso University, 2015). A student health center (SHC) provides healthcare access to all university enrolled students that are full time or part time. The SHC offers preventative services, illness services, immunizations, allergy injections, lab testing, and minor procedures. Last year for one week during October, promotion for the influenza vaccine occurred in the student union and it was the only influenza vaccination campaign that took place. According to the director of the SHC, the SHC provided a total of 200 influenza vaccines to the university students during the 2015-2016 school year (K. Eshenaur, personal communication, 2016). The vaccine cost 35 dollars last year when paid out of pocket for students. New to the university this year, any student enrolled in 9 or more credit hours had to be enrolled in an insurance plan, either one through a parent or guardian, their own, or through the university. According to the insurance provided through the school, immunizations that have a recommendation from the advisory committee from the CDC on immunization practices are provided within the coverage of the insurance plan (Valparaiso University, 2016). Also, the insurance plan states preventative services will have no deductible, copays or coinsurance applied when the services are performed by a preferred provider, including the SHC (Valparaiso University, 2016). With insurance coverage among all full time and part time students on campus and the influenza vaccine as a preventative service, cost as a restricting factor for receipt of the vaccine did not exist.

The affect influenza and ILIs have on college students was studied during the H1N1 pandemic and is still being studied. Understanding the prevalence of influenza and ILIs in college students is important in order to break down barriers between college students and vaccination receipt. Research shows in 28% of the college student population who are sick in a school year, ILIs are the cause (Nichol et. al., 2008). When reported cases of ILIs are occurring in at least one quarter of a campus population, the chance of increasing transmission to others occurs. In the 2009 pandemic, 79% of confirmed H1N1 influenza cases happened in the population less than 30 (Yang, 2012). Confirmed cases demonstrate how college students who fall within this age group are affected by influenza. In the influenza pandemic, high attack rates were reported on campuses from 25% to 73%, especially among those living on campus (Benjamin et. al., 2016; Uddin et. al., 2009). Even though more specific statistics may be needed to understand more about influenza and ILI illnesses within the college population, it is apparent that these individuals are affected. With recent influenza vaccination campaigns taking place, influenza vaccination rates vary across studies. Multiple studies report varied vaccination rates among college students for influenza vaccine receipt between 8 to 40 percent (Benjamin et. al., 2016; Merrill et. al., 2010; Nichol et. al., 2008; Poehling et. al., 2012; Shropshire et. al., 2013; Yang, 2012; Yang 2015). The ACHA performs an annual survey at 137 collegiate schools across the United States. The receipt of influenza vaccine among college students in the 2015 to 2016 influenza season to be 45.2% reported by the ACHA (ACHA, 2016). With variable influenza receipt rates ranging from 8% to 45.2%, the ACHA goal of 50% on college campuses and the healthy people 2020 goal of 70% is still not being achieved.

Purpose of the EBP project

Through statistical data and research, influencing college students' influenza vaccine receipt is a continued essential need. By implementing a primary prevention service regarding influenza vaccination promotion to college students, a positive impact to improve health outcomes for the student and those they come in contact with can be achieved to provide herd

immunity. Employing this preventative service throughout an entire college campus is essential to help establish a program and make steps towards achieving the ACHA goal of 50%. Achieving this preventative health outcome for students by working with the student health center creates relationships on campus between the SHC and the student resulting in continued care for many preventative measures.

Identifying the compelling question. The compelling question that invoked investigation included: What best interventions are present to better influence college students to receive the influenza vaccine? When assessing the literature, focus was placed on determining what best practice interventions and motivations aimed at college students provided successful implementation achieving improved influence on receipt of the influenza vaccine.

PICOT format. The clinical question based on Schmidt and Brown (Adams, 2012) in PICOT format includes (a) patient population, (b) intervention, (c) comparison, (d) outcome, and (e) time, encompassed: Through the use of an influenza vaccination multicomponent program from October 28th 2016 through January 20th 2017, will there be an influence on college students' intent to receive the vaccine compared to no program in place?

Significance of the project

The aim of the evidence based project is to examine the effects of an influenza vaccination multicomponent program for college students. Determining influence in the rate of receiving the influenza vaccine will be a primary outcome and secondary outcomes will look to determine influences and motivations behind receiving or not receiving the vaccine to help the SHC continue the program for the future.

CHAPTER 2

THEORETICAL FRAMEWORK AND REVIEW OF LITERATURE

EBP integrates the best available evidence on a topic to improve health outcomes (Melynk & Fineout-Overholt, 2011). Theories help with the critical thinking processes to influence the implementation of the best practice evidence found in EBP projects. When theory and evidence are molded together, change in practice is guided towards achievable improved health outcomes. In this chapter, a discussion of both a theoretical framework and EBP model will follow. Following that discussion, a description of a literature search and evidence appraisal process will occur to construct the best practices evidence for implementing an influenza vaccination program for college students. Finally, through the connection of the theories and best practice evidence, a recommendation for implementation of the EBP project was formed and discussed on influencing intent to receive the influenza vaccine in college students.

Theoretical Framework

The Health Belief Model (HBM) was the chosen theoretical framework for this project. In application to the EBP project, the HBM is fitting because it focuses on influencing an individual's beliefs creating action through participating in health promotion behaviors. The model discusses an individual's decisions about their health, health threats, and considered health behaviors. When HBM is applied to health promotion and health education efforts, the individual's behavior is influenced based and healthcare professionals can address efforts through the multiple constructs within the model.

Description of the theoretical framework. The HBM was a model developed by psychologists in the 1950s to explain the failure of individuals to participate in and receive preventative health services (Glanz, Rimer, & Lewis, 2002). HBM believes that a health behavior of an individual is determined by their personal beliefs or perceptions about a disease and the disease processes prevention strategies. Later, the model was expanded to include

reasoning behind an individual's response to symptoms and behavior to an illness. The reason for the expansion was due to the belief that a personal perception is influenced by multiple intrapersonal factors that must be accounted for affecting health behavior. The model identifies six constructs that interact to form a health behavior change. Within these six constructs, there are four main constructs discussing an individual's perceptions which influences their health promotion behavior. These four constructs include perceived seriousness, perceived susceptibility, perceived benefits, and perceived barriers. The HBM model continued to evolve and added the last two constructs including cues to action and self-efficacy.

Perceived seriousness. Perceived seriousness in the HBM is defined as the individual's belief about how one exclusively defines seriousness or severity of a disease (Glanz et. al., 2002). The information that defines the disease's severity can come from medical knowledge. Another important source of information defining the seriousness of a disease can be beliefs from difficulties with a disease which can cause the individual to miss work or school, and the effects the disease can create on everyday life. With the varying different characteristics of each individual including chronic disease states, current jobs, where a person may live, this provides for an individualized perceived seriousness to make a change.

Perceived susceptibility. Perceived susceptibility builds off of perceived seriousness. This concept is defined as the perceived subjective risk of the individual on contracting a disease or a health condition which would prompt them to adopt a health promotion behavior (Glanz et. al., 2002). When an individual perceives the disease as a greater risk or they are at increased susceptibility, there is an increased likelihood of engaging in health promotion behaviors. This is also true for those who do not perceive susceptibility of a disease or not feeling at risk, creating a decreased engagement in health promotion behaviors. An individual's traits and behaviors are included within their perceived susceptibility.

Perceived benefits and perceived barriers. Perceived benefits within HBM is defined as an individual's belief in the value or effectiveness of a behavior to impact a disease from

developing (Glanz et. al., 2002). When the benefit is perceived as positive in decreasing the risk of illness, an individual is more likely to adopt the health promotion behavior. To adopt a health promotion behavior, an individual must believe the benefits outweigh the barriers, an important influential element for behavior change in the HBM. Perceived barriers is defined as the obstacles that an individual identifies causing prevention from them taking action. These barriers can range from physical to psychological and can include not being able to drive to a location or fear of a test.

Cues to action. The HBM model believes that an individual's behavior is influenced by cues to action. Cues to action are any preventative behavior action including an event, person, or thing that the individual chooses to adopt from exposure to internal or external stimuli (Glanz et. al., 2002). The exposure to stimuli is seen from information related to mass media, through discussions with various people, the internet, or multiple other health information sources. Knowing a person who has had a disease process is another way an individual may adopt a preventative behavior and cue to action. Cues to action end up being factors that stimulates an individual to start driving a change in a health promotion behavior.

Self-efficacy and modifying factors. Self-efficacy is defined as an individual's belief in their own ability to carry out the behavior and produce the outcome (Glanz et. al., 2002). When an individual believes a new behavior is useful and do not have the ability to perform the behavior, they will generally not participate in the health promotion behavior. With self-efficacy, it is important to understand in order to implement a health promotion behavior, the confidence of the individual is essential. The HBM does take other modifying factors into account about the individual playing a role in the decision of whether they decide to participate in the health promotion behavior. These modifying factors include education, culture, age, personal experiences, gender, and economic status.

Application of HBM to the EBP project. The focus of the EBP project was intervening with college students to create a health promotion behavior change on influenza vaccination.

Through providing multiple educational interventions, application of the HBM took place to influence the health promotion behavior of receiving the influenza vaccination. To provide this change, the educational components provided were utilized as cues to action. With providing these tools, college students will begin to understand their specific risk to the influenza illness, increasing their perceived susceptibility. Also, perceived susceptibility was discussed in the educational components by explaining the complications influenza can have specific to their population. To improve perceived barriers, an immunization clinic on campus was available for students and discussion through education tools about the vaccine safety, efficacy, and side effects to dispel any myths. All educational tools and cues to action lead the college students to consider themselves as capable of making a well-educated decision about receiving the preventative health vaccine, increasing self-efficacy. In the HBM, influencing an individual on health related decisions must be performed by providing more than medical considerations including ones social relations and values (Glanz et. al., 2002). Specifically targeting education tools by using social media and creating posters that are specific to the college population helps address their social relations and values. Through the constructs of the HBM in the educational components, the EBP project will help the college students build a sense in understanding the risk, seriousness of complications, applicability of the vaccine, and consider themselves capable of making the decision to take action to prevent influenza.

Strengths and limitations of the theoretical framework for the EBP project. The strength of the HBM is the focus placed on prevention and health promotion behaviors for disease processes. Health promotion and prevention is a key factor in healthcare for everyone to keep infectious disease from spreading among the community, including influenza. With the EBP project focused on increasing education to the college students to influence influenza vaccination uptake, HBM fits well being a health behavior promotion model. A strength of the HBM is the six constructs provides for the use of multiple interventions. The combination of multiple interventions shows effectiveness more than single interventions because it improves

the likelihood of the health promotion behavior. In a study performed by Adams et. al. (2014), utilization of all six constructs of the HBM model as interventions during an influenza campaign resulted in 82.6% of hemodialysis patients receiving the influenza vaccine. When utilizing all six constructs through several interventions for all types of populations to promote a health promotion change, successful changes are more likely to occur including influencing difficult populations like college students, the focus of the EBP project.

A weakness of the HBM is it does not entail a cultural component and its influencing factors as to why an individual chooses to or not to take part in a health promotion behavior. The lack of a culture element in the HBM model is evident in the studies that measure the model being performed primarily in Western countries, creating a lack of applicability among cultures (Mo & Lau, 2015). With an absence of applicability of culture in the HBM, understanding what is influencing a population within different cultures one is targeting for a specific health behavior can actually create trial and error of intervention components. Not only does HBM lack a specific culture component, it lacks social and structural components. Social and structural factors, including being in a group or specific community setting where a healthy behavior is considered normal and promoted among each other, is not accounted for in the HBM (Mo & Lau, 2015). For this project, with a group of culturally and socially diverse college students, these factors play a major role in influence and a health care provider would benefit from better understanding culture and social influences in this population to create a positive health behavior change.

EBP model of implementation

EBP is practice grounded in the best available research evidence integrated with theory, patient preferences, and clinical expertise. As practitioners and nursing innovators, the goal is to implement clinical practice based on evidence. By centering patient care and quality improvements on evidence-based practice, safe and improved patient outcomes occur. Without implementation of EBP models, improper evaluations on a need for change would be performed

with implementation, creating decreased patient outcomes, unsafe environments, and out of date guidelines or policies.

Evidence Based Practice Model: The Stetler Model

The Stetler model is an EBP model that builds its strengths on the use of research with knowledge utilization. The goal of any EBP model is to facilitate safe and effective evidence-based practices. Through three revisions, the Stetler model has grown with added complexity to provide better guidance to apply research to practice in the real world. Use of an EBP model helps practitioners to simplify analysis of both the product and process of research.

Description of the EBP model. To guide the design and implementation of this project the Stetler model of EBP will be used. The model is known as a practitioner-oriented model because it guides a problem solving process at a level for a skilled practitioner (Ciliska et. al., 2011).Through the use of this model, an individual practitioner or a group of practitioners can deliver current evidence based practice. After multiple revisions, critical thinking and the use of research are still the core of the model. Evidence is defined as information or facts that are systematically obtained which are replicable, observable, credible, verifiable, and supportable (Stetler, 2001). Stetler discusses two types of evidence, external and internal, acquired through a systematic process. External evidence is based on research, and other sources include expert opinions and credible program evaluations used as supplemental recommendations. Internal evidence is obtained through data sources including local performances, planning, quality outcomes, evaluation, EBP models, consensus and experience of local groups, and experiential information from individual professionals. Internal evidence supports external evidence. An importance is stressed on being mindful of the types of research evidence selected. There are five progressive phases in the model to guide evidence based practices.

Preparation phase. The preparation phase is the first phase of the model which is the identification of the problem through defining and affirming the priority (Ciliska et. al., 2011). When bearing in mind the problem, it is important to consider environmental factors both

external and internal to help clarify its purpose and potential significance. External factors can influence a problem's potential application, and internal factors can influence or diminish its objectivity (Stetler, 2001). In this phase, the search process is systematically initiated for relevant evidence. A mix of external and internal evidence is important to select as both help guide the EBP process providing valuable insights.

Validation phase. The second phase is the validation phase. A major component happening in this phase is assessment of a body of evidence collected from phase one through systematically evaluating and summarizing (Ciliska et. al., 2011). The advanced practice nurse (APN) determines what is credible and sufficient. When evaluating, a utilization focus between the specific problem and each article is applied (Stetler, 2001). Stetler recommends that in this phase a table of evidence should be created to help with critiquing the evidence. After evaluating all of the evidence, the end process should result in either clear sufficient or insufficient evidence. If any evidence is found to be insufficient according to Stetler, it should be deemed non-credible and eliminated.

Comparative evaluation/descriptive making phase. Phase three of the model is called the comparative evaluation/decision making phase. After the evidence is evaluated in phase two, decisions are made in this phase about the use of the evidence through the process of synthesizing the evidence. A set of utilization criteria is used on both external and internal evidence which includes appropriate setting, feasibility, current in practice, and significance of the evidence. Through this process, activities are conducted including labeling, condensing, organizing, and attributing meaning to all the evidence to uncover reliable data and determine a decision on use of evidence. The evidence is broken into several categories established from the criteria and the user including to use, to not use, and to consider use. The end decision of this phase results in either use of the research to guide practice resulting in moving to phase four, or considering the need for planned change of the problem and stopping the EBP model process.

Translation and application phase. The translation and application phase is fourth. Conversion of the evidence into a plan of action is the major focus in this phase. The ultimate goal of implementation occurs from using the details within the evidence, enhancing those details, and adopting them into a plan of action (Ciliska et. al., 2011). In order to apply evidence into action, first, confirmation of the type, method, and level of application must occur. When details are lacking from evidence, translation may be required to clarify. Translation for clarification occurs from research-based or non-research based evidence with the use of consensus, theoretical information, or expert judgement. Development of a plan must include formal organizational changes and reflect evidence based strategies to disseminate the translated findings for optimal facilitation of change in the problem.

Evaluation phase. The evaluation phase is the last phase. It encompasses evaluation of the implementation and change of practice in terms of the effectiveness outcome for supporting the problem. The goal of evaluation is to determine if the EBP project has achieved the appropriate outcome (Ciliska et. al., 2011). During evaluation the projects feasibility, anticipated or unanticipated effects, and recognition of modifications needed are assessed. Determining feasibility when evaluating a project on a smaller scale is performed through a pilot test of the project leading to extension to a substantially larger scale or modification. The revisions and evaluations process ultimately determine the decision on modifications, a need for process change to the project, or stopping the project all together. A dynamic evaluation may occur when a highly complex organizational change is involved, where a deliberate, systematic, and continuous evaluation process happens and internal evidence is collected to enhance the application of the findings. Evaluation with either method determines if the outcome goals of the implementation of evidence were or were not met.

Application of the EBP model to the EBP project. Stetler's first phase of the model is preparation which includes identifying the problem. Within the preparation phase for this project, consideration of the PICOT question was used for the systematic search for relevant evidence.

A search for internal and external evidence ensued to determine feasibility of the project. Internal evidence was gathered through meetings with the nurse practitioner at the University student health center to discuss influenza vaccine rates on campus for college students and through data collection from health need assessments sources. External data was collected through a vigorous systematic database search. In the second phase of Stetler's model, validation, the EBP project leader considered and summarized numerous articles that illustrated the most pertinent evidence to fulfill the PICOT question. In satisfying the comparative evaluation/decision making phase of the Stetler model, the EBP project moved forward from the articles chosen from the previous phase, by using the appraisal process to narrow to 16 total articles applicable to the EBP project. The appraisal process consisted of application of John Hopkins Nursing Evidence-Based Practice (JHNEBPP appraisal model and tools to guide evaluation of level and quality of the evidence in determining feasibility for the EBP project. When implementing the translation/application phase of the model, collaboration with the nurse practitioner of the university SHC occurred over several meetings to discuss facilitation and continued implementation of the influenza vaccination multi-component program. The final phase of the model is evaluation, a significant part of evidence based practice. Evaluation of the intervention was performed on the EBP project after implementation and from survey answers to determine feasibility for the SHC in the future.

Strengths and limitations of the EBP model for the EBP project. A major strength of the Stetler model is it is a practitioner oriented model providing step-by-step instructions to integrate research into practice. Enhanced critical thinking and leadership skills of nurse practitioners result in more EBP changes in practice. Velez et. al. (2015) saw a problem as nurse practitioners on over prescribing of antibiotics, which causes community associated methicillin-resistant Staphylococcus aureus infections, based a quality improvement project on the Stetler Model. The outcome of the project using the model showed that across medical professional groups, education alone did not influence behavior on prescription writing and

considering the socio-ecological system to drive practice change is needed, focusing on issues such as incentives, patient demands, and other drivers. As seen in the example, once a need for change in practice is seen, a PICOT question is formed, a nurse practitioner finds substantiating evidence to confirm the need for the change, determines the feasibility, and considers all the evidence before implementing the practice. These crucial first steps of changing practice often occur before consulting any EBP model. The Stetler model built steps around the advanced skills of an advance practitioner improving the probability of EBP implemented being effective. This EBP project followed the exact formal steps of the Stetler model, even though many times practitioners follow it informally to begin a practice change.

A limitation of the Stetler model is that a user can incorporate a combination of different types of evidence to facilitate a change in EBP, including internal evidence of consensus opinions, experience of local groups or patients, and experiential information from individual professionals (Ciliska et. al., 2011). Internal evidence is used to support other research findings, and the EBP project leader determines creditability. Since internal evidence is facts, a way of thinking, reflections, or experience, it can have the potential to be biased and can taint an EBP project. Most reviews do not discuss internal evidence within their reviews and focus on systematic searches that result in research studies or systematic reviews. Freeman et. al. (2009) discussed within their study, during phase one of the Stetler model to determine the best policies to decontaminate noncritical equipment a search algorithm was created for their systematic search in databases. Velez et. al. (2015) described their phase I of Stelter model using a systematic search process that resulted in qualitative and quantitative research and clinical guidelines. Internal evidence is important as it does help solidify the reason for the EBP problem. The clinical site for implementation of the EBP project at present time is going through a change in tracking systems from paper charting to electronic charting which will help to determine documentation of number influenza vaccinations given during each month for comparison which was not able to be done in past years. Currently, the only information that

was able to be obtained about influenza vaccine that was given on campus was that 200 vaccines were ordered and all 200 were given last year. To account for this limitation, a vigorous research process occurred with application of multiple research tools, numerous resources, and collaboration with internal sources at the university student health center on the topic to determine relevance of the problem. Also, information from data sources in respects to the population seen at the site was accessed to determine feasibility.

Literature Search

A literature search was performed to find relevant evidence in best practices related to interventions for influenza vaccine programs for college students, the focus of the EBP project. The purpose of the literature search was to gather numerous sources of external evidence. Strategy for performing the comprehensive search will be discussed below.

Sources examined for relevant evidence. The databases searched for relevant evidence included (a) Cochrane, (b) Joanna Briggs Institute (JBI), (c) CINHAL, (d) Medline, (e) National Guideline Clearinghouse, (f) ProQuest, (g) Academic Search Premier, (h) PsycInfo, and (i) Healthsource: Nursing Academic Edition. Keywords associated with the search included *flu OR influenza, college students OR university students, preventio* OR interventio* OR prevention strategies OR implemen* OR progra* OR promotio**. More detailed discussion of the search process in each search engine including search strategy with keywords and limiters will be discussed below.

Inclusion and exclusion criteria. Table 2.1 discusses inclusion and exclusion criteria used. Limiters used included all articles dated 2008 to 2016 and in English with evidence-base data. National guideline recommendations, academic, peer-reviewed journals and electronic research articles, and systematic reviews were included. To be included for review, articles needed to focus on the college student population. All articles to be included needed to discuss interventions to receive or intent to receive the influenza vaccine. Exclusion criteria were languages other than English, dated prior to 2008, and any articles not discussing influenza

Table 2.1 Criteria Table for Evidence

Inclusion Criteria	**Exclusion Criteria**
College Student Population	General Population
Influenza Vaccine influential factors: if the article discussed college students refusal or influencing reasons for receipt of influenza vaccine to determine ways to improve interventions for the population	Influenza vaccine influential factors: focused on refusal or influencing reasons for receipt of vaccine to determine ways to improve interventions not focused on the college population
Influenza Vaccine Interventions: if the article discussed college students and interventions to receive or intent to receive the influenza vaccine, article included	Any article not discussing influenza vaccine interventions to change intentions to receive the vaccine or receive the influenza vaccine within the college student population as the main primary objective of the study
Articles that included discussion about the general population but included college students or spoke specifically about the age of this population for influenza vaccination interventions were included.	Any article discussing the effectiveness of the vaccine as the only objective in the college population.
Published dates between 2008 to 2016	Articles published prior to 2008
Articles printed in English language	Articles printed in languages other than English

vaccine interventions to change intentions to receive the vaccine or receive the influenza vaccine within the college student population as the main primary objective of the study. Any article discussed the effectiveness of the vaccine as the only objective was excluded. Articles including the general population as the primary population and including college students with specific discussion about the age of this population for influenza vaccination interventions were included. Citation searching was performed on available literature. Search result abstracts were reviewed for project applicability with pertinent full-text reviews analyzed for inclusion.

A Cochrane search was performed using the keywords *flu OR influenza,* yielding a total of 41 results. All of the articles resulted were systematic reviews. One of the results from the abstract fit inclusion and was reviewed. In the JBI database, keywords used included *flu OR influenza,* resulting in 15 results. For the evidence review, one of the results of an evidence summaries was appropriate and utilized. The excluded articles did not pertain to college students and were for the general population. After searches were completed in Cochrane and JBI, keywords had to be reformed due to large search results in the different databases including CINHAL, MEDLINE, and ProQuest. CINHAL was searched with MESH headings including *flu OR influenza* and keywords included *college students OR university students, preventio* OR interventio* OR prevention strategies OR implemen* OR progra* OR promotio**. The search yielded 65 results with 12 articles to be reviewed for inclusion. Within the Medline database, using the same MESH headings and keywords from CINHAL, the results were 179 findings. After duplicated articles were excluded, 8 articles were reviewed. To look for evidence-based practice guidelines, the National Guideline Clearinghouse was searched using the keyword *flu OR influenza*, resulting in 58 guidelines. Within these guidelines, only 2 were relevant for inclusion. The other articles were excluded because they did not fit inclusion criteria. In ProQuest, keywords used to search for relevant evidence included *flu OR influenza, college students OR university students, preventio* OR interventio* OR prevention strategies OR implemen* OR progra* OR promotio**. A total of 227 initial results were found and after

eliminating duplicates, applying exclusion and inclusion criteria, 16 articles were reviewed for possible inclusion. Searches in Academic Search Premier, PsycInfo, and Healthsource: Nursing Academic Edition were performed using the same key terms as ProQuest. Academic Search Premier had a total of 24 results found with duplications present from previous searches and 4 new articles were reviewed for inclusion. Within PsycInfo, after duplicate articles were factored out, there was a total of 2 articles for review out of an initial 60 search results. Healthsource: Nursing Academic Edition had 25 results. Duplicate articles were again present and only 3 articles were reviewed for potential analysis. Citation chasing resulted in 6 articles to review and determine if inclusion was appropriate. Data of the evidence search is presented in Table 2.2 discussing the (a) articles found, (b) duplicate articles, (c) articles reviewed, and (d) articles analyzed for project.

Levels of Evidence

Momentous trials lead to eventual practice recommendations and without determining the level and quality of evidence through critical appraisal this cannot occur. Appraisal of each article to define level of evidence and quality was performed through the use of the JHNEBP appraisal model. Within JHNEBP's appraisal model, evidence is classified into five levels. Level one consists of evidence obtained from any randomized controlled trial or a systematic review that only includes randomized controlled studies with or without a meta-analysis. Level two contains evidence including quasi-experimental studies, or systematic reviews with a combination of randomized controlled trials and quasi-experimental studies only with or without meta-analysis. Level three evidence comprises any quantitative non-experimental study, or systematic review including randomized controlled studies, quasi-experimental studies, or non-experimental studies, with or without meta-analysis, and qualitative systematic reviews with or without meta-synthesis. Level four includes clinical practice guidelines and consensus or position statements since development occurs from patient preferences, research, and clinical practice. Level five evidence contains literature reviews, expert opinions, quality improvement

Table 2.2
Evidence Search Table

Database Searched	Articles Found	Duplicate Articles	Articles Reviewed	Articles Analyzed for Project
Cochrane Database	41	0	1	0
JBI	15	0	1	0
CINHAL	65	0	12	5
Medline	179	12	8	2
National Guideline Clearinghouse	58	0	2	0
ProQuest	227	14	16	7
Academic Search Premier	24	16	4	1
PsycInfo	60	13	2	0
Healthsource: Nursing Academic Edition	25	9	3	0
Citation Chasing	6	0	6	1

Note. Databases are listed in search order. JBI is Joanna Briggs Institute EBP Database. ProQuest is ProQuest Nursing Allied Health Source.

studies, financial evaluations, and program evaluations. Both JHNEBP appraisal tools were utilized to appraise the evidence including the Research Evidence Appraisal Tool and Non-Research Evidence Appraisal Tool.

The scientific evidence is not only assigned a level of evidence, but is also assigned a quality rating of high, good, or low. High quality evidence produces consistent and generalizable results, with an adequate sample size, and an extensive literature review of scientific evidence performed resulting in definitive conclusions. Good quality evidence produces reasonably consistent results from sufficient sample sizes, and consistent fairly comprehensive literature review of scientific evidence resulting in fairly definitive conclusions. Low quality evidence produces inconsistent results from insufficient sample sizes and there is little scientific evidence available to draw appropriate conclusions. If evidence receives a low quality rating, the JHNEBP appraisal model discards the evidence and it is not used in the research process. JHNEBP tool for appraisal is broadly defined, structured, and the when applying critical thinking skills and experience to justify rating an individualized specific conclusion for quality results. Table 2.3 includes the summary of JHNEBP levels of evidence and quality included for this EBP project.

Evidence Appraisal

With the results of the search strategy producing 700 initial articles, reading through abstracts and titles and excluding duplicates helped narrow the results. The remaining 55 articles were then reviewed in full text for inclusion and exclusion criteria to decide whether inclusion for the appraisal would occur. A total of 16 articles out of the 55 were found to be relevant for appraisal in the EBP project. Table 2.4 provides a summary of each included article and their citation, design/rating and appraisal, purpose, sample/setting, intervention and measurement, and findings and recommendations. A summary of the appraisals is provided.

Agarwal (2014) performed a cross-sectional study, “A/H1N1 Vaccine Intentions in College Students: An Application of the Theory of Planned Behavior.” The purpose was clearly defined to examine the applicability of the Theory of Planned Behavior in regards to

Table 2.3
Levels of Evidence and Quality

Level	Used in Project	
I	0	
II	0	
III	16	Good Quality
IV	0	
V	0	

Note. Adapted from Dearholt, S. L., & Dang, D. (2012). Johns Hopkins Nursing Evidence-Based Practice : Models and Guidelines (2nd Edition). Indianapolis, IN, USA: Sigma Theta Tau International.

Table 2.4
Appraisal of Evidence

Citation	Design/ Rating & Appraisal	Purpose	Sample/ Setting	Intervention & Measurement	Findings & Recommendations
Agarwal, Vinita, 2014 A/H1N1 Vaccine Intentions in College Students: An Application of the Theory of Planned Behavior	Cross Sectional Study Level III Quality Good	Examine the applicability of the Theory of Planned Behavior in regards to susceptibility, elf-efficacy, and intentions of college students who had not received the A/H1N1 vaccine.	• Undergraduate Students at a midsized Southern Metropolitan Research University • Communication Classes recruited • 489 total participants	• Survey was administered measuring the constructs of the TPB towards obtaining the H1N1 vaccine • Self-report of vaccination status was measured • Measured through IBM SPSS statistics 21	• Found significance in vaccine communication to college students to include individual choice, obtaining it as responsibility, highlighting usefulness and benefits. • Recommend to discuss when not receiving the vaccine the susceptibility it places on self, others, friends, and family
Bednarczyk, Chu, Sickler, Shaw, Nadeau, & McNutt, 2015 Low Uptake of Influenza Vaccine Among University Students: Evaluating Predictors Beyond Cost and Safety Concern	Cross Sectional Study Level III Quality Good	Evaluate the influenza vaccine coverage, identify major barriers, and identify if additional education would change perceptions about need for vaccination among college students	• Students who attended the University Health Center • Large public New York State University • 600 total participants	• Surveys were distributed at the University Health Center • An on-campus vaccination program was ongoing during the study • Self-report of vaccination status was measured • Analysis of the results was conducted through SAS	• College students main reason for not receiving the vaccine included being too lazy. • Students were willing to get vaccinated after learning about the risk of transmission to friends and family. • Recommendations include educating college students on both risks of flu and benefits of vaccine to themselves and those around them.
Benjamin & Bahr, 2016 Barriers Associated with Seasonal Influenza Vaccination Among	Cross Sectional Study Level III Quality Good	Identify factors and barriers associated with receiving the seasonal influenza vaccine among	• Undergraduate Students • Campus of California State University Northridge	• Completed a survey questionnaire with demographics, health related information, and information on	• Freshman, sophomores, and those with insurance were more likely to receive vaccine • Students reported beliefs of dangerous side effects, they may get the flu from the

College Students		college students	• 317 total participants	the influenza vaccine • Self-report of vaccination status was measured • Statistical analysis used SAS software	vaccine, and they are not at risk of getting the flu as reasons for not receiving the vaccine • Recommendations are improving education on benefits and real risks of vaccine
Jarrett, Wilson, O'Leary, Eckersberger, Larson, & SAGE, 2015 Strategies for Addressing Vaccine Hesitancy: A Systematic Review	Systematic Review Level III Quality Good	Identify strategies that have been implemented and evaluated across diverse global contexts to respond to, and manage the issues of vaccine hesitancy	• Articles evaluated or addressed an intervention on vaccine hesitancy as a primary outcome • 181 total articles included	• The GRADE system was used to evaluate the quality of evidence for inclusion in a systematic review with meta-analysis. • The Effective Public Health Practice Project quality assessment tool was applied for risk of bias to all articles	• Interventions most successful were (a) targeting unvaccinated or under-vaccinated populations, (b) improved convenience and access, and (c) targeted specific populations • Two studies on social media interventions found positive uptake for seasonal influenza • Recommends more studies to test effectiveness of social media interventions
Merrill, Kelley, Cox, Layman, Layton, & Lindsay, 2010 Factors and Barriers Influencing Vaccination Among Students at Brigham Young University	Cross Sectional Study Level III Quality Good	Identify the prevalence of the influenza vaccination and factors associated with the vaccine among college students	• 7 undergraduate general education classes were included at Brigham Young University • 411 total students participated	• Surveys were collected employed during class • Collection of information occurred through self-report • Data was analyzed through the SAS version 9.1	• Significant associations seen between receiving the influenza vaccine and work at health care facility, living off campus, living with parents, nursing students, and around children. • Found 45% who received the vaccine was due to HCP encouragement. • Recommendations are for education on severity, stressing the consequences of

					illness on missing important activities.
Monn, 2016 An Evidence-Based Project to Improve Influenza Immunization Uptake	Cross Sectional Study Level III Good Good Quality	Purpose was to impact influenza vaccination uptake at a midsized private college on students.	• College Students at private residential college in south central Pennsylvania • 299 participants	• Multiple education interventions to the students were used • Exit survey collected after vaccine administration • SPSS was performed for data analysis	• Found college web portal and posters were most selected reasons for vaccine uptake • Posters were more frequently selected by those on campus and college web portal was selected by those off campus. • Increased vaccination rates by 226% from previous year was seen. • More research on vaccine uptake at a cost to students
Nowak, Sheedy, Bursey, Smith, Basket, 2015 Promoting Influenza Vaccination: Insights from A Qualitative Meta-Analysis of 14 Yeats of Influenza-Related Communications Research by U.S. Centers for Disease Control and Prevention (CDC)	Qualitative Systematic Review Level III Quality Good	Perform a qualitative analysis to determine the communication used to promote and educate to increase seasonal influenza vaccination uptake	• Systematic review included 29 articles in total	• A qualitative systematic review was performed by two reviewers with a data analysis identifying major themes over time and across studies. • Influences linked to influenza vaccination decisions were categorized as facilitators and barriers	• Several important factors in the age of college students was noted: o More likely to believe not to get flu or will be manageable so will not receive vaccine o Did not know flu recommendations where for them, so didn't receive the vaccine o More likely to receive when information was given on vaccine safety, side effects, effectiveness, & by HCP
Poehling, Blocker, Ip, Peters, & Wolfson, 2012 2009-2010 Seasonal Influenza	Cross Sectional Study Level III Quality	Assess self-reported influenza vaccine coverage and understand different	• 8 different College Campuses in North Carolina – 7 public & 1 private	• Surveys were distributed and collected from college students after a seasonal influenza	• College students had higher vaccination rates if parents graduated college, had health insurance, previously were vaccinated, were in

Vaccination Coverage Among College Students From 8 Universities in North Carolina	Good	factors associated with uptake after a seasonal influenza campaign	• 4,090 college students were included	campaign on campus • Data was collected through self-report on influenza vaccine history • Data was analyzed using SAS version 9.2	lower undergraduate classes, attended a private college • Highly likely to receive vaccination when educated through social media and if participates in academic club or honor society • Future studies more research on elements of influenza campaigns
Ramsey & Marczinski, 2011 College Students' Perceptions of H1N1 Flu Risk and Attitudes Toward Vaccination	Cross Sectional Study Level III Quality Good	Determine the rates of likelihood to receive the influenza vaccination and major reasons behind refusal in college students	• College students at Northern Kentucky University • Students recruited from Introductory Psychology courses • 514 total participants	• Influenza education campaign on campus • A survey was collected with self-report • Mann Whitney and SPSS 17.0 were used to analyze data	• College students in this study felt they were not at risk, were unconcerned, and still unlikely to get vaccinated • Many believed vaccine wouldn't work, it would give them the flu, or it would have serious side effects • Recommendations in the future include improving college students knowledge on vaccination safety, effectiveness, and necessity
Rodas, Lau, Zhang, Griffiths, Luk, & Kim, 2012 Exploring Predictors Influencing Intended and Actual Acceptability of the A/H1N1 Pandemic Vaccine: A Cohort Study of University	Prospecti ve Cohort Study Level III Quality Good	Investigate the factors associated with influenza vaccine uptake by university students and examine the relationship between intention and actual vaccination	• First-year undergradua te University students at the Chinese University of Hong Kong • 330 total participants	• A pre and post survey was conducted gathering self-repot data • At this time current H1N1 campaign was occurring in Hong Kong • SPSS 16.0 was used for data analysis	• Not receiving the vaccine associated with belief of low risk of susceptibility, low knowledge, and high risk perceptions about the vaccine • More likely to receive vaccine if discussed with them by HCP or University Health Service • Recommendations include providing clear, concise, factual information for

Students in Hong Kong					students with a campaign through health center.
Shropshire, Brent-Hotchkiss, & Andrews, 2013 Mass Media Campaign Impacts Influenza Vaccine Obtainment of University Students	Cross Sectional Study Level III Quality Good	Determine the effectiveness of a mass media campaign on increasing the rate of college students obtainment of influenza vaccination	• College Students at a large Southern University • 721 total participants	• A multiple intervention mass media campaign was implemented • A survey was than collected at the health center after receipt of the flu vaccination • SPSS 19 was used to analyze that data	• The most successful of the mass media interventions students who received the vaccination included the web site portal page and campus print posters. • Recommendations include evaluating more specifically which aspect of the mass campaigns is most influential to target multiple students.
Sunil & Zottaarelli, 2011 Student Utilization of a University 2009 H1N1 Vaccination Clinic	Cross Sectional Study Level III Quality Good	Identify factors that influence college students decisions to receive the H1N1 vaccine at the campus vaccination clinic	• University Students • 529 total participants	• Survey was administered gathering information through self-report • A mass campus vaccination effort was held offering free vaccination • SPSS 18.0 was used for data analysis.	• Found students perceived their risk as being low and did not see the vaccine as a benefit, main reasons for not receiving the vaccine. • Future recommendations are increasing awareness of the benefits and peer to peer campaigns.
Suresh, Thejaswini, & Rajan, 2011 Factors Associated with 2009 Pandemic Influenza A (H1N1) Vaccination Acceptance Among University Students From India During the Post-	Cross Sectional Study Level III Quality Good	Analyze university student's knowledge, attitude, and willingness to accept the H1N1 vaccination during the post-pandemic period in India	• University students of Vellore Institute of Technology in India • 802 total participants	• Survey was performed and collected to assess knowledge and intention • A vaccination program was in place for a month prior to survey collection • PRISM GraphPad was used to analyze the data	• Fear of side effects and self-risk perception were high in those not receiving vaccination. • Most reported information for obtained knowledge about influenza and the vaccine in those who received it included mass media. • Recommendations include providing targeted student

Pandemic Phase					vaccine education program
Wilson, 2010 Pandemic Flu Knowledge Among Dormitory Housed University Students: A Need for Informal Social Support and Social Networking Strategies	Cross Sectional Study Level III Quality Good	Determine what knowledge and understating college students who lived in dorms had about influenza and the vaccine	• University students that lived in dormitories at New Mexico State University • 167 total participants	• Influenza program was implemented on campus • Surveys were collected to determine demographics, flu and vaccine awareness, knowledge, intention, and practices • SPSS 16.0 was used to analyze the data.	• Not receiving the vaccine most cited reasons included getting the flu from the vaccine and would not receive immunity. • Main sources for knowledge on the vaccine included social/support networks, and electronic media. • Future studies on electronic media and support networks. Increase sample size for studies.
Yang, 2012	Cross Sectional Study Level III Quality Good	Examine the use of the risk information seeking model and TPB on college students' pursuing the H1N1 vaccine	• Public university in upstate New York, • Undergraduate college students • Total of 371 students participated	• A survey was utilized through online collection from entry level undergraduate classes. • To analyze the data, the LISREL 8.80 system was used.	• Negative emotions and attitudes found to have a significant correlation to learn more about influenza and the vaccine. • When students feel they have control to manage the disease or don't perceive the vaccine as effective not going to receive • Recommendations is for education to be useful, unbiased, believable, and unexaggerated for students.
Yang, 2015	Cross Sectional Study Level III Quality Good	Identify key social cognitive behaviors using the Theory of Planned Behavior and Health Belief Model to	• College undergraduate students at a large Northeastern public university • 473 total participants	• A survey was conducted to assess the TPB and HBM in regards to influenza through self-report. • Data was analyzed using	• Interpersonal discussion and not using traditional media will interest college students to vaccinate • Social influence is a necessary component for intention to vaccinate

	inform promotion and intention of flu vaccination in college students	SPSS 20 and LISERL 8.80.	• Future research should tailor messages on effectiveness, social responsibility, and pro-vaccine

susceptibility, self-efficacy, and intentions of college students who have not received the A/H1N1 vaccine in obtaining the vaccine. Included within the study was 489 college students in undergraduate communication classes. The study took place between January and March 2010 at a midsized southern, metropolitan research university. There was no discussion of a predictive analysis being performed to determine participants needed to detect a small effect size. The surveys were collected using convenience purposive sampling to the undergraduate communication students during their classroom time. At the time of survey disbursement, health campaigns were currently in place on the university campus. Collection occurred through self-report from a hardcopy survey collected in person by the researcher and through a drop box outside the researcher's office. Information that was gathered from the survey included the factors of a student's intention, attitudes, and behaviors in why they would or would not obtain the influenza vaccine. Reliability and validity was discussed in regards to each questionnaire tool utilized in the survey. Comparing the overall student population at the school to the sample taken for the study, no statistically significant differences in baseline characteristics were noted. Data on the outcomes was analyzed through the SPSS 21 and hierarchical regression equations. Results of the study found a significant contribution in receiving the vaccine by controlling for knowledge on influenza vaccine side effects and susceptibility to influenza. The study also found a significant predictor of future intentions to receive the vaccine including prior behaviors of receiving the vaccine. A major limitation of the study was administration the survey to communication students only who have a greater focus on media effects and health campaigns. The survey sample was self-selected by the researcher. Based on the appraisal of this study, there is evidence applicable for the EBP project. The quality of the evidence helps support the evidence, making it a good quality study.

Bednarczyk et. al. (2015) focused on evaluating the influenza vaccine coverage for college students to identify major barriers and if any additional education would change perceptions about the need for vaccination. The study recruited participants from a university

student health center at a large, public New York State University. A self-reported survey of 600 students was gathered through convenience sampling. A predictive analysis was not discussed for the study sample. There was a current university vaccination program in place during the time of the survey with the main components implemented included email communication and on campus signage. Data was analyzed using the Epi-Info and SAS systems. The data collected from the survey included self-repot of influenza vaccine, reasons for not receiving the vaccine, awareness of the vaccine, barriers, and knowledge. Even with 61% of the students being aware of the vaccination program on campus, only 28% of the students surveyed received the influenza vaccine. The most significant reasons for not receiving the influenza vaccine cited by students in the study were 32% “being too lazy to get the vaccine” and 29% believing they “didn’t need it because they were healthy.” When education was given to students in regards to spreading the flu to family or loved ones and that the vaccine provided protection, 71% said they were more likely to now receive the vaccine. The following study was appropriate, meaningful, and feasible to yield results for implementing a program for influenza vaccine uptake among college students. The study being limited to students only attending the university health center and only stating that it was a large efficient sample size can decrease generalizability of the results, however the overall study does provide support that values application to the EBP project.

Benjamin and Bahr (2016) implemented a cross-sectional study, “Barriers Associated with Seasonal Influenza Vaccination Among College Students.” The main purpose of the study was to identify factors and barriers associated with receiving the seasonal influenza vaccine among college students. A total of 317 undergraduate college students were included. During the one week time period in January at the colleges campus of California State University the research study was performed. Undergraduate students were chosen as the primary target for the survey which included a total general school population of 33,771. Even though the total undergraduate population was discussed by the authors, no discussion of a predictive analysis

was performed to detect the appropriate effect size. A convenience sample of surveys were collected in person from a common student gathering location on campus. The surveys utilized self-report to collect information on healthcare information, knowledge about influenza vaccine, attitudes, barriers, access, beliefs, and education provided to them on the vaccine. To discuss the reliability and validity of the surveys, the authors discussed the development of the surveys through using previous studies surveys. There were no statistically significant differences among the baseline characteristics of the study sample and general student population at the university. Analysis of the data was performed through SAS software and multivariate logistic regression. The results of the study found a significant association in undergraduate students who were freshman or sophomores being more likely to receive the influenza vaccine. Also, the study found three significant predictors of future intentions to receive the vaccine including seeing a medical provider, encouraged by a medical provider, and having health insurance. A major limitation of the study was a lack of unknown predictive analysis with the convenience sampling which can decrease the generalizability due to unknown effect size. After appraising the study, evidence is present that is appropriate for the EBP project. The quality of the evidence not only is supportive, it makes it a good quality study.

Jarrett et. al. (2015) completed a systematic review, “Strategies for Addressing Vaccine Hesitancy – A Systematic Review.” The objective was clearly defined to identify strategies from across diverse global contexts that have been implemented, in order to evaluate, respond, and manage the issues of vaccine hesitancy. The search strategy was visibly outlined stating the keywords and subject headings used for the two different literature searches (a) peer-reviewed literature search, and (b) grey-literature search. Searches were limited to a specific time period for both searches and the different databases were clearly listed for both. A separate appendix was included with the inclusion and exclusion criteria. A mix of experimental and non-experimental studies were included in the review. To include or exclude studies, a PICO three question theme and GRADE methodology was used and the authors developed a 15 question

data extraction tool. Excluded studies were discussed in an included Characteristics of Excluded Studies table. A total of 166 studies met the inclusion criteria from the peer review search and 15 from the grey literature review search and all the included articles were presented in several flow charts. Two authors assessed each study independently. The methods of measuring validity and strength of the evidence was not discussed. Assessment of risk of bias was performed using the Effective Public Health Practice Project qualitative assessment tool. Studies included pre and posttest groups and only the post test data was utilized for analysis through the Review manager software with the fixed effects mode. The review found the most effective interventions increasing the largest vaccine receipt rates included the use of multicomponent interventions. Within the study it was found when information was specifically targeted at unvaccinated or under-vaccinated populations, information was generated specifically or tailored for a population, and access to the vaccines was improved, increases of greater than 25% was seen. Limitations for the review were discussed as the PICO question which generated select articles for the review and may have excluded studies or included bias to studies. The review without discussing validity and a specified PICO question still provided quality evidence valuing application to this EBP project.

Merril et. al. (2010) performed a cross-sectional study, “Factors and Barriers Influencing Vaccination Among Students at Brigham Young University.” The purpose was clearly stated to identify the prevalence of the influenza vaccination and factors associated with the vaccination among college students. A total of 411 college students in seven undergraduate general education classes were included. The study’s survey was conducted during the National Influenza Vaccination Week from November 26th to December 2nd 2007 at a private, faith based university of Brigham Young. A lack of discussion about a predictive analysis being performed was present within the study. Surveys collected were employed through a hardcopy in a convenience purposive sample during their classroom time after permission from the instructors. Collection of information occurred through self-report collected at the beginning of the class.

The survey collected information on current knowledge about influenza and the vaccine, practices in regards to the vaccine, beliefs as well as concerns, and where students received information. A pilot study had been performed prior to the study which was used to determine reliability and validity of the questionnaire tool utilized in the survey. The outcomes for the data was analyzed through the SAS version 9.1, frequency distributions, cross tabulations, and stepwise logistic regression. There were significant associations with college students receiving the influenza vaccine and those who were associated with a health care facility, living off campus, living with their parents, nursing students, and those around children. The study also found if a student thought the flu was dangerous or fatal they would receive the vaccine. Being that the survey was self-report, a limitation included the possibility of bias due to survey dispersal and administration to specific students in general education classes. Even after the appraisal of this study and with the limitations, the evidence is relevant for the EBP project. The overall quality of the evidence supports the evidence, making it good quality.

A cross sectional study (Monn, 2016) aimed with the objective to impact influenza vaccination uptake was performed at a midsized private college. College students were recruited for the study at a private in south-central Pennsylvania to determine the increase influenza vaccination rate from the previous year. Students for the study were collected through convenience sampling on who received the vaccine and the post-survey was also collected through convenience sampling. The predictive analysis was not discussed for the study sample effect size. The researcher implemented a multiple intervention campus wide influenza vaccination campaign that included provider education, media education, posters throughout campus, and immunization clinics on campus. This study occurred during a time frame of September 1st to December 14th 2014. To analyze the data, the SPSS 21 system, cross tabulations with Pearson x^2 tests were utilized. The post-survey was employed to anyone who received the vaccine and was voluntary. Results of the study showed a significant increase in influenza vaccination form the previous year at 226%. Students noted the college web portal at

51% and posters at 32% as the most influential and significant reasons for receiving the vaccine. There was a significant association with living on campus and the posters component and those residing off campus with the web portal component. Limitations of the study were no reliability or validity of the post-survey was tested decreasing generalizability and due to running out of the vaccine supply on campus, a number of students were unable to receive the vaccination. With the limitations and study findings, it is significant and feasible, resulting in associations that can be used to implement a program for influenza vaccine uptake among college students. The study provides support for application to the EBP project.

Nowak et. al. (2015) completed a qualitative systematic review, “Promoting Influenza Vaccination: Insights from a Qualitative Meta-Analysis of 14 years of Influenza-Related Communications Research by U.S. Centers for Disease Control and Prevention (CDC).” The purpose of the review was to determine best practice communication used for promoting the vaccine and education with the hope for an increase of seasonal influenza vaccination uptake. The qualitative meta-analysis was completed on an already performed review made available which included a grey literature search of 29 unpublished seasonal influenza vaccination studies, a valid strategy. This review came from the Heath Communication Science Office in the CDC’s NCIRD and the studies included took place over a 14 year time span. Studies included were mostly qualitative, 13 being focus group discussions, 6 were in-depth interviews, and 4 involved both focus groups with in-depth interviews. The meta-analysis found facilitators and barriers to help or hinder influenza vaccination uptake. Seven facilitators of the receipt of the influenza vaccine included (a) perceived susceptibility or health threat, (b) prevention/protection from influenza, (c) age and health status, (d) health care provider recommendation, (e) experience with influenza illness, (f) convenience, and (g) active promotion. Six barriers of receiving the influenza vaccine included (a) not susceptible to serious illness/influenza is a “manageable” illness, (b) flu vaccine recommendations do not apply to me, (c) influenza vaccines are not effective, (d) fearful of, concerned about, influenza vaccines, (e) other

measures are as or more effective than vaccination, and (f) personal experience with influenza or influenza vaccination. A limitation of the meta-analysis was many of the studies over the 14 year time span took place when the environment played a major role on the interventions including an influenza pandemic and influenza vaccination recommendation changes which could vary the results. Even with the possibility of environmental bias, the meta-analysis provides adequate outcomes among the studies making relevance for the EBP project.

Poehling et. al. (2012) performed a cross-sectional study, “2009-2010 Seasonal Influenza Vaccination Coverage Among College Students from 8 Universities in North Carolina.” The question for the review was obviously stated, to assess self-reported influenza vaccine coverage and understand different factors associated with uptake after a seasonal influenza campaign. The setting included 8 different college campuses in North Carolina. Included in the analysis was 4,090 undergraduate college students who completed a survey between the last week of October through all of November in 2009. A predictive analysis was performed estimating an appropriate effect size to be 4,000 for a stratified random sample of survey participants who did participate voluntary after being picked. Even using multiple campuses, no statistical analysis differences were present in baseline characteristics. Seasonal influenza immunization campaigns occurred from September through October on the campuses and the study did not specify the interventions used. Outcomes were measured using the SAS version 9.2 and generalized linear mixed effects modeling. The survey looked specifically at receipt of the vaccine, demographics including extracurricular activities, and attitudes with behaviors of the college students. There was no reported significant differences among demographic characteristics between the data collected at each university and also between the study populations with the general student population. Significant predictive factors found within the study that predicted receipt of the influenza vaccine included being an underclassman, attending a private school, having a parent who graduated college, participating in a club or honor society, volunteering or performing community work, and using email often or very often.

Being a cross-sectional study with self-report surveys was a major limitation. The survey by the participants helped discuss valuable information on factors affecting students in receiving the vaccine which is feasible for the clinical setting it was applied to. The results of the study measured provide reasonable support to apply to this EBP project.

Ramsey and Marczinski (2011) implemented a cross-sectional study, “College Students’ Perceptions of H1N1 Flu Risk and Attitudes Toward Vaccination.” The purpose was evident as to determine the rates of likelihood in college students to receive the influenza vaccination and major reasons behind refusal. Undergraduate students were included within the study totaling 514 students in an introductory psychology class. The study occurred at Northern Kentucky University (NKU) from October to December. There was no discussion of a predictive analysis being performed to determine participant effect size. Survey collection was performed through convenience sampling. At time of survey disbursement, a current influenza awareness strategies were being implemented on the university campus and updated information was provided through the NKU website. The collection of the self-report survey was web-based. The 50 question survey collected information on the student’s knowledge, vaccination history, reasoning, and perceptions of flu risk. The survey also determined if the students would or would not obtain the influenza vaccine. Survey questions were derived from a previous survey and reliability and validity was not fully discussed. Analysis of the data outcomes was analyzed through the SPSS 17 and Mann-Whitney tests. The study results found the most common reason students felt they were at decreased risk for influenza included they were healthy. Other results of the study found a significance in students who received the vaccine the previous year were likely to receive the influenza vaccine. The study also found a significant probability to receive the vaccine if recommended by a doctor. A major limitation of the study was administration to a selected introductory psychology. The evidence is good quality making it applicable for the EBP project.

Rodas et. al. (2014) completed a prospective cohort study, “Exploring Predictors Influencing Intended and Actual Acceptability of the A/H1N1 Pandemic Vaccine: A Cohort Study of University Students in Hong Kong.” The study looked to investigate the factors associated with influenza vaccine uptake by university students and examine the relationship between intention and actual vaccination. Recruitment of participants included first year students at the Chinese University of Hong Kong. A total of 330 students completed both the pre and post self-reported survey collected through convenience sampling. The surveys were collected in August 2009 and May 2011. Surveys pursued to collect information about self-efficacy, perceived susceptibility, and intention to receive the vaccine. Both a citywide and university influenza vaccination campaigns occurred during the time of the surveys. Data was analyzed using the SPSS 16, Chi-squared tests, and *t*-tests. Only 4.6% of the students received the influenza vaccine in the post-survey out of the 58.6% who intended to receive the vaccine from the pre-survey. The students who received the vaccine had significantly higher knowledge scores and had positive attitudes in regards to the vaccine. The results of the study are acceptable to promote implementing a program for influenza vaccine uptake among college students. The study’s participation rate and follow up rate was low which limited the sampled size, decreasing generalizability of results. The results of the study provide support that permits application to the EBP project.

Shropshire et. al. (2013) performed a cross-sectional study, “Mass Media Campaign Impacts Influenza Vaccine Obtainment of University Students.” The overall purpose of the study was to determine the effectiveness of a mass media campaign on increasing the rate of college students’ obtainment of influenza vaccination. An influenza vaccination campaign took place on a large southern university campus. Recruitment of college students who received the influenza vaccine on campus were included for the survey. Surveys were collected via hard copy and convenience sample from September through December. A total of 721 students completed the survey. No discussion of a predictive analysis being performed was present. The self-report

surveys collected information on the vaccination campaign and the influence on receiving the influenza vaccine. The authors discussed no well-accepted survey for influenza vaccination was currently present, so a survey was developed by the authors with approval from the IRB and Chief of Medical staff at the university health center. The overall demographics of the university and of the study sample showed no statistical differences. Analysis of the data was performed through SPSS 19. The results of the study found the most highly viewed elements of the campaign included the website and posters around campus. The students who received the vaccine for the first time stated the most common reasons for not receiving the vaccine in the past included inconvenience/lack of time and fear of receiving illness form the vaccine. The information from the influenza campaign was determined to have moderate to strong significance in their impact to receive the vaccine. Several limitations of the study was the survey was self-report and collection only through those vaccinated on campus eliminated students who may have received vaccination off campus. Appraisal of the study presents evidence of good quality that is appropriate for the EBP project.

Sunil and Zottarelli (2011) completed a cross-sectional study, “Student Utilization of a University 2009 H1N1 Vaccination Clinic.” Implementation of the study occurred to identify factors that influence college students’ decisions to receive the H1N1 vaccine at the campus vaccination clinic. The setting for the study included a major urban university campus. The total college students included was 529 who completed a survey in January at the vaccination clinic sites or in public areas on campus. A predictive analysis was not performed to establish the appropriate effect size. The university provided a two day influenza vaccination clinic free to the students. Data of the outcomes were measured using the SPSS 18. Specifically, the survey assessed for receipt of the vaccine, perceived susceptibility and knowledge, risks and behaviors in regards to influenza and the vaccine. Three significant predictive factors of college students receiving the vaccine found within the study included being older in age, knowing someone in the past who was sick from influenza, and if a family or friend has received the vaccine. The

major limitation of the study was use of self-report surveys. Study results helped demonstrate valuable information feasible for application to the EBP project.

Suresh et. al. (2011) completed a cross sectional study, “Factors Associated with 2009 Pandemic Influenza A (H1N1) Vaccination Acceptance Among University Students from India during the Post-Pandemic Phase.” The purpose of the study was to analyze the university student’s knowledge, attitude, and willingness to accept the H1N1 vaccination during the post-pandemic period in India. After a predictive analysis was performed, 802 students were included from a university in India, Vellore of Technology. The survey was collected from October 2010 to January 2011 and was distributed to the students after the vaccination program was in place at the university. The survey questions gathered information on the knowledge, beliefs, and attitudes towards influenza and the vaccine. Survey questions were created by the researchers and reliability and validity was not discussed. Analysis of the data was performed through PRISMA GraphPad 4.0. Results from the study found students not vaccinated reported reasons including safety of the vaccine and belief of not being at risk to influenza. Other results of the study found a significance in students who received the vaccine were from bio-science and bio-technology majors. A major limitation of the study was administration of a self-report survey. Evidence from the study with limitations was still good quality making it applicable for the EBP project.

In the cross-sectional study performed by Wilson and Huttlinger (2010), a total of 167 college students only living in the dormitories were included within this study. The goal of the study was to determine what knowledge and understating college students who lived in dorms had about influenza and the vaccine. Performance of the study took place between August and November 2009 at New Mexico State University. No predictive analysis was performed to determine participants needed to detect a small effect size, but the goal by the authors for participation was initially 200. Due to convenience purposive sampling and some surveys being disqualified the goal was not achieved. The University implemented influenza health education

across the campus through use of a webpage, flyers, electronic media campaign, and education to department teachers. Data was collected through self-report from surveys collected in person after completion by a graduate student group. The survey goal was to seek information from the students on knowledge, attitudes, behaviors, and practices related to the influenza vaccine. Multiple measurement tools were used for the analysis. Reliability and validity was discussed by the development of the survey through a face-to-face survey instrument that built the surveys based on a literature review and information from different community partners located on campus. There were no statistically significant differences in baseline characteristics from the sample and rest of the student population. Data on the outcomes was analyzed through the SPSS 16.0.1 and a Pearson x^2. The results found significant differences in how college students received information about influenza vaccine with family being the most significant and online being the next most significant. Also, only 54.8% felt the influenza vaccine was safe, 57.5% of students felt they could receive the flu from the vaccine, and 77.1% did not believe the vaccine provided immunity. A major limitation of the study was a low participation rate at 10.6% completing the surveys. Based on the appraisal of this study, there is evidence that is applicable for the EBP project.

A cross sectional study (Yang, 2012) designed with the objective to examine the use of the risk information seeking model and theory of planned behavior on college students' pursuing the H1N1 vaccine. At a large public university locate in upstate New York, college students were recruited with 371 participating. Students for the study were sought through entry-level undergraduate classes and the survey utilized convenience sampling. A predictive analysis was not discussed for sample effect size. Reliability and validity of the questions on the survey were discussed and most questions on the survey were utilized from previous studies on the different models and influenza. This study occurred during the spring of 2010. To analyze the data, the LISREL 8.80 system, x^2 goodness-of-fit statistic, and x^2/df ratio were utilized. Results of the study showed significance in college students seeking information about the vaccine when the

information given seemed objective and accurate. Negative emotions and attitudes was found to have a significant correlation to college students drive to learn more about influenza and the vaccine for obtainment. Limitations of the study noted were a small sample size for the use of complex model and theory can decrease generalizability. After analysis of the limitations and study findings, results are still significant and feasible, with relations that are useful for implementation in a program for influenza vaccine uptake among college students.

Yang (2015) completed a cross-sectional study, “Predicting Young Adult’s Intentions to Get the H1N1 Vaccine: An Integrated Model.” The goal of the study was to identify key social cognitive behaviors using the Theory of Planned Behavior and Health Belief Model for promotion and intention of flu vaccination in college students. The study recruited participants from a large, northeastern public university enrolled in undergraduate classes. A total of 470 self-reported survey participants were obtained through convenience sampling. The survey questions utilized were measured to determine the tools reliability and validity. Surveys were collected in October 2010. Data was performed using SPSS 20 and LISREL 8.80. Collected data from the survey about influenza and the vaccine included intention to receive, attitude, susceptibility, perceptions, self-efficacy, barriers, and benefits. A positive relationship was found between receipt and intention of receiving the vaccine with feeling social pressure to obtain the vaccine. Influence to receive the vaccine had a positive relationship with interpersonal discussion and not news media. The survey tool had several questions that scored as low reliability which may have weakened some relationships of behavioral intention. The following study resulted in feasible conclusions. With the results, implementation of a program for influenza vaccine uptake among college students in an EBP project can be performed and the overall study provides valuable insight.

Construct Evidence Based Practice

The critical appraisal and analysis of the literature on interventions and influence on receipt of the influenza vaccination in college students delivered the groundwork to lead to

construction of the EBP project. The information gained from the appraisal and analysis allowed for development of recommendations from the literature for a multi-component intervention on influenza vaccination for college students. Discussion below about best recommendations to implement interventions for college students on the influenza vaccination will be discussed and linked to the PICOT question of the EBP project.

Synthesis of literature. In the literature analysis, college students' intention to receive the influenza vaccine were affected through individualities and behavioral and social influences. These influences provided the studies with different implementation strategies determined to be supportive of influencing receipt of the influenza vaccine. The literature supports the following interventions (a) vaccination clinics on campus, (b) posters, (c) social networks, (d) focused education, (e) education through technology, and (f) multi-component interventions.

Vaccination clinics on campus. Several studies discussed a perceived barrier on the influence associated with the decision to receive the influenza vaccine as access. The odds of receiving the influenza vaccine was found to be significantly lower in those students who perceived a barrier (Sunil & Zottarelli, 2011). College students expressed not receiving the influenza vaccine in the past due to not being convenient and a lack of time (Agarwal, 2104; Shropshire, et. al., 2013). Multiple factors can play a role in access including residence. College students do not always reside on campus often commuting to campus for class. Statistical significance was found in several studies in the likelihood to receive the vaccine and living in the dormitories (Monn, 2016; Sunil & Zottarelli, 2011). Of the 74% of college students who received the influenza vaccination after a media initiative and multiple on campus vaccination clinics, they lived in the dormitories (Monn, 2016). With undergraduate students living in the dormitories, receipt of the influenza vaccine was influenced. Freshman and sophomores are more likely to obtain the influenza vaccine than upperclassmen (Benjamin & Bahr, 2016; Monn, 2016; Poehling, et. al., 2012). Undergraduate students in the freshman and sophomore classes revealed a significant association with receipt of the influenza vaccination, $p< 0.02$ (Benjamin &

Bahr, 2016). Several studies sought to determine whether having vaccination clinics on campus available for all students would benefit the report of this barrier. Multiple studies found when the influenza vaccination was made readily available through onsite clinics, increased intention or likelihood to get the vaccine was present (Bednarczyk, et. al., 2015; Jarrett, et. al., 2015; Monn, 2016; Nowak, et. al, 2015).

Posters. Multiple educational interventions have been applied to the college population with some success. Posters around campus are visualized when placed in the appropriate location providing information to the college students. More than three quarters of college students stated they saw posters in regards to the influenza vaccine on campus (Sunil & Zottarelli, 2011). Posters have been studied and shown positive results when provided on campus to promote awareness about the influenza vaccine. Signs and posters on campus as an educational tool for college students were noted as informative influences increasing the receipt of influenza vaccine in the population (Bednarczyk, et. al., 2015; Monn, 2016; Rodas, et. al., 2012; Shropshire, et. al., 2013; Sunil & Zottarelli, 2011). Rodas et. al. (2012) found 66.7% of college students who were surveyed and noted the university advertisement on campus showed a significant association to receipt of the influenza vaccine, $p<0.001$. Location of the signs and posters were of importance when placed on campus. Posters and signage placed in common areas and in the maximum traffic areas of the university were selected to have an impression (Bednarczyk et. al., 2015). The advertisement of posters about the influenza vaccine were seen by one third of the college students who received the influenza vaccine in practice change implemented within one study (Monn, 2016). Specifically, posters and signs are being seen by a specific population of students making them important to utilize in an influenza vaccination educational awareness campaign. Students who were living on campus showed a significant correlation between learning about the influenza vaccination through the posters displayed, $p<0.001$ (Monn, 2016). Posters can convey to college students accurate information and are a source of guidance about the influenza vaccination.

Social networks. Social networks include family and friends which plays a major in influencing the college student population in regards to the influenza vaccine. College students who believed people close to them wanted them to be informed about the influenza vaccine were more likely to sense a need for the information and seek information about the vaccine, $p<0.001$ (Yang, 2012). It was found in multiple studies, social networks positively influenced health behaviors with a significant association between college students' intent to receive the vaccine (Agarwal, 2014; Bednarczyk, et. al., 2015; Nowak, et. al, 2015; Sunil & Zottarelli, 2011; Wilson & Huttlinger, 2010; Yang, 2012; Yang, 2015). Education was found to be successful at improving vaccine rates when discussing risks to family and friends. When family and friends were perceived to be at risk if not vaccinated, increased likelihood to receive the vaccine was seen (Agarwal, 2014; Bednarczyk, et. al., 2015). Social networks were found to play a major role in providing discussion about the influenza vaccine. Several studies found college students sought information from a family member or friend prior to receiving the influenza vaccine (Wilson & Huttlinger, 2010; Yang, 2012; Yang, 2015). When college students discussed the influenza vaccine with their family, a significant relation was found in intention to receive the vaccine, $p< 0.05$ (Yang, 2015). Wilson & Huttlinger (2010) found the top source of information a college student sought for the influenza vaccination was family with a significant p value of 0.035. College students value their relationships with friends and family placing a large impact on health decisions. Merril et. al. (2012) performed a study and of the 53 college students who received the influenza vaccine, 33 of them received information about the vaccine from their parents. Poehling et. al. (2012) found college students who participated in clubs or honor society had an increased predicted rate of receipt of the influenza vaccine which was significant, $p< 0.05$. When a college student knew a friend or family member who suffered from influenza, the probability of receiving the influenza vaccine was higher (Nowak, et. al, 2015; Sunil & Zottarelli, 2011). When students were around children on a regular basis, the receipt of the vaccine was found to be increased with a relative risk of 1.94 and a confidence interval of 1.1 –

3.4 (Merril et. al, 2010). Social networks including family and friends play a role in influence on college students receiving the vaccine when information is given about the risks on their family or friends health. Bednarczyk et. al. (2015) found 71% of unvaccinated college students were more willing to receive the vaccine when they received information about receiving the influenza vaccine as protecting family and friends. Nowak et. al. (2015) found in their meta-analysis that a positive reaction to the influenza vaccine was seen when messages were provided about the vaccine protecting loved ones.

Focused education. When educating the college student population, the message being communicated is important otherwise barriers will be created. College students want information about the influenza vaccine to have correct facts, be clear, and the message provided simply in order to consider receiving the vaccine (Nowak, et. al, 2015; Rodas, et. al., 2012; Yang, 2012). Yang (2012) found after surveying college students, when information about the influenza vaccine was perceived by the students as objective and accurate, seeking this information was more likely and association with intention to receive the vaccine was seen, $p<0.001$. The portrayal of the message when educating the college student is important especially in whether it is positive or negative. Education about the vaccine which is positive can promote vaccination intention (Agarwal, 2014; Jarrett, et. al., 2015; Yang 2015). Highlighting the positive beliefs about the influenza vaccine is significant in behavioral intention for receipt of vaccine, $p<0.001$ (Agarwal, 2014). When negative emotions about the influenza vaccine were present from education received, a significant association between decreased behavioral intention and receipt of vaccine was seen, $p< 0.001$ (Yang, 2012). Providing education through a healthcare provider (HCP) or university advertisement campaign was seen to be an important factor for college students. College students that were educated about the influenza vaccination by a HCP or through university sponsored advertisement, had an increase in willingness to receive the vaccine (Bednarczyk, et. al., 2015; Benjamin & Bahr, 2016; Merrill, et. al., 2010; Ramsey & Marczinski, 2011; Rodas, et. al., 2012). Ramsey & Marczinski (2011) study found

when college students received a recommendation from a HCP, a significant positive correlation to receiving the influenza vaccine was found, $p< 0.001$. Advice received from a healthcare provider showed a significant association for college students to accept the need for the influenza vaccine with an increase in intention to receive, $p< 0.001$ (Rodas et. al., 2012).

College students have similar perceived susceptibilities and risks in regards to influenza. This is important to understand when determining what to focus on in regards to education for improving influencing influenza vaccination rates among college students. When giving education to college students, education material targeted which are specific to college students increases intention to receive and vaccination rates (Benjamin & Bahr, 2016; Jarrett, et. al., 2015; Nowak, et. al, 2015; Ramsey & Marczinski, 2011). In the meta-analysis performed by Nowak et. al. (2015), when information was specific to an age group and health status, increased vaccination rates or intentions for receipt. Education materials should be specific for the college population and multiple studies focused on the materials for specific information college students want to be educated on about the vaccine. The education materials for college students should focus on information about vaccine safety, side effects, and effectiveness to increase willingness to receive the influenza vaccine (Benjamin & Bahr, 2016; Merrill, et. al., 2010; Nowak, et. al, 2015; Ramsey & Marczinski, 2011; Shropshire, et. al., 2013; Suresh, et. al., 2011; Rodas, et. al., 2012; Wilson & Huttlinger, 2010; Yang, 2012; Yang, 2015). Due to a lack of targeted education received by college students, many myths have been created and decreased receipt of the influenza vaccine is occurring. Many college students are under educated about the flu vaccine and believe they will develop the illness from receipt of the vaccine creating a fear (Benjamin & Bahr, 2016; Ramsey & Marczinski, 2011; Shropshire, et. al., 2013; Wilson & Huttlinger, 2010). Benjamin & Bahr (2016) in their study found 47.8% of students agreed with the statement, “I believe that as a result of the flu shot I may actually get the flu.” Another study performed by Wilson & Huttlinger (2010), found similar results with 42.5% of the students believing if they receive the influenza vaccine they will catch the flu. A concern

expressed by college students in multiple studies as to why they do not receive the influenza vaccine was that dangerous side effects would occur from receipt of the vaccine (Benjamin & Bahr, 2016; Ramsey & Marczinski, 2011; Rodas, et. al., 2012; Suresh, et. al., 2011; Wilson & Huttlinger, 2010; Yang, 2012; Yang, 2015). Yang (2015) found when students understood the benefits of the vaccine, increased receipt of the vaccine was seen with a significant association, $p< 0.001$. When the knowledge for the influenza vaccine side effects were controlled, a significant association with increased intention to receive the vaccine and college students was seen, $p< 0.001$ (Agarwal, 2014).

Education needs to be given on the susceptibility to the actual illness of influenza in regards to their specific population. Many college students who did not receive the influenza vaccine felt it was unnecessary because they were healthy (Bednarczyk, et. al., 2015; Nowak, et. al, 2015; Ramsey & Marczinski, 2011). Rodas et. al. (2012) found 48.7% of the students surveyed believed they didn't need the vaccine because they weren't at risk. Ramsey & Marczinski (2011) study found college students at 50% believed they were not at risk for getting influenza because they were too healthy. Significant examination took place in intention to receive the vaccine or receipt of vaccine in multiple studies on college students' beliefs of susceptible risk to influenza. When college students perceived low susceptibility of contracting the influenza virus they were not likely to obtain the vaccine, however the higher the perceived susceptibility the more likely the receipt of vaccine (Agarwal, 2014; Benjamin & Bahr, 2016; Merrill, et. al., 2010; Nowak, et. al, 2015; Rodas, et. al., 2012; Sunil & Zottarelli, 2011; Suresh, et. al., 2011; Wilson & Huttlinger, 2010; Yang, 2015). Ramsey et. al. (2011) had study results showing 72.8% of college students surveyed believed if they became sick from influenza it could not cause serious illness, thus there was no need for the vaccine. Agarwal (2014) results showed when education was given to show college students they were susceptible to influenza, a significant impact on intention to receive the vaccine was seen, $p<0.001$. When college students perceived themselves as susceptible to influenza, a significant association to receipt of

the influenza vaccine was seen, $p < 0.001$ (Yang, 2015). The focused message, specified education for the population, and susceptibility including risk of influenza on their health all play a major role in the decision for college students in regards to intention and receipt of the influenza vaccine

Education through technology. There are multiple avenues of education communication being utilized within the college student population. The most recent data on influenza vaccination programs has been associated with successful improvements in intent to receive the vaccine through technology education. Traditional media used to educate students on the influenza vaccine creates decreased effect of behavior intention to obtain the vaccine (Yang, 2015). Different creative educational interventions are being studied and used to reach this challenging population to improve health promotion behaviors including influenza vaccines. One of the most common and statistically significant educational techniques used for influenza vaccination programs in college students to increase awareness and improve vaccination rates included social and electronic media (Bednarczyk, et. al., 2015; Jarrett, et. al., 2015; Monn, 2016; Poehling, et. al., 2012; Shropshire, et. al., 2013; Suresh, et. al., 2011; Wilson & Huttlinger, 2010).

College students are technologically savvy and because of this use many different internet outlets when seeking to obtain information. With phones allowing for the internet in this populations fingertips, email, social media pages, and university web portals can be accessed at all times. Multiple studies found college students engaged in education through social media to learn about the influenza vaccine which had a positive influence on whether they would receive the vaccine (Jarrett, et. al., 2015; Monn, 2016; Poehling, et. al., 2012; Shropshire, et. al., 2013; Suresh, et. al., 2011; Wilson & Huttlinger, 2010). Suresh et. al. (2011) found 40.6% of the college students surveyed received information about influenza and the vaccine from the internet. Another important education aspect for college students for the influenza vaccination found in studies was the use of email communication and the university web portals. Several

studies concluded that email communication was not only a commonly noted education tool, but showed significant effect in the probability to receive the vaccine (Bednarczyk, et. al., 2015; Poehling, et. al, 2012). Poehling et. al. (2012) study found 94.2% of students that received the influenza vaccine reported significant correlation with often or very often email usage. The web portals found similar results to email communication among several studies. When college students lived off campus, a significant correlation between learning about the influenza vaccination through social media and the college web page was present, $p< 0.001$ (Monn, 2016). College web portals used as education tools were a successful education tool for influenza vaccination on survey of college students for intent to receive the vaccine (Monn, 2016; Poehling, et. al., 2012; Yang, 2015). From the findings on education performed through technology, use of social media and email to communicate education on influenza vaccination distributes information through a variety of channels and specifically targeting college students. When electronic social tools are not used to communicate education to the college population, it results in less success in influencing influenza vaccine uptake (Wilson & Huttlinger, 2010).

Multi-component approach. In order to target college students who contain a wide classification of people, a multicomponent approach is best. Influenza vaccine campaigns using multiple interventions for college students are associated with significant increases in influence as well as uptake of the vaccine found in multiple studies (Benjamin & Bahr, 2016; Jarrett et. al., 2015; Monn, 2016; Poehling et. al., 2012; Shropshire et. al, 2013). The most effective interventions in a systematic review to increase influenza vaccine acceptance was those of multi-component strategies (Jarrett et. al., 2015). Shropshire et. al. (2013) study found 69.5% of the students surveyed who received the influenza vaccine was either strongly influenced, the reason they received the vaccination, or encouraged to receive the vaccination because of a multicomponent campaign. Implementing a campus-wide influenza awareness project with four different strategies resulted in a 226% increase in the number of college students who completed the influenza vaccination (Monn, 2016). Successful education efforts through

campaigns lead to important changes in misconceptions about the influenza vaccine (Benjamin & Bahr, 2016). These multi-component campaigns focused on using components to include residential and class statuses within the college population. Efforts to target students across different classes and residing both on and off campus improved influenza vaccination rates (Poehling, et. al., 2012). A mass media campaign including poster, internet, social media, banner advertisement, and in class power point presentations compared to only flyers in the previous year for influenza vaccine awareness, showed an increase of 27.9% in influenza vaccination receipt through the university (Shropshire et. al., 2013).

Limitations. A major limitation discussed by all studies was sample bias. Due to the studies being cross sectional and cohort, self-reported surveys were used to collect data. Self-reported data from surveys provide subjective information and can result in reporting bias (Agarwal, 2014; Bednarczyk, et. al., 2015; Benjamin & Bahr, 2016; Merrill, et. al., 2010; Monn, 2016; Poehling, et. al., 2012; Ramsey et. al. 2011; Rodas, et. al., 2012; Sunil & Zottarelli, 2011; Shropshire et. al., 2013; Suresh, et. al., 2011; Wilson & Huttlinger, 2010; Yang, 2012; Yang, 2015). Self-report can impact the generalizations made because it impacts how in-depth the evaluations can be performed on the results creating a possibility of bias. A study has been performed specifically on self-report and influenza vaccination status for understanding reliability. The Wisconsin Immunization Registry reports based on comparison over a two year influenza season, self-report was 97% sensitive, 92% specific, has a positive predictive value of 83% and a negative predictive value of 99%, making self-report surveys reliable (Irving et. al., 2009). Overall, reporting bias has the possibility of decreasing applicability and reliability when reporting data.

Convenience sampling was another limitation of many studies because they were surveyed based and not randomized in nature. Many studies collected surveys on campus, in the classrooms, or online. When convenience sampling is chosen, people choosing to participate may be more biased because they are more concerned, whether positive or

negative, towards the influenza vaccine (Agarwal, 2014; Bednarczyk, et. al., 2015; Benjamin & Bahr, 2016; Merrill, et. al., 2010; Monn, 2016; Poehling, et. al., 2012; Ramsey et. al. 2011; Rodas, et. al., 2012; Sunil & Zottarelli, 2011; Shropshire et. al., 2013; Suresh, et. al., 2011; Wilson & Huttlinger, 2010; Yang, 2012; Yang, 2015). Another concern with convenience sampling is the lack of sample size or the type of sample size that can be obtained. Participation is convenient and many surveys for the studies included were conducted only to certain student bodies, classroom settings, or locations on campus, thus limiting the size and type of population participating. Benjamin & Bahr (2016) discussed the small attrition rates received on their surveys being only 317 undergraduate students participating out of the 33,771 undergraduate students on campus. Wilson & Huttlinger (2010) only had a 10.6% completion rate in their study. Small sample size or inappropriate sample size can cause limitations in generalizing outcomes.

Best practice recommendation. The best practice model recommendation for influencing influenza vaccination among college students is the use of a multi-component intervention to include educational components in technology with the use of social media and emailing, posters, and an immunization clinic on campus. Research supports the education components of the intervention to focus on information given to the college students that is targeting their population. Actual education materials should be related to susceptibility and risk to influenza, vaccine safety, side effects, and effectiveness of the vaccine to help debunk any myths.

Answering the clinical question. The best practice recommendation answered the clinical question: *Through the use of an influenza vaccination multicomponent program from October 28th through January 20th, will there be an influence on college students' intent to receive the vaccine compared to no program in place?*

CHAPTER 3

IMPLEMENTATION OF PRACTICE CHANGE

Participants and setting

The purpose of the EBP project was to determine the influence of a multicomponent intervention on influenza vaccination intention of college students. Due to the challenges that exist with influencing the college population as seen in the literature review and analysis, the practice change focused at their age group had a foundation of technology elements for the project. Through the use of education, social media, and vaccination clinics on campus, the EBP project focused on influenza vaccinations which took place at a mid-sized university in Northwest Indiana. The university is a private and faith based college enrolling approximately 4,500 undergraduate and graduate students (Valparaiso University, 2015). Approval was gained from the institutional review board (IRB) and university student health center (SHC). The project implementation spanned over a time frame of three months from fall October 28th, 2016 to January 20th, 2017. October was chosen as the start date based on discussion with the university SHC nurse practitioner (NP) who received vaccines and the literatures discussion of target time for education. This time frame is frequently used for influenza vaccination promotion because the CDC deemed late December through March for flu activity, making the time period before crucial to vaccinate (Grohskopf et. al., 2016).

To participate in the project, the participants needed to be college students, either undergraduate or graduate, enrolled at the university. Other factors deciding whether included for participation in the EBP project was (a) older than 18, (b) able to understand, read, and speak English, and (c) access to internet through the student email system.

Outcomes

The primary outcome of the project was the intent of college students to receive the influenza vaccine after the multi-component intervention of education and vaccination clinics on

campus. Data was collected via a pre and post survey which was non-matching with self-report of intent to receive the influenza vaccine. On the post survey, questions were asked to determine the student's influenza immunization status and if the student received the vaccination at off campus locations. The scores from the pre and post surveys helped to determine the influence of the multicomponent intervention on college students receiving the influenza vaccine. Secondary outcomes measured included questions on the surveys determining influences and motivations behind receiving or not receiving the vaccine.

Intervention

Implementation of the project was performed by the project manager, a doctorate of nursing practice (DNP) student and at the clinical agency site of the university SHC in collaboration with the NP. Prior to starting the multicomponent intervention, a pre-survey was completed and obtained through the use of the university's secure email system. The pre-survey was developed by the project manager and contained questions on demographical data, influenza vaccination history, motivation, and intent to receive the vaccine. It was sent to the entire population including undergraduate and graduate students who were age 18 or older meeting inclusion criteria. The EBP project contained several different components making for a multi-component intervention to impact the students' intent to receive the influenza vaccine. The first component was educational and was provided through the electronic media system located in each building on campus to reach the entire university student population. See Appendix A to view the educational materials used in the project through the electronic media system. Each week a new electronic flyer was utilized through this system. Within the electronic media system flyers, short length education was provided to discuss influenza vaccine's purpose, safety, efficacy, and side effects. Through the use of the electronic media system, common myths were addressed and dispelled. Different education tools were utilized including images, college population targeted memes, and short written material messages.

Next, the EBP project component of posters were placed throughout various locations on campus. Providing posters helped to connect with the students that did not access the information through the electronic media. They were strategically placed in locations of high access areas by students around campus and placed in the common areas in the buildings for visualization. A total of 9 different posters were created to enforce different messages about the vaccines safety, efficacy, purpose, and side effects and each were made in a professional grade. See Appendix B to view the posters and flyers containing the education material used for the EBP project. Approval was gained from the department within that building for display. Within the union, a large glass display at the entrance of the union contained an influenza display case with table tents for an entire week in October. The items for this display were created and approved by the NP in the SHC which has been the current influenza education practices in past years.

Another component utilized to address the influenza vaccine education and social media of college students was a twitter page. The twitter page was dedicated to the same education provided to the students through the electronic media flyers and posters. With the twitter page, the short length education continued to be provided with more frequent updates throughout the week on the influenza vaccine. The twitter page and electronic flyers were utilized to notify students when the vaccination clinic times were held on campus. The university SHC site also posted information about the clinics and the influenza vaccine on their webpage and twitter page. With young adults and college students, traditional educational avenues are not successful as many spend most of their time on social media, so by increasing awareness through the twitter page it allowed for frequent convenient communication. Appendix C shows the twitter page.

The last component of the project was increasing access to receive the influenza vaccine by providing immunization clinics on campus. A total of 3 clinics were held on campus at the nursing building, the law building, and the student union. The date chosen for the clinic at

the student union that took place on campus was during November prior to thanksgiving break. Facilitation of the influenza vaccination clinics on campus was coordinated with and implemented through the university SHC NP. The project manager, a nurse from the SHC, and the NP were in charge of administration of vaccines. Notification in regards to vaccination time, location, and date was posted on posters, flyers, the electronic media system, and through social media for the entire student population. See Appendix D to view the posters created to alert students about the clinics occurring on campus. After receiving the influenza vaccine, stickers were given to all students to show other students receipt of vaccine. Also, the sticker contained a hashtag and a small informative card to promote discussion sharing and twitter posts after receipt of the vaccine. See Appendix E to view the template of the sticker created by the project manager. The goal was to provide for spread of social networking through friends and use of social media about the influenza vaccination. These stickers were also provided to the university SHC and education was provided to the staff to give the sticker to any student who received the vaccine. Several posters contained information and displayed throughout campus with times, locations, and dates for the clinics on campus.

Planning

Early planning was utilized throughout the project development. Meetings both via email and in person took place with the professor overseeing the project development to determine the appropriate steps for coordination and implementation of the project. The DNP student who was the project manager, met with the NP at the university's SHC about discussion of the overall project facilitation and implementation. With the NP, guidance was provided on project strategies including directing appropriate management on gaining permission within the university for implementing specific components on campus. Education was performed at the university's SHC discussing project implementation for the vaccination clinic portion and providing sticker's after the vaccine was given to any student during the course of the project.

Data

Measures and their reliability and validity. The pre-survey was divided into two sections and the post-survey was divided into two sections. The first section of the pre-survey included demographic questions. In the second section of the pre-survey, identification of influenza vaccination history, motivations, and intent to receive was gathered. The two section post-survey mirrored many of the same questions of the pre-survey. In the second section of the survey, receipt of vaccination question for this season was asked with location of obtainment. Also in the second section, several questions' answers focused on the interventions that were placed on campus and whether they had any influence on the students' decisions to vaccinate. The surveys were developed by the project director. See Appendix D to view the pre-survey and post-survey created for the data collection. A written statement was provided prior to initiation of the pre and post survey and discussed a brief summary of the reason for collection of the survey. Self-reports have the potential for bias because people can change their self-reported responses to represent themselves better. These surveys were sent to the entire student population and not having the same populations respond to both surveys resulted in non-matching surveys. A risk for varied participation resulting in possible selection bias because the surveys were both sent electronically to the entire campus before and after the intervention was present.

Collection. The DNP student before starting implementation of the multi-component intervention collected pre-surveys through email and post-survey forms was collected upon completion of the intervention time frame.

Management and analysis. Surveys were distributed through the internet service Surverymonkey.com by an email with a link through the student email system. Surveymonkey utilizes TRUSTe security program to ensure privacy of all users and for all respondents to surveys. Also, Surveymonkey complies with US-EU and US-Swiss Safe Harbor Frameworks which ensures the principles of notice, choice, onward transfer, safety, privacy, data integrity, access, and enforcement of information used through the website. All settings for both the pre

and post-surveys distributed by the project manager contained settings of anonymous and no tracking of IP addresses. The only person with access to the Surveymonkey account and password was the project manager to view the survey responses and data for analysis. The username and password was not written in writing or electronically in any form for access to others. A link was provided at the end of the consent form before starting the survey to give all participants the opportunity to read additional information about Surveymonkey's privacy and security policies.

The pre-survey and post-survey data results were analyzed using descriptive and inferential statistics. Descriptive statistics were used to analyze all the demographic data, outcomes, and to report variances. The descriptive statistic test comprising of the chi square test of independence was used to determine significant results and decide on conclusions for all outcomes. All outcomes including intention to receive the influenza vaccination, knowledge, beliefs, and influences through self-report were measured through analysis in percent of participants responses on from both surveys and emails.

Protection of human subjects

Each participant was informed about the purpose of the project through written statement prior to collection of the pre and post-survey. Before starting participation in the project, a written statement was discussed for all components of the intervention that took place on campus to promote the influenza vaccination and filling out the survey as voluntary. Due to the survey question results being completely self-reported, participants were informed that all responses were private and the participants would remain unidentifiable to produce honest answers. All data obtained from participants from the electronic website were printed and placed in a locked file within a secure location accessible for the project manager.

Chapter 4

Findings

The purpose of this EBP project was to assess the influence of a multicomponent intervention on students' intention to receive the influenza vaccination. Other evaluation was conducted using descriptive statistics to determine any differences in demographic information between the participants in each group. Secondary outcomes including perceived beliefs and motivations to receive or not receive the influenza vaccination were also analyzed to determine variances among the two groups.

Participants

At the project implementation site, a total of 4,363 students met the inclusion criteria for participation. The EBP project involved a pre-survey and post-survey that were administered before and after the multi-component intervention. Included in the distribution of the surveys were undergraduate, graduate, and law students. Both surveys were distributed anonymously to increase participation. The pre-survey consisted of 12 questions and the post-survey had 13 questions. The pre-survey was distributed through the student email system with the link to Surveymonkey where the survey could be accessed on October 28th, 2016. Distribution of the post-survey in the same manner as the pre-survey occurred through the email system to the same 4,362 students on January 20th, 2017. Only slight changes were made between the pre-survey and post-survey to keep consistency in the questions and answers for analysis. On the post-survey, a question was added to determine location where students received the influenza vaccination. Also, to decrease surveys responses from being performed incorrectly, the last question in the post-survey was altered by adding an answer for received the vaccine. The last question was the primary outcome for the EBP project in order to determine differences in intention to receive the vaccine among the two independent groups. The extra answer of "received the vaccine" was considered for analysis purposes as the same answer as those who

intended to receive the vaccine due to vaccine completion. A total of 399 and 231 respondents participated in the pre-surveys and post-surveys, respectively.

Characteristics

After running descriptive frequency tests, the pre-survey and post-survey responses were similar with no significant differences between the demographic variables. Of the 399 students who participated in the pre-survey, 68.9 % (n = 275) were female with 31.1 % (n = 124) being male and in the post-survey out of the total 231 participants, 69.7% (n = 161) were female, while 30.3% (n = 70) were male. A chi-square test of independence was calculated comparing the results of the pre-survey and post-survey genders. No significant relationship was found ($x^2(1) = 0.751$, $p>0.05$). Gender of both the pre and post-survey appear to be independent. In both the pre-survey and post-survey grade level of students was similar with students who participated. The pre-survey responses revealed freshmen at 24.8%, (*n* = 99), sophomores at 17.3% (*n* = 69), juniors at16.8% (*n* = 67), seniors at 21.1% (*n* = 84), law students at 4.8% (*n* = 19), graduate students at 14% *(n* = 56), and other students at 1.3% (*n* = 5). Post-survey responses showed freshman at 22.1% (n=51), sophomore at 15.6% (n=36), junior at 16% (n=37), senior at 19.9% (n=46), law student at 4.3% (n=10), graduate student at 19.9% (n=46), and other students at 2.2% (n=5). A chi-square test of independence was calculated comparing the results of the pre-survey and post-survey grade level. No significant relationship was found ($x^2(1) = 0.458$, $p>0.05$). Current student grade status in the pre-survey and post-survey appear to be independent.

In regards to the students' ethnicity, no variation occurred in the pre-survey and post-survey. A majority of participants were white/Caucasian at 81% (*n* = 323) in the pre-survey and 84% (n=194) in the post-survey. Other ethnicities in the two surveys included Asians or Pacific Islanders at 4.8% (*n* = 19) and 4.3% (n=10), Hispanics or Latinos at 4.8% (*n*=19) and 5.2% (n=12), Blacks or African Americans at 3.5% (*n* = 14) and 3.5% (n=8), other at 5.8% (n=23) and 3.0% (n=7), and American Indians or Alaska Natives at 0.3% (*n* = 1) and 0%. A chi-square test

of independence was calculated comparing the results of the pre-survey and post-survey students' ethnicities. No significant relationship was found ($x^2(1) = 0.775$, $p>0.05$). Ethnicity of the two survey groups appear to be independent. Based on campus residence, the students resided off campus consistently with pre-survey responses at 50.6% (*n* = 202) and post-survey at 55% (n=127). The students who resided on campus in the pre-survey was 49.4% (*n* = 197) and post-survey was 45% (n=104), similar as well. A chi-square test of independence was calculated comparing the results of the pre-survey and post-survey student residencies. No significant relationship was found ($x^2(1) = 0.247$, $p>0.05$). Campus residences between groups appear to be independent.

Of the participants who partook in the pre-surveys, 57.1% (*n* = 228) had received flu vaccination in the previous year on the pre-survey and 43.7% (*n* = 101) on the post-survey. A total of 42.9% (*n* = 171) of students on the pre-survey did not receive a flu vaccination in the previous year compared to 56.3% (*n* = 130) in the post-survey. A chi-square test of independence was calculated comparing the results of the pre-survey and post-survey receipt of the vaccine in the previous year. No significant relationship was found ($x^2(1) = 0.916$, $p>0.05$). Receipt of the vaccine in the previous year for both groups appear to be independent. In the post-survey, a question was added to determine location where the vaccine was received. After factoring out student survey responses who reported not receiving the vaccine at this time, 55.4% (n=128), results were analyzed. A majority of the students were vaccinated in pharmacies (34%, *n* = 35), at private physician offices or by home physicians (28.1%, *n* = 29), and at the university SHC or through campus vaccination clinics (21.4%, *n* = 22). The rest of the students received influenza vaccination in hospitals, health department, or clinics (13.6%, *n* = 14) and other locations (2.9%, *n* = 3). The results of all demographics are included in Figure 4.1, 4.2, 4.3, 4.4, and 4.5. Figure 4.6 shows location of vaccine receipt for the post-survey. Table 4.1 shows the demographic percent frequency for the pre-survey and post-survey responses. In

table 4.2, the data analysis for the demographic data is shown with the results of the chi square test of independence.

Barriers and enablers. In determining an analysis for barriers and enablers to receiving the vaccine, two questions on the pre-survey and post-survey were utilized. These two survey questions in both surveys included responses from the students on the main reasons behind a student receiving the vaccine and the main reason for why a student did not want to receive the vaccine. Students responses in either of the two questions that included “already received the vaccine” or “had not received the vaccine” were factored out of the analysis and then percentages for all other responses in the questions were computed. For students who received the influenza vaccination in the previous year, the pre-survey showed a commonality in the response of education by a healthcare provider (HCP) at 25.1% (*n* = 45) as the reason for receiving the vaccination. Other cited reasons for receiving the vaccine included influence from family and friends at 20.7% (*n* = 37), availability of insurance at 16.8% (*n* = 30), information from outside sources at 7.3% (*n* = 13), and information from the university campus at 2.8% (*n* = 5). The students in the post-survey had similar responses as the pre-survey with education by a healthcare provider at 27% (n=29), education on campus at 0.9% (n=1), education from outside sources at 5.7% (n=6), family and friends influence at 18% (n=19), and access to immunization clinics on campus at 5.5% (n=6). In 49 (22.3%) student responses’ in the pre-survey, other was cited as a reason for receipt of the vaccine and 42.4% (n=45) of the responses in the post-survey. For students who had not received influenza vaccination in the previous year, many of the responses were the belief of being healthy and did not need the vaccination at 33.8% (*n* = 78). Other reasons noted for not receiving the vaccine included cost of vaccination (5.2%, *n* = 12), fear of needles (8.7%, *n* = 20), previous reactions after influenza vaccination (4.8%, *n* = 11), inconvenience due to location (17.7%, *n* = 41), and numerous side effects or safety (11.7%, *n* = 27). The post-survey results for reasons vaccination was not needed were similar to the pre-survey with most students believing that they were healthy and did not need it at 27.8% (*n* =

Figure 4.1 Pre and Post Survey Gender Outcomes

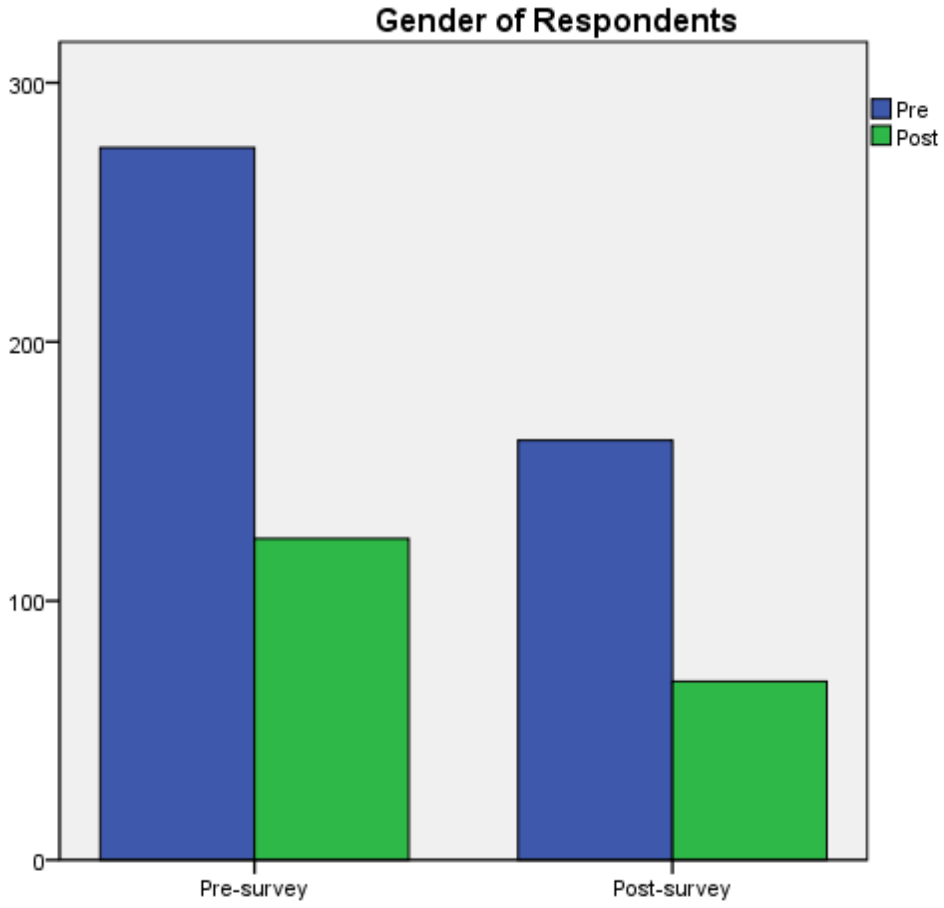


Figure 4.2 Pre and Post Survey Grade Level Outcomes

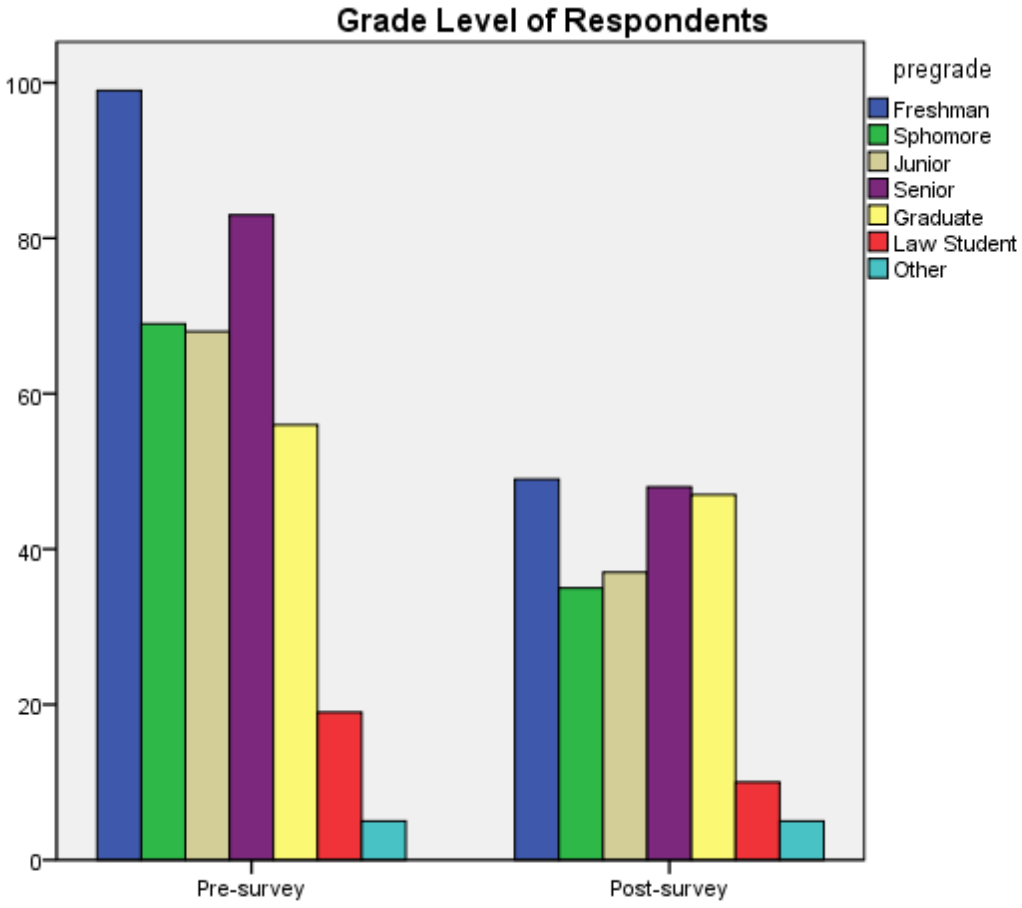


Figure 4.3 Pre and Post Survey Ethnicity Outcomes

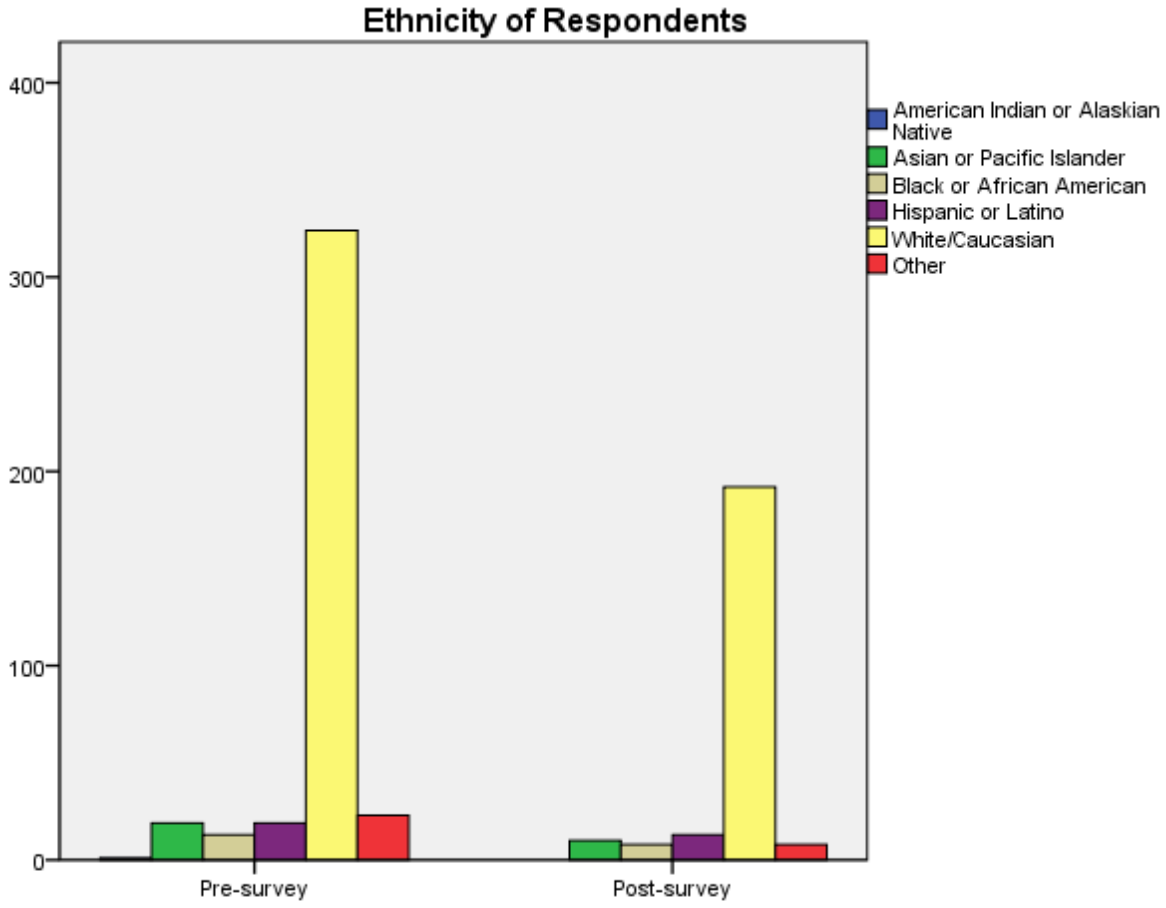


Figure 4.4 Pre and Post Survey Residence Outcomes

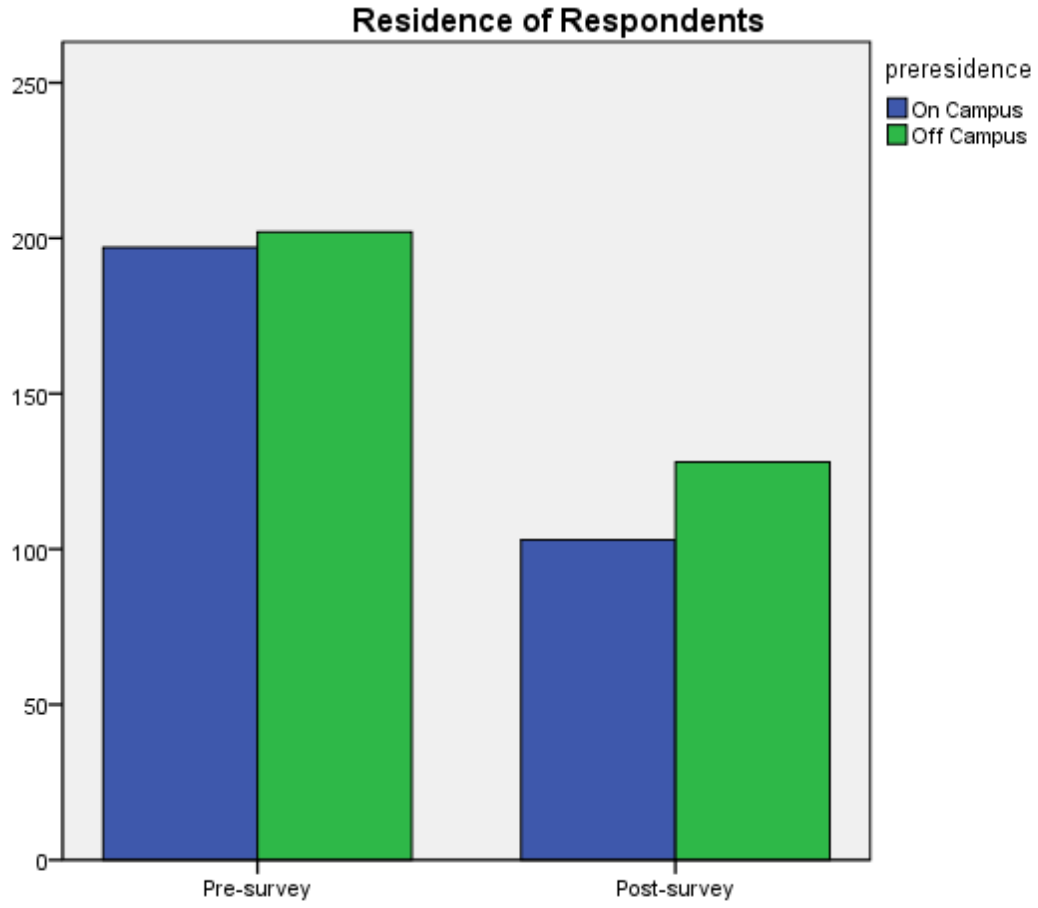


Figure 4.5 Pre and Post Survey Previous Year Vaccine Receipt Outcomes

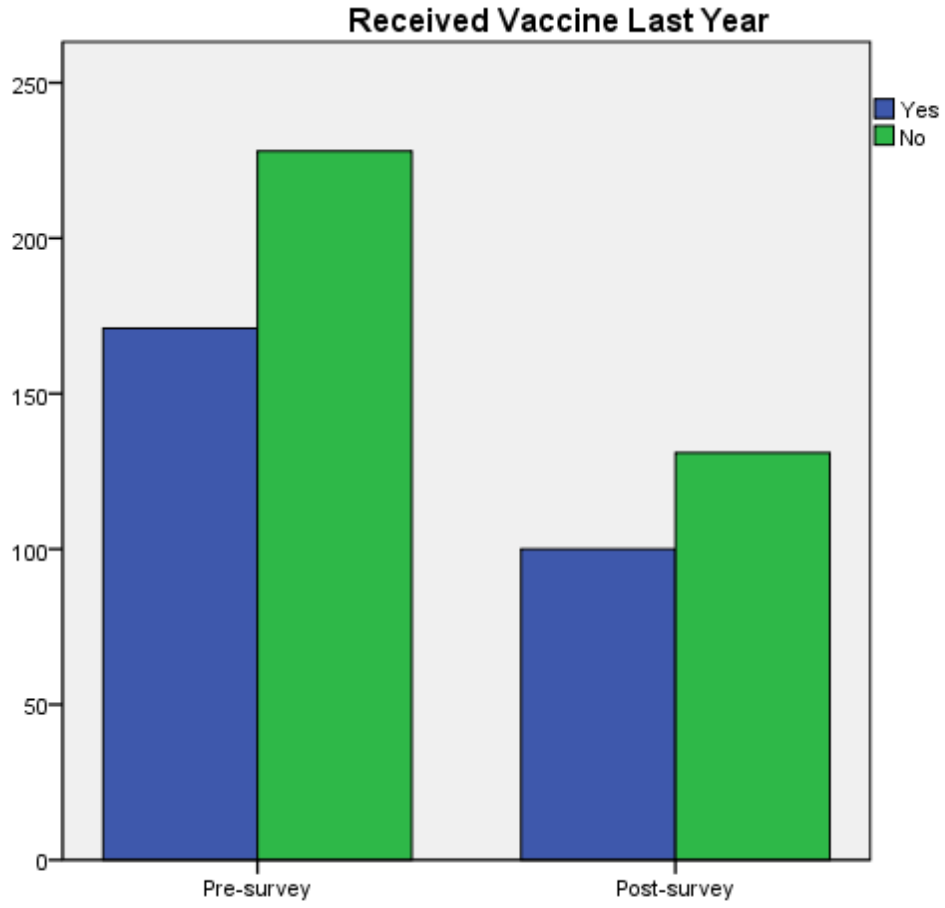


Figure 4.6 Location of Vaccine Receipt in Post-Survey

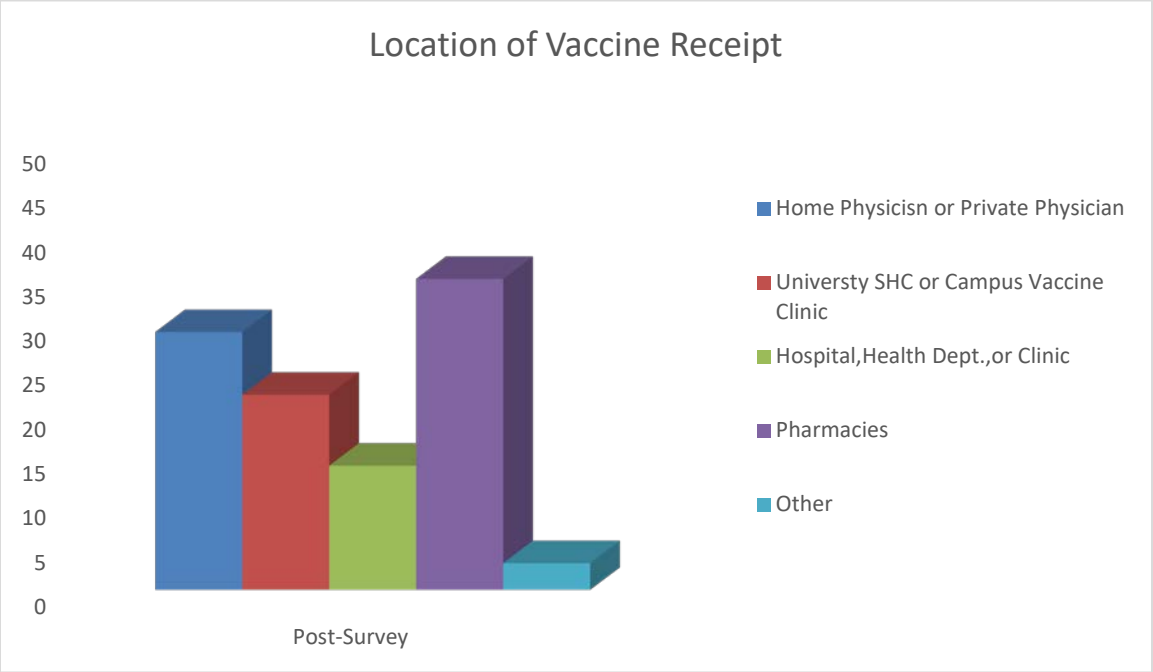


Table 4.1 Demographics of the Participants

	Pre-survey *n* (%)	**Post-Survey *n* (%)**	**Total *N* (%)**
Gender			
Female	275 (68.9%)	161 (69.7%)	436 (69.2%)
Male	124 (31.1%)	70 (30.3%)	194 (30.8%)
Grade Level			
Freshman	99 (24.8%)	51 (22.1%)	150 (23.8%)
Sophomore	69 (17.3%)	36 (15.6%)	105 (16.7%)
Junior	67 (16.8%)	37 (16%)	104 (16.5%)
Senior	84 (21.1%)	46 (19.9%)	130 (20.6%)
Law Student	19 (4.8%)	10 (4.3%)	29 (4.6%)
Graduate Student	56 (14%)	46 (19.9%)	102 (16.2%)
Other	5 (1.3%)	5 (2.2%)	10 (1.6%)
Ethnicity			
American Indian or Alaskan Native	1 (0.3%)	0 (0%)	1 (0.1%)
Asian or Pacific Islander	19 (4.8%)	10 (4.3%)	29 (4.6%)
Black or African American	14 (3.5%)	8 (3.5%)	22 (3.5%)
Hispanic or Latino	19 (4.8%)	12 (5.2%)	31 (4.9%)
White/Caucasian	323 (81%)	194 (84%)	517 (82.1%)
Other	23 (5.8%)	7 (3%)	30 (4.8 %)
Residence			
On Campus	197 (49.4%)	104 (45%)	301 (47.8%)
Off Campus	202 (50.6%)	127 (55%)	329 (52.2%)

Previous Yea Influenza Vaccination			
No	228 (57.1%)	130 (56.3%)	358 (56.8%)
Yes	171 (42.9%)	101 (43.7%)	272 (43.2%)

Table 4.2 Chi Square of Independence Demographics

Pearson Chi Square	**Value**	**df**	***p*value**
Gender	0.100[a]	1	0.751
Grade Level	5.695[a]	6	0.458
Ethnicity	2.513[a]	5	0.775
Residence	1.343[a]	1	0.247
Received vaccine last year	0.011[a]	1	0.916

Significant *p* value <0.05

37). The rest of the students in the post-survey reported cost (3.0%, *n* = 4), fear of needles (6.8%, *n* = 9), prior reactions after influenza (6%, *n* = 8), inconvenience due to location or time (24.1%, *n* = 32), numerous side effects and safety (9.0%, *n* = 12), and other reasons (23.3%, *n* = 31). To highlight the differences in frequency, Figure 4.7 and 4.8 includes data in regards to barriers and enablers Table 4.3 represents the distribution of barriers and enablers frequency among the participants from the pre-survey and post-survey.

Changes in Outcomes

Statistical testing. The picot question of the EBP project asked "Through the use of an influenza vaccination multicomponent program from October 28th through January 20th, will there be an influence on college students' intent to receive the vaccine compared to no program in place?" The primary outcome of interest in this EBP project was the college students' intent to receive influenza vaccination after the multi-component intervention of education and vaccination clinics on campus. To determine the effectiveness of the influenza vaccination multi-component program in influencing the college students to receive the vaccination, a chi square test of independence was used for analysis to identify any significant differences between the pre-survey and post-survey responses. All the statistics were performed at a 0.05 level of significance.

Significance. In determining the significance of the primary outcome, a statistical analysis was performed on the survey question included in the pre-survey and post-survey, "Do you intend to receive the flu (influenza) vaccine this year?" Based on the students' responses, the intent to receive flu the vaccination before and after the multi-component intervention was not statistically significant but differed. In the pre-survey, students at 45.1% (n=180) intended to receive the influenza vaccine in the course of the year. Based on the posttests scores, differences were seen with 39% (*n* = 90) of the participants having already received the influenza vaccine and 12.6% (n=29) still intending to receive the vaccine. A total of 51.6% (n=119) of the students in the post survey received or intended to receive the vaccine which

Figure 4.7 Pre and Post Survey Enablers for Receipt Outcomes

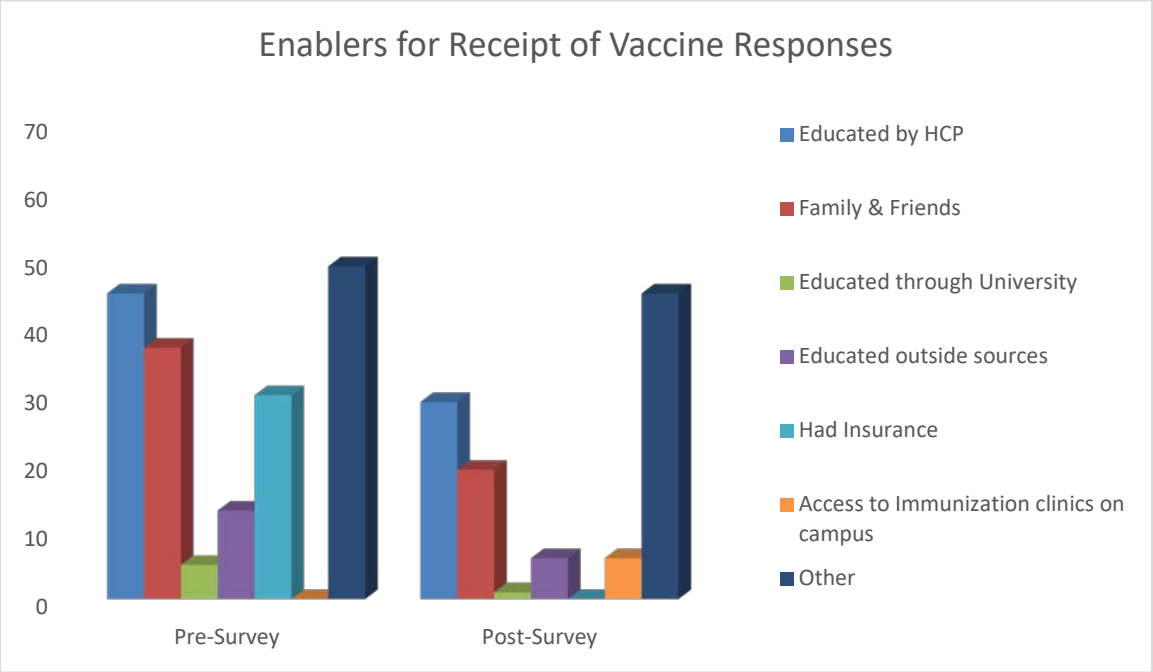


Figure 4.8 Pre and Post Survey Barriers for Receipt Outcomes

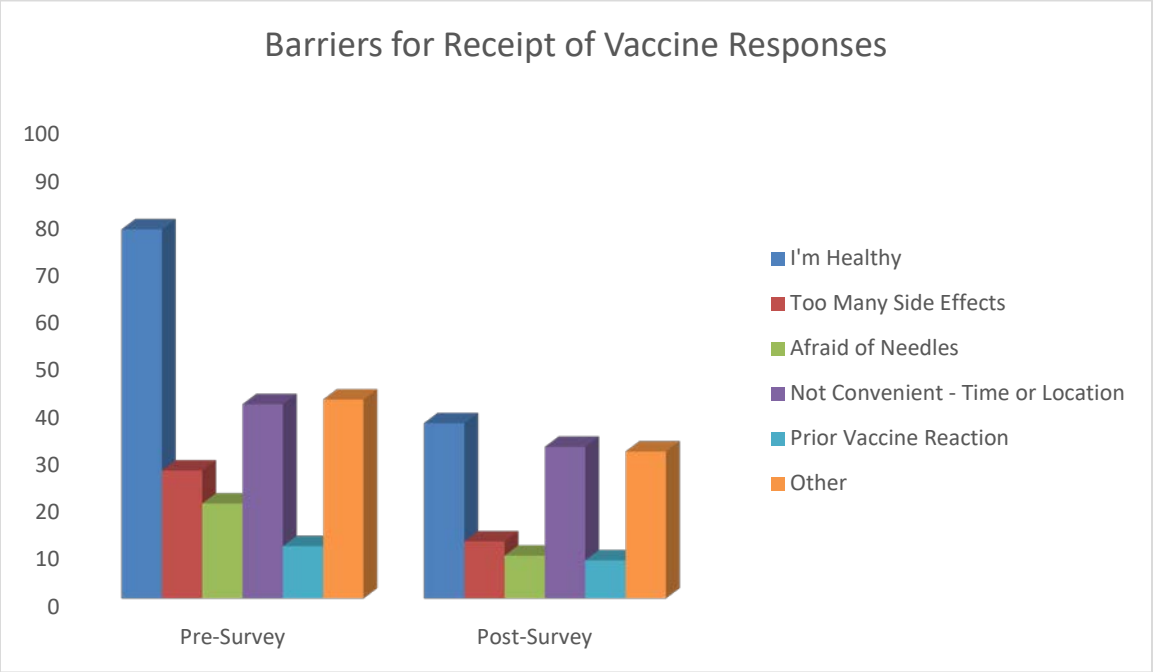


Table 4.3 Barriers and Enablers for Participants

	Pre-survey *n* (%)	**Post-Survey *n* (%)**	**Total *N* (%)**
Reason for not receiving Influenza vaccine			
I'm healthy and I do not need the vaccine	78 (33.8%)	37 (27.8%)	115 (31.6%)
The vaccine has too many side effects or is unsafe	27 (11.7%)	12 (9%)	39 (10.7%)
I am afraid of needles	20 (8.7%)	9 (6.8%)	29 (8%)
Not convenient due to location or time	41 (17.7%)	32 (24.1%)	73 (20%)
Had prior reactions to vaccine in past	11 (4.8%)	8 (6%)	19 (5.2%)
Other	42 (18.1%)	31 (23.3%)	73 (20%)
Received vaccine (not factored into calculated frequencies)	(n=168)	(n=98)	
Reason for receiving Influenza vaccine			
Educated by a healthcare provider	45 (25.1%)	29 (27.3%)	74 (26 %)
Family and friends received it	37 (20.7%)	19 (18%)	56 (19.6%)
Educated from university campus	5 (2.8%)	1 (0.9%)	6 (2.1%)
Educated with information from outside sources	13 (7.3%)	6 (5.7%)	19 (6.7%)
Had insurance to receive it	30 (16.8%)	-	30 (10.5%)
Had access to immunization clinics held on campus	-	6 (5.7%)	6 (2.1 %)
Other	49 (27.4%)	45 (42.4%)	94 (32.9%)
Have not received vaccine (not factored into calculated frequencies)	(n=220)	(n=125)	
Location of vaccine receipt			
Home physician or private physician office	-	29 (28.1%)	-
University SHC or on campus vaccine clinic	-	22 (21.4%)	-
Hospital, health department, or clinic	-	14 (13.6%)	-

Pharmacies	-	35 (34%)	-
Other	-	3 (2.9%)	-
Did not receive vaccine (not factored into calculated frequencies)	-	(n=128)	-

was used for the data analysis. The pre-survey showed 18.8% (*n* = 75) were unsure whether they would receive the influenza vaccine and the post-survey showed a difference at 13% (*n* = 30) still being unsure. In the pre-survey, 35.5% (*n* = 82) of students had no intention of receiving the influenza versus the post-survey where 36.1% (*n* = 144) did not intend to receive the vaccine. A chi-square test of independence was calculated comparing the results of the pre-survey and post-survey intent to receive the vaccine. No significant relationship was found ($x^2(1) = 0.089$, $p>0.05$). Intention to receive the influenza vaccine among both survey groups appear to be independent.

Secondary outcomes. In determining the differences between the pre-survey and post survey on perceived beliefs and motivations after implementation, the chi square test of independence was also completed. Specifically the analysis was performed on four questions including perceived importance of the influenza vaccine, perceived danger of the flu vaccine giving them the flu, safety of the vaccine, and desired need for more education in order to receive the vaccine.

Perceived importance. In the pre-survey, 54.4% (*n* = 217) of the students perceived the influenza vaccine as important for college students and people of their age and after the multi-component intervention on the post-survey, 59.3% (*n* = 137) indicated it was important. The students that were unsure of the need within their age group for the vaccine in the post-survey was 21.3% (*n* = 85) and in the post-survey responses uncertainty was 21.6% (*n* = 50). Students in the post-survey believed non-importance to college aged students at 24.3% (*n* = 97) and a decrease on the post-test in non-importance was seen with responses at 19.0% (*n* = 44). A chi-square test of independence was calculated comparing the results of the pre-survey and post-survey intent to receive the vaccine. No significant relationship was found ($x^2(1) = 0.475$, $p>0.05$). Perceived importance of the vaccine to the college students in the two groups appeared to be independent.

Perceived side effects of vaccine. Based on responses, a majority of the students at 69.9% (*n* = 279) believed the influenza vaccine would not give them flu in the pre-survey and a slight increase in results were seen in the post-survey at 75.3% (*n* = 174). Perceptions of receiving the flu after having the vaccine was still seen on responses at 12.3% (*n* = 49) in the pre-survey and 15.2% (*n* = 35) in the post-survey responses. Uncertainty of whether contraction of the flu could occur from the vaccine was at 17.8% (*n* = 71) in the pre-survey responses and 9.5% (*n* = 22) of students in the post-survey. A chi-square test of independence was calculated comparing the results of the pre-survey and post-survey intent to receive the vaccine. No significant relationship was found ($x^2(1) = 0.238$, $p>0.05$). The belief that the influenza vaccine would give the student the flu in the pre-survey versus the post-survey appear to be independent.

Perceived safety of vaccine. A majority of the students in both surveys perceived the influenza vaccine was safe at 72.2%, (*n* = 288) in the pre-survey and 76.6% (*n* = 177) in the post-survey. Students' responses were similar with beliefs about the influenza vaccine not being safe before project implementation at 9.5% (*n* = 38) of responses in the pre-survey and after implementation of the project at 10.8% (*n* = 25) in the post-survey. Differences were seen in the uncertainty of safety in the vaccine with the pre-survey responses at 18.3% (*n* = 73) and a decrease in the post-survey responses at 12.6% (*n* = 29). A chi-square test of independence was calculated comparing the results of the pre-survey and post-survey intent to receive the vaccine. No significant relationship was found ($x^2(1) = 0.284$, $p>0.05$). The belief on the vaccine being safe among groups appear to be independent.

Perceived need for continued education. Students' belief of more education to increase willingness to receive the influenza vaccine differed but was not statistically significant. In the pre-survey, responses at 41.9% (*n* = 167) were seen compared with an increase in the post-survey responses at 50.2% (*n* = 116). No noted differences occurred with not wanting more education on the vaccine with pre-survey responses at 27.6% (*n* = 110) and post-survey

responses at 26.4% (*n* = 61). Slight differences with a decrease in response in the post-surveys was seen for uncertainty in whether more education would increase willingness of receipt of the vaccine. The pre-survey responses were at 30.6% (*n* = 122) and the post-survey responses were at 23.4% (*n* = 54). A chi-square test of independence was calculated comparing the results of the pre-survey and post-survey intent to receive the vaccine. No significant relationship was found ($x^2(1) = 0.100$, $p>0.05$). The need for more education to receive the influenza vaccine in both survey group responses appear to be independent. Figures 4.9 through 4.13 show outcomes of both the primary and secondary data analysis. Table 4.4 provides the responses of the primary and secondary outcomes of data analysis in frequencies. The chi square test of independence for the primary and secondary outcomes analysis is provided in table 4.5.

Reliability and validity. The two surveys utilized for the EBP project implementation were not adapted from other authors or any specific tools. To help shape and form the surveys for the EBP project, the multiple studies results sections from the literature review were looked at to form questions. The main questions were then constructed to have similar analysis as the other research studies. Due to not adapting the surveys and creating them, no established criteria is available for reliability or validity testing on the surveys.

Figure 4.9 Pre and Post Survey Intent for Receipt of Vaccine Primary Outcome

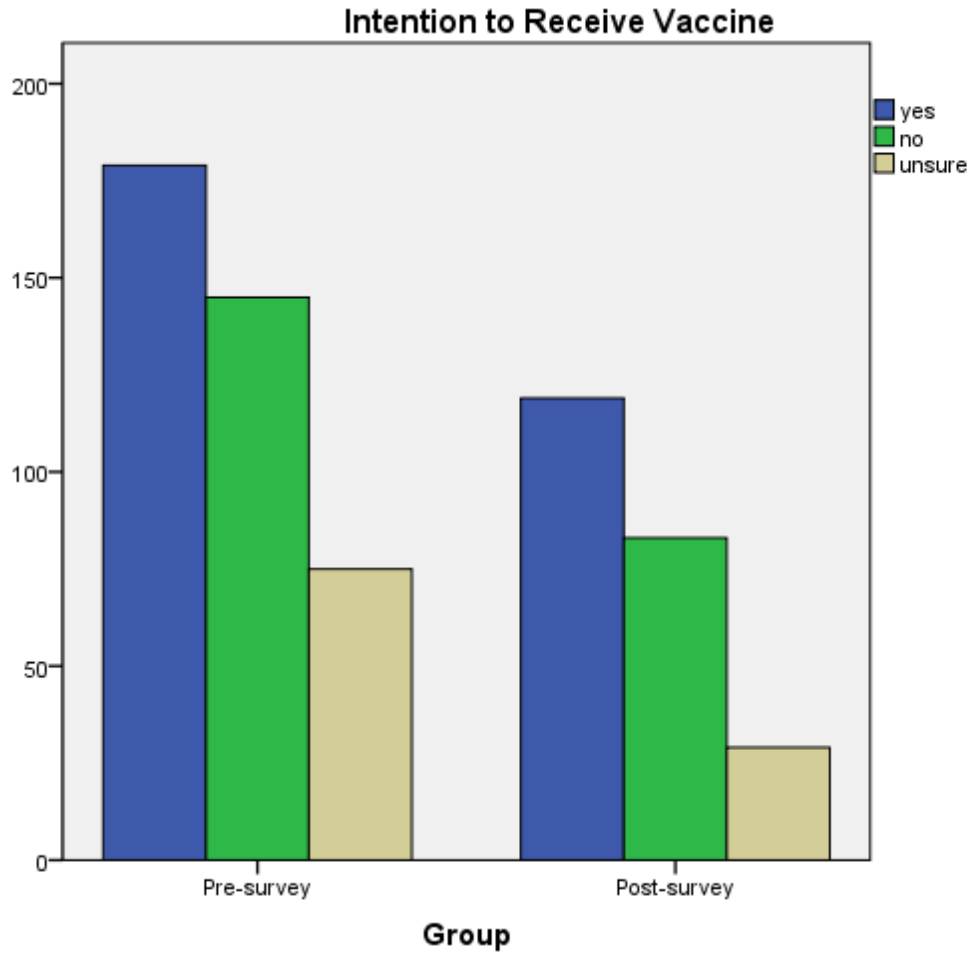


Figure 4.10 Pre and Post Survey Importance for Vaccine Receipt Secondary Outcome

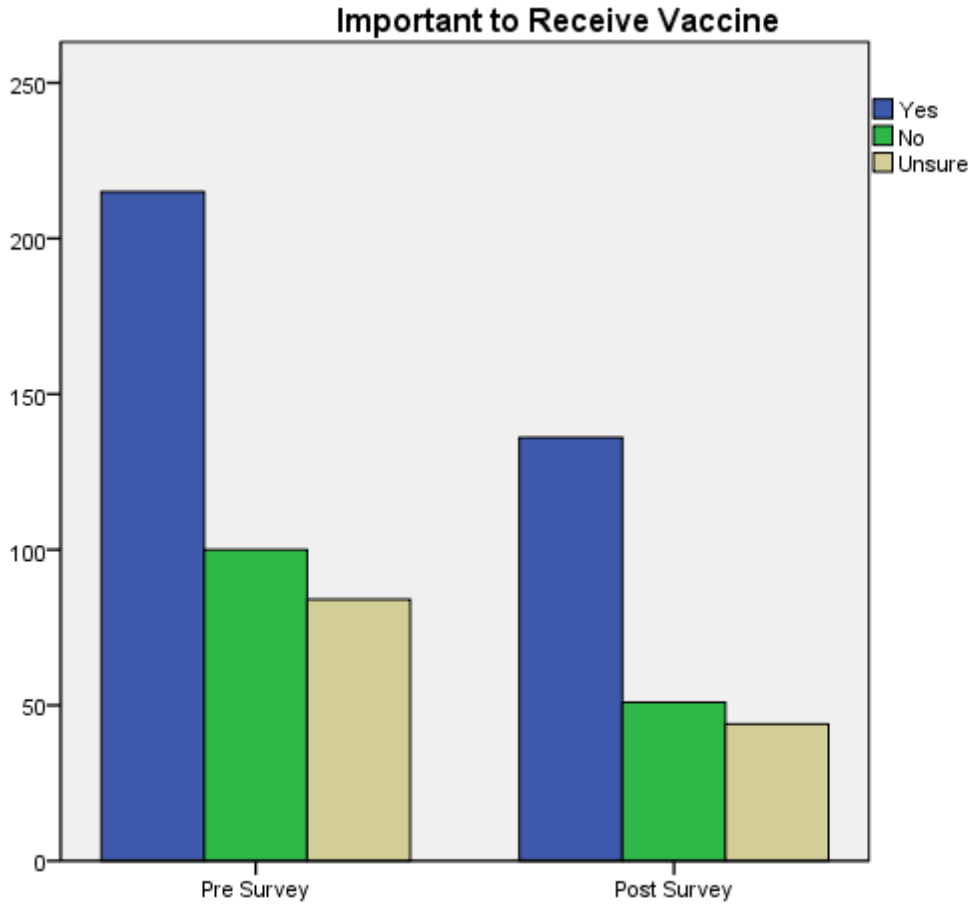


Figure 4.11 Pre and Post Survey Vaccine Give the Flu Secondary Outcome

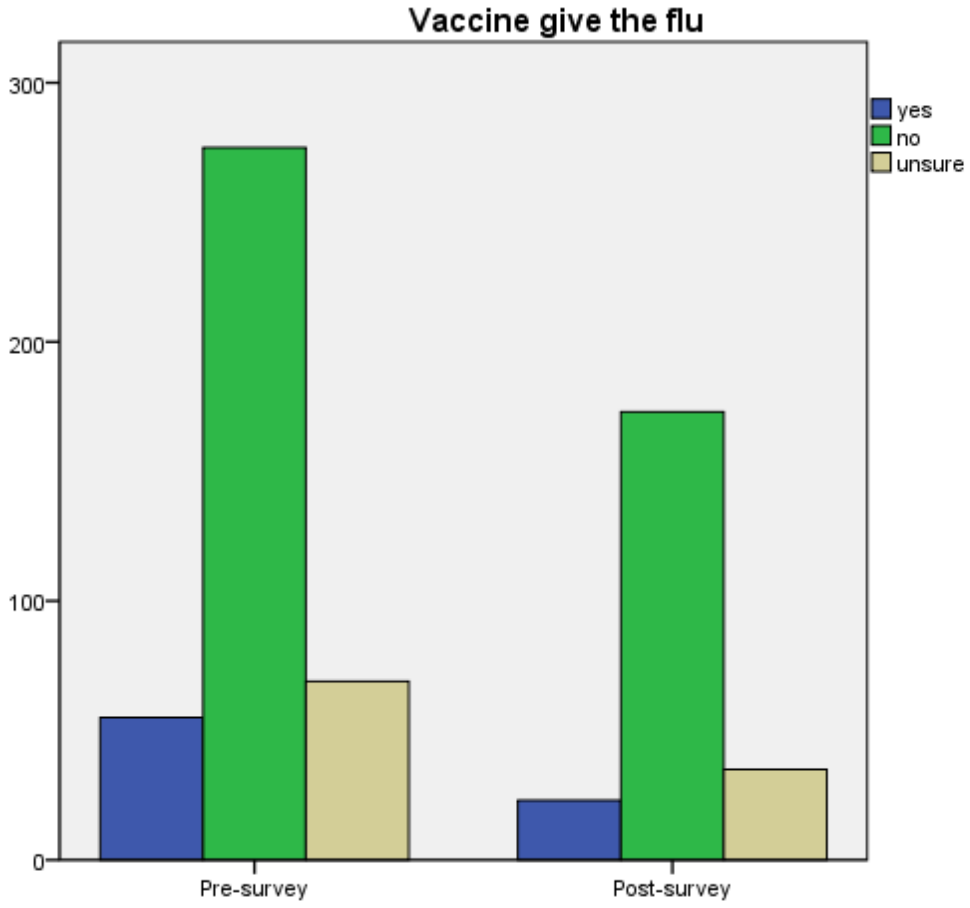


Figure 4.12 Pre and Post Survey Vaccine Safety Secondary Outcome

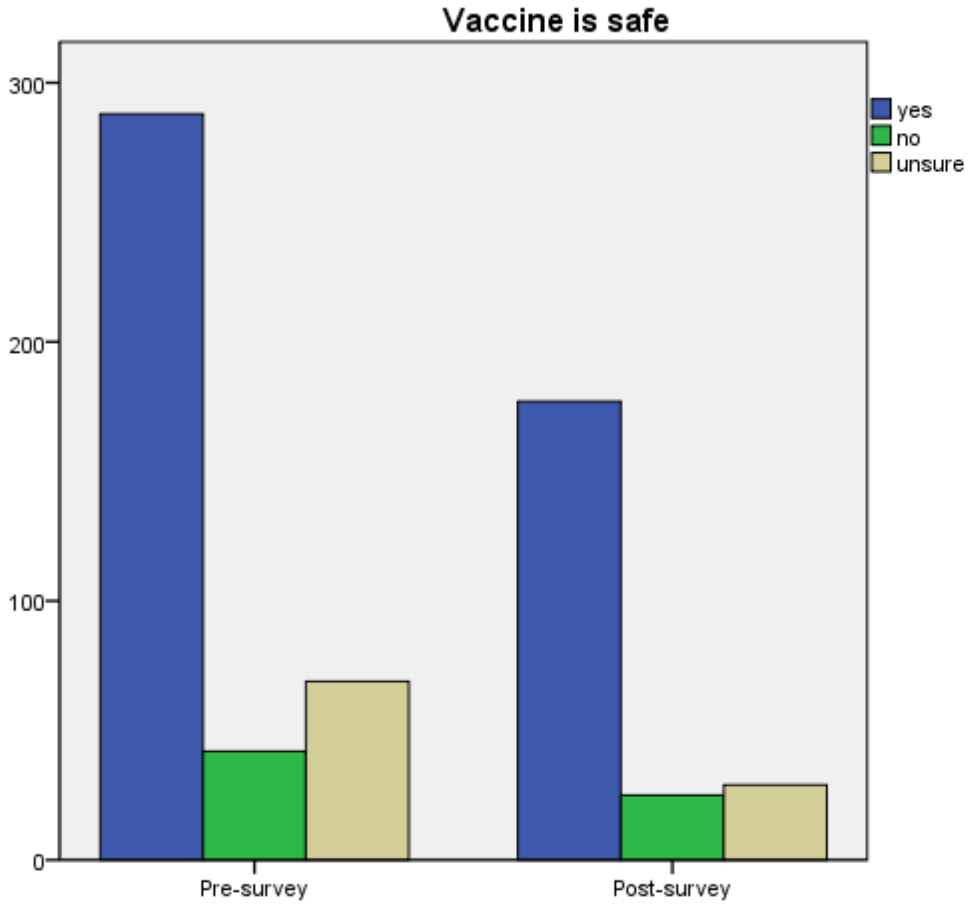


Figure 4.13 Pre and Post Survey More Education for Vaccine Receipt Secondary Outcome

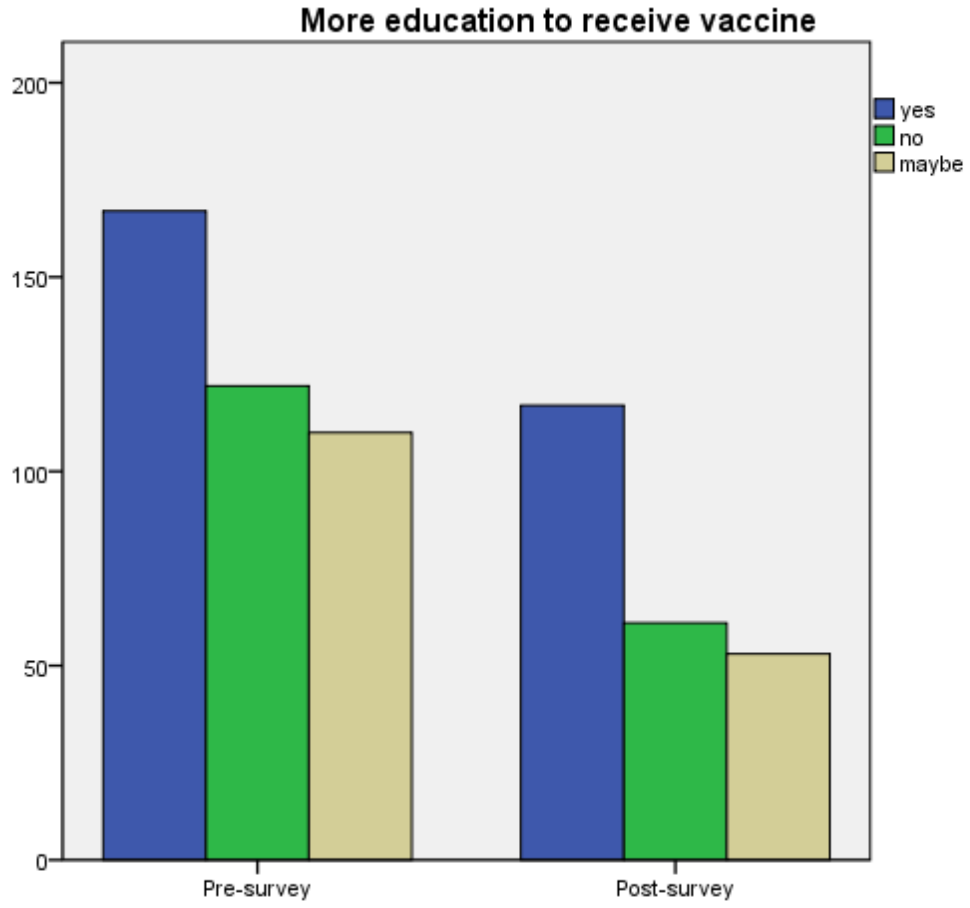


Table 4.4 Frequency of Primary and Secondary Outcomes of Participants

	Pre-survey *n* (%)	**Post-Survey *n* (%)**	**Total *N* (%)**
Primary Outcome			
Intention to receive vaccine			
Yes	180 (45.1%)	(*n*=29)	209 (33.2%)
+ received this year		119 (51.5%)	
No	144 (36.1%)	83 (35.9%)	227 (36%)
Unsure	75 (18.8%)	29 (12.6%)	104 (16.5%)
Already received this year		90	90 (14.3%)
Secondary Outcome			
Vaccine is important for college students			
Yes	217 (54.4%)	137 (59.3%)	354 (56.2%)
No	97 (24.3%)	50 (21.6%)	147 (23.3%)
Unsure	85 (21.3%)	44 (19%)	129 (20.5%)
Vaccine will give you the flu			
Yes	49 (12.3%)	22 (9.5%)	72 (11.3%)
No	279 (69.9%)	174 (75.3%)	453 (71.9%)
Unsure	71 (17.8%)	35 (15.2%)	106 (16.8%)
Vaccine is safe			
Yes	288 (72.2%)	177 (76.6%)	465 (73.8%)
No	38 (9.5%)	25 (10.8%)	63 (10%)
Unsure	73 (18.3%)	29 (12.6%)	102 (16.2%)
Need more education to receive vaccine			
Yes	167 (41.9%)	116 (50.2%)	283 (45%)

No	122 (30.6%)	61 (26.4%)	183 (29%)
Unsure	110 (27.6%)	54 (23.4%)	164 (26%)

Table 4.5 Chi Square of Independence Outcomes

Pearson Chi Square	**Value**	**df**	***p*value**
Primary Outcome			
Intention to receive vaccine	4.830[a]	2	0.089
Secondary Outcomes			
Vaccine is important for college students	1.487[a]	2	0.475
Vaccine will give you the flu	2.871[a]	2	0.238
Vaccine is safe	2.516[a]	2	0.284
Need more education to receive vaccine	4.595[a]	2	0.100

Significant p value <0.05

CHAPTER 5

DISCUSSION

The purpose of this EBP project was to determine the impact of a multi-component campaign in regards to the influenza vaccine on intention to receive among college students. Project implementation took place at a private university in northwest Indiana and was provided to the entire student campus. The project implemented many different components including education through visual posters or flyers on campus, social media, electronic campus media education, and included several vaccination clinics on campus. An explanation of the project findings will be discussed in this chapter. Along with these explanations, the theoretical and EBP framework which were chosen to guide the EBP project will be evaluated and discussed. Lastly, implications for future projects and research from the EBP project will be defined and discussed.

Explanation of Findings

The reported receipt of vaccine in the previous year on both the pre and post survey was almost equal at 42.9% and 43.7% respectively. Not only were they close reported rates of receipt of the vaccine, the percents were close to the reported national college rates. The influenza vaccine among college students for the 2015 to 2016 influenza season were reported at 45.2% by the ACHA (ACHA, 2016). Within the demographic data collected from both surveys, no statistical significance was seen, which exhibits between both surveys a similarity among the groups that responded. In regards to demographics, the similarity among groups showed bias was not a factor due to the convenience sampling method. Even with similar groups demographically, the results of the two surveys found females were more likely to complete the surveys than males at almost 70%. In other studies performed in the literature review, females responding to surveys was also elevated. Monn (2016) found 79% of the respondents who receive the influenza vaccine after the multi-intervention program were female. According to the private northwest university where the EBP project was implemented, female undergraduate

students comprise of 52% of the student population (Valpo, 2016). The female gender distribution within the EBP against the university did differ, however the difference in percent could be due to not including graduate program students in demographics from the university. In both surveys, no significance in ethnicity was seen. The surveys did show how apparent the Caucasian presence at the university was with a total at 82.1% in the surveys. White or Caucasian undergraduate students at the university comprise of 71.3% (Valpo, 2016). The ethnicity demographics between the university students and EBP participants were close to comparable. The slight difference between the two may again have pertained to not including the graduate students in demographic statistics at the university. For the EBP project, reaching different grade levels at the university was close to evenly spread in both surveys' respondents. When looked at comparing the university to the surveys, the respondents from the surveys different grade levels were distributed similarly to the university population. This information shows when students are provided information through multi-component campaigns that all grade levels of students are willing to participate when an opportunity is present. Overall, the demographics when compared to the distribution of the university as discussed were similar and representative of the student body in multiple demographic categories.

To determine the barriers and enablers to receiving the influenza vaccine in previous years, several survey questions were asked with similar responses resulting in no significance among both surveys. The most cited reason for not receiving the influenza vaccine was students believing they were healthy and did not need it at 33.8% in the pre-survey and 27.8% in the post survey. The second most common reason for not receiving the vaccine was not convenient due to time or location at 17.7% in the pre-survey and 24.1% in the post survey. These two reasons followed the common barriers in the literature search review in regards to most important factors for not receiving the vaccine. Multiple studies included within this review found college students who perceived a low susceptibility to the influenza virus were not likely to receive the vaccine, compared to students with high perceived susceptibility who were more

likely to receive the vaccine (Agarwal, 2014; Benjamin & Bahr, 2016; Merrill, et. al., 2010; Nowak, et. al, 2015; Rodas, et. al., 2012; Sunil & Zottarelli, 2011; Suresh, et. al., 2011; Wilson & Huttlinger, 2010; Yang, 2015). With the increase and decrease changes noted from the pre-survey to the post-survey, more focused education through the various interventions on the college students' susceptibility is obvious. Several studies in the literature established when the influenza vaccination was made readily available through clinics on campus, there was found to be an increase in intention or likelihood to receive the vaccine (Bednarczyk, et. al., 2015; Jarrett, et. al., 2015; Monn, 2016; Nowak, et. al, 2015). In the EBP project, there were limitations on notifying students about the onsite clinics which created a challenge for participation at the clinics. Knowing the results from the EBP project align with findings from the literature in regards to convenience, future changes must influence the appropriate key stakeholders at the university to improve notifications of clinics. To keep the surveys simple to increase participation and completion, other was an answer used for the two questions in regards to barriers and enablers on both surveys with no place to type their other reason in. Students gravitated to this answer at 18.1% of the pre-surveys and 23.3% of post surveys for receiving or not receiving the vaccine. Without providing a place to type the reason, not knowing the reason may have changed the data results or even could have changed the data to match much closer with what was seen within the literature search.

For the students who had received the vaccine, being educated by a HCP was the common reason similar to the literature for receipt at 25.1% of the pre-survey respondents and 27.3% of the post-survey respondents. An increase in willingness to receive the influenza vaccine was present when college students were educated about the influenza vaccination by a HCP or through a university sponsored program (Bednarczyk, et. al., 2015; Benjamin & Bahr, 2016; Merrill, et. al., 2010; Ramsey & Marczinski, 2011; Rodas, et. al., 2012). Matching with the literature, the second most common reason for receiving the vaccine was related to family and friends receiving it at 20.7% of respondents on the pre-survey and 18% on the post-survey.

Social networks including family or friends in the research articles showed a positive influence on intent to receive the influenza vaccine (Agarwal, 2014; Bednarczyk, et. al., 2015; Nowak, et. al, 2015; Sunil & Zottarelli, 2011; Wilson & Huttlinger, 2010; Yang, 2012; Yang, 2015). Continuing to relate education that is college specific towards the entire student population provides for multiple social influences which can keep increasing one's influence to receive the vaccine. Again, the answer of other was provided and pre-survey respondents choose the other response at 27.4% and the post-survey respondents choose it at 42.4%. Knowing what the other response indicated could change the data to be significant and help create more target specific material for the campaign through understanding the population better, especially in the post-survey. The most noted places the vaccine was received at included on the post survey pharmacy at 34%, a home physician or private physician office at 28.1% and the university SHC or vaccine clinic on campus at 21.4%. This was not calculated for significance because it was only asked on the post-survey. With almost fifty percent of students relying on a HCP or SHC to receive the vaccine continues to confirm the importance of health promotion of the vaccine through the university. When college students were educated by a HCP or university advertisement about the influenza vaccination, an increase to receive the vaccine was seen (Bednarczyk, et. al., 2015; Benjamin & Bahr, 2016; Merrill, et. al., 2010; Ramsey & Marczinski, 2011; Rodas, et. al., 2012). This similar finding within the EBP project to the research shows students are looking for trustworthy education to be provided by a HCP or SHC.

Even without a level of significance seen for either the primary or secondary outcomes, differences were present between the pre and post-survey responses reflecting changes did occur. In the primary outcome, which measured for change in intention to receive the vaccine, performance of the analysis showed no significance with a p value of 0.089. The pre-survey scores for intention to receive the vaccine was at 45.1% and post-survey scores at 51.5%. Changes though subtle were present from the pre-survey to the post-survey responses with an increase of 6.4% intending to receive the vaccine. The increased difference reveals a change

occurred, however what specifically caused the change is not well-defined. The change could be reflected from several factors including the multi-component education campaign, another informative outlet, different participants between survey groups, and participation of the college students who may have better understood the significant risk and need to receive the vaccine.

After completing analysis for the secondary outcomes, no significance was found among any of the questions. Again just as the primary outcome analysis revealed, in the secondary outcomes slight improvements in each question were seen. According to student responses, the importance of the vaccine from the pre-survey to post-survey did not show significance with a p value equal to 0.475. There were associated changes with a 4.9% increase in responses of students believing the vaccine was important from the pre survey at 54.4% versus the post survey at 59.3%. Another positive finding seen from the pre to post survey was a 5.4% increase in students who believed the vaccine would not give the flu with pre scores at 69.9% and post at 75.3%. This positive correlation did not meet the level of significance during analysis with a p value of 0.238. With a non-significant p level at 0.284 for belief the vaccine was safe, an increase in the responses was again seen at 72.2% of responses in the pre and 76.6% in the post surveys, equaling 4.4%. The last secondary outcome measured was to determine the responses of the student on if they received more education about the vaccine. This outcome had a non-significant p value at 0.100. Once again, an increase between the two surveys at 8.3% was found, with pre survey responses at 41.9% and post survey at 50.2%. These subtle but increased improvement in scores are important for several reasons. First off, the slight improvements reflects influenza vaccination knowledge gaps can become smaller. The changes seen shows students have the ability to change their beliefs and knowledge which influences their intent to receive the influenza vaccine. Creating smaller gaps using correct knowledge after implementation of the multicomponent influenza campaign, showed the importance of utilizing a multi-component campaign which positively affected all secondary outcomes which was consistent with the literature. When influenza vaccine campaigns utilize multiple interventions in

the college student population an association of an increase in influence and receipt of the vaccine has been found (Benjamin & Bahr, 2016; Jarrett et. al., 2015; Monn, 2016; Poehling et. al., 2012; Shropshire et. al, 2013). Lastly, the results recognize the literature in that the college population are less likely to have experienced influenza's serious adverse outcomes. Connecting these results from the EBP project with the known literature can help continue to promote the vaccine need within their population ultimately improving acceptance.

Evaluation of Applicability of Theoretical and EBP Frameworks

Theoretical Framework

Using the HBM for the project was appropriate and applicable because the concepts within the model specifically addressed helping a person to consider a health-promotion behavior change. The college age population through research has shown to be difficult when they consider a health promotion behavior due to being overall healthy individuals and beliefs of decreased susceptibility to a disease process. For the EBP project, through combining evidence based research and the HBM, target specific communication through education and social media made small impacts on college student and helped with the formation of the components of the influenza campaign. When application of the HBM into the EBP project occurred, different educational tactics and tools for the intervention helped to outline the importance of health prevention needed actions for the influenza vaccine. In the HBM, in order to influence an individual in regards to health decisions one must provide more than medical considerations including social relations and values (Glanz et. al., 2002). The targeted education tools and utilization of social media addressed the social relations and values among the college population which as seen with in the EBP project results influences their decisions. The education was directed at the barriers as well as concerns and were population specific to change and promote the healthy behavior of receiving a yearly influenza vaccine.

In the HBM, health promotion is perceived as a person’s individual responsibility and highlights the importance of an individual’s beliefs. Utilizing and understanding the importance

of this within the EBP project helped to address the barriers and concerns hindering the health promotion for this particular population. The education over the course of the EBP project provided the college students with the capability to form their own understanding of the health behavior. By creating this self-understanding, students could determine what form of action they sought for themselves creating an owning of the health responsibility. Even though there was no significant findings after the statistical analysis, a 6.4% increase was seen in students who intended to receive the vaccine prior after the project was completed. The college students were also given the opportunity to take personal responsibility in their health promotion through having access to different influenza vaccination clinics on campus to receive the vaccine. The EBP project did not show significance in the secondary outcomes after analysis, however subtle changes in these outcomes by the college students show they are building a sense in understanding the risk, seriousness of the disease, and considering themselves capable of taking action to intend to receive or not receive the influenza vaccine. After project implementation utilizing the HBM model, the campaign provided college students with the needed information to not only understand their risk and their susceptibility to the disease, but also to make their own informed health promotion behavior through the intention to receive the vaccine or not.

Strength and weaknesses of theoretical framework. A strength of utilizing the HBM within the EBP project was the survey questions were connected with HBM constructs. The surveys after being created had specific questions measuring the HBM constructs including perceived susceptibility, perceived severity of the vaccine, perceived benefits of attaining the vaccine, and different barriers perceived by college students from receiving the vaccine. Not only was the HBM utilized in formation of the surveys to address these constructs, education was built around the constructs to discuss the influenza vaccine including its safety, benefits, and susceptibility to influenza within their population. With this information provided, the vaccine clinics on campus to receive the vaccine where utilized for cues to take action. The surveys

were distributed to determine the college student populations' change in health promotion behaviors and the education received with the vaccination clinics on campus were present to address and improve their health promotion behaviors.

The weakness of the HBM model was that it does not directly account for specific cultures. Without specifically addressing a culture, there is a lack of diversity in education and creates a gap in presenting knowledge to different populations. With limited or no studies that report the use of the HBM specifically with just college students, the differences present in their culture prevents appropriate education from familiarizing individually with the students. No strong suggestions on the best ways to create an interest and connect with this population was available to decrease their perceptions of health promotion behaviors and receiving a vaccine. Without a full understanding of the specific populations' culture, the HBM was unable to provide specific direction or information on how to create a realization through the material to show the environmental factors of being susceptible to influenza are existent. Due to the lack of addressing a specific culture in the HBM, creating new educational materials specific for their population was more difficult and was an error and trial process. Due to presenting the materials in an error and trial process, there was an increased chance of the materials being not focused enough for the college students which may have negatively affected their influence on receiving the preventative vaccine.

EBP Framework

For the EBP project, the Stetler model of evidence-based practice was the framework used to implement the multi-component influenza vaccination campaign. The Stetler model was the basis for incorporating best evidence based research into practice. Within the model there are five phases to implement research in practice and they include (a) preparation, (b) validation, (c) comparative evaluation/decision making, (d) translation/application, and (e) evaluation. In the EBP project, all the stages included in the Steltler model were utilized to develop, implement, and evaluate.

The first phase, the preparation phase, involved identifying a clinical problem which was a lack of intent and receipt of the influenza vaccine among college students which needed improvement. In helping drive the identification of the clinical problem, both internal evidence from ideas and beliefs from the project manager and nurse practitioner and external evidence obtained from the systematic literature search were utilized. To determine the best evidence based practices in research, during this phase a comprehensive review of the literature was performed proving the lack of intention to receive or actual receipt of the influenza vaccination with in the college population. In the preparation phase, the PICOT question drove the research and was completed by the end of the phase through finding the relevant research to answer the PICOT question. After the project manager discussed the research findings that proved a need for the PICOT question with the NP at the university SHC, a decision was made to implement the multicomponent influenza vaccination campaign throughout the campus. The time frame for the project was discussed and chosen due to the beginning of influenza season starting in October and peak influenza season occurring in January.

The validation phase was used within the EBP project to analyze and synthesize the articles helping to choose the best recommended evidence research about the PICOT question. Once the findings were synthesized and evaluated, the similar themes within the articles aided building the evidence based project intervention for college students. With numerous articles to consider and to be incorporated in the EBP project, the article had to exemplify the most valuable, applicable, and best current evidence. After the information was summarized, the comparative evaluation and decision making phase of the Stetler model was used to complete the systematic appraisal to direct the project by integrating the research into the intervention. Fifteen total articles were selected and a critique was performed to determine their reliability, value, and applicability for the project.

The Stetler model's fourth phase, translation and application, directed applying the knowledge and evidence that was obtained from the literature search. Different elements of the

project's education including posters, flyers, and the social media page were constructed to the specific college population. Both input form the research and nurse practitioner at the SHC were taken into account for the implementation of the influenza vaccination clinics on campus. Considered for the project implementation was time, costs, and availability of both the project manager and college students for completion of surveys and the EBP project. This phase included implementation of the multi-component intervention of education, social media, and vaccination clinics. Also, this phase included the surveys being emailed to the college students to colelct the data for analysis in the next phase. The pre-survey and post-survey were completed on October 28th and January 20th the beginning and end of the project implementation.

The last phase of the Stetler model is the evaluation phase in which analysis and evaluation of the data collected occurs. To perform the analysis, data from the pre-survey and post-survey were utilized to determine if the intent to receive the influenza vaccine changed after the implementation time period. Secondary outcomes were also analyzed through the two surveys to identify any significance in a college students perceived beliefs and motivations to receive or not receive the influenza vaccine. No significant results were identified in both the primary and secondary outcomes, however changes were noted in the last phase and consideration of revisions to the EBP project implementation components. In order to continue to show changes and produce levels of significance with this EBP project, evaluation of the project was performed to improve the success and effectiveness for the future. During the evaluation phase, a reflection occurred in regards to each component of the EBP project implementation, on the practicality of the research for the project, and any needed system changes for the future. Even though strengths and limitations were determined during this phase, the EBP project still served as useful towards more similar EBP projects to be completed in the future.

Strength and limitations of the EBP framework. The strength of the Stetler model for the EBP project was the ease of the models' step by step implementation guide to help facilitate best evidence based research into practice. Utilizing the model helped the project to be facilitated in a specific progression. Within the fourth phase of Stetler's model, translation and application, a strength was disseminating the evidence into education that could be utilized to change their intention to receive the vaccine. Many different education materials and three different vaccination clinics were offered on campus to allow for the intended change. If students were unable to attend clinics, information was provided on where to receive the vaccine on the educational materials, electronic media, and through the social media twitter account page. Not only did the model help keep the EBP project in the proper step by step implementation plan, the internal and external evidence found in the first step of the project helped to provide positive promotion of the project for implementation when presented to the NP at the university SHC. With having the external evidence present for the NP, resistance was decreased.

Even with the internal and external evidence present, not all the administration boards a part of the IRB process at the university believed the multi-component influenza vaccination campaign was necessary for implementation. A weakness of the Stetler model for the EBP project included the lack of discussion on how to gain support by stakeholders to implement the project. The university stakeholders, especially the institutional effectiveness board, even with the appropriate IRB forms completed and multiple discussions, still did not understand the importance of the project. The adoption phase due to not receiving full approval limited how the intervention could reach more students which did ultimately affect project implementation because of alterations placed on the EBP project. The alterations to the project did affect implementation and may have affected data received through the surveys.

Strengths and Limitations of the EBP Project

Through evaluating the EBP project, several strengths and weaknesses were identified. By understanding both the strengths and weaknesses throughout the EBP project, assistance in

finding the probable contributing and impeding factors can help significantly in ways to advance future undertakings for a multi-component influenza vaccination campaign to increase intention or receipt of the vaccine. While strengths were identified, many more limitations existed which affected the outcomes.

Strengths

A strength of the project was the educational components were properly displayed across campus using different forms of materials and technology to identify with the college students. Visual posters or flyers were placed in all the main buildings and dorms on campus. The electronic flyers displayed through the media system of the school were able to reach every building on campus. With having education displayed across campus, it allowed everyone to have the opportunity to learn more about the vaccine, become interested in the health promotion behavior, and gain an understanding of the need to be vaccinated to improve intending to receive the vaccine.

Another strength of the EBP project was creating specific surveys for the EBP project. The survey when designed included no opinions or inferences, and questions addressed only one topic or idea per question. The questions were also socially sensitive when gathering demographics and by having limited questions on demographics, this helped to provoke more participation and accurate information. The best practice recommendations from the literature review was the main driving factor in the creation of the survey to provide appropriate data during collection to measure the primary and secondary outcomes. In creating the specific survey to measure the primary and secondary outcome, the survey was population specific and included limited questions helping to decrease the probability of underreporting. The survey questions that were created allowed a minimal needed time to answer the questions aiding to increase student participation. Not only were the surveys not time consuming for students to complete, they were simplified with short answers to decrease reading time and confusion. The project survey being brief when colleting the data was important to collect accurate

demographic and vaccine decision information. Lastly, the surveys were sent anonymously for data collection. The anonymous survey provided encouragement of voluntary participation which can limit the fear of reprisal in regards to their answers on the influenza vaccine. By looking into all these key factors when creating the survey, the survey tool represented a practical and cost-effective resource to gather data for the large target population.

Limitations

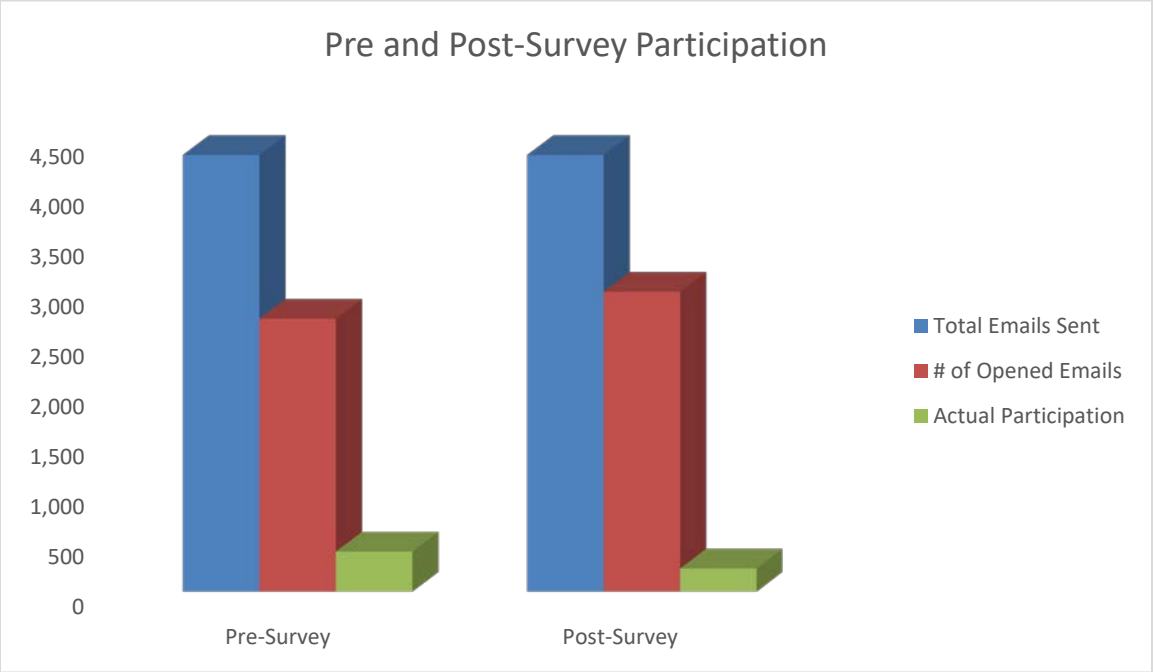
A weakness within the study was having to create for the first time a population specific pre-survey and post-survey because no such tool existed in the literature. With the surveys relying on a convenience sample, all college students who responded had the option of whether to or not to participate in the project. Convenience sampling has been known to create a difficulty in trying to control for biases, especially when relating to self-selection to participate. A convenient sample for the EBP project may have resulted in completion of the surveys by a specific population including the motivated college students that were more accepting of the influenza vaccine and those students who continually participate in campus lead research. The participation among the two surveys verify this participation limitation with respondents in the pre-survey at 399 compared to the post-survey at 231. The variation in responses of the surveys could also have been due to students not receiving any incentive for participation. Initially when the pre survey was sent to the 4,363 students for participation through email, 62% actually opened and viewed the email which was a total of 2,726 students. The email that was sent for the post survey resulted in 69% of students opening the email which equates to 2,995 students. The email contained the link to the survey which was only completed in the pre survey by 399 students and 231 students in the post survey. Figure 4.14 shows the dramatic difference in emails opened and actual participation in the survey. For the project, an incentive being initiated for the project may have tempted motivation to complete the surveys considering students were opening and reading the emails with the link. With these limitations present, the varied participation rate between the two surveys affected the rate of participation and therefore

affected the attrition rate within this project. In the pre-survey, 399 college students participated compared to the post-survey where only 231 students participated. Even with a high number of participants in the pre-survey, there was a considerable loss of responses in the post-survey from at 168. This considerable change in size created an attrition rate between the pre-survey and post-survey of 42.1%.

Even though it was discussed as a strength earlier, utilizing population specific surveys which were sent anonymously also provided limitations. The survey being sent anonymous was performed to help improve completion rate. However, this anonymous survey created difficulty with analysis which provided non-significant scores and significant scores may have been present. The anonymously sent surveys resulted in different groups of respondents who were unknown which resulted in non-matched groups. When analyzing the data, this created limitations on how the data compared to one another because the surveys did not show whether the same respondents from the pre-survey were in the post-survey. Also, the non-matching groups forced the only analysis that could be performed as a chi-square test of independence. Altering the primary and secondary outcome survey questions with likert scales and making the participants matching in the future could help to perform a different analysis and determine if the outcome of the data was significant.

During the translation and application phase, a few of the components within the project had to be altered to be compliant within the schools IRB approval requests. After receiving IRB approval on the entire EBP project, an additional program at the school was requested to be involved to be able to utilize the email system. Both the surveys and several notifications throughout the EBP project timeframe were to be sent through the email system for the students. The emails were intended to discuss the social media account in place for the vaccine, influenza vaccination education occurring, and vaccination clinics being held on campus. The importance of email communication with the students was discussed in several studies. Email communication for interventions on the influenza vaccine to students showed

Figure 5.1 Email Pre and Post-Survey Participation



significance in the probability to receive the vaccine (Bednarczyk, et. al., 2015; Poehling, et. al, 2012). Even though the emailing process was approved by the IRB at the school, the institutional effectiveness board did not approve utilizing the email system for the notifications in regards to the social media account, education material, and vaccination clinics on campus. The approval in regards to the email system was only gained to disperse the pre-survey and post-survey through email. Multiple discussions occurred for several weeks between the board on the purpose of the multi-component influenza program and need for utilizing the email system, however no headway was made and multiple changes to the project were expected to be made prior to implementation. The three beliefs behind not approving the email component of the intervention was the board felt the students would have too many emails being sent, could feel bombarded, and it created a lack of privacy. This limitation played a major role in the EBP project because it resulted in reduced awareness of the education campaign around campus and vaccination clinics occurring. Only visual materials that could be seen was able to provide knowledge about the campaign, social media account, and the vaccination clinics occurring on campus. Technology with the use of the email system is a known significant factor found in multiple studies to increase intent to receive the influenza vaccine. A study by Poehling et. al. (2012) found a significant correlation between often or very often email use in 94.2% of students who received the influenza. To try and accommodate for the changes within the project, posters and flyers were altered with the influenza vaccine social media twitter account placed on them. Through discussion with the media relations department on campus, electronic media flyers were created and dispersed weekly through the electronic media system on campus that had televisions displaying the ads throughout all the buildings on campus. The hope with these alterations was to continue to reach multiple students in different areas of the campus with the influenza vaccine education.

To try and notify students about the vaccination clinics through other avenues, posters and flyers were altered with the times and dates of the clinics. Also, the SHC became involved

placing times and dates on their webpage and social media accounts. There was a large consensus from the students at the main vaccination clinic for the project that was held in the student union building that they wished they had received prior electronic notification because they only found out due to posters displayed in the hallways that day. Several of the students that attended the clinic not only discussed these comments but made multiple trips gathering their friends to come and receive the vaccine from the onsite clinic. Students at the clinics discussed the impact of receiving the vaccine due to the convenience of the clinic on campus and with having insurance coverage at the school taking care of the cost. The impact of knowing these students desires makes the email notifications even more vital to a successful influenza vaccination campaign to increase receipt of the vaccine. After the clinic had ended, as the project manager was leaving, several groups of students showed up to the clinic location and they had to be turned away due to the vaccine not being present. A discussion occurred with the students about receiving the vaccine at the SHC. The students that were turned away either did not know where the SHC was or said they did not want to make the trip to the edge of campus just to receive the vaccine. Without having permission to promote the EBP project across campus, limitations definitely were present in how much change could occur in the student's perceptions on the need for the vaccine. The need for total buy-in by for a healthcare educational program within a university on the influenza vaccine is necessary to help the knowledge gap for these students in regards to the vaccine.

Implications for the Future

The project's primary objective was to implement an evidence based multi-component intervention providing information to college students in regards to influenza and the vaccine to influence intention to receive the influenza vaccination. Providing information that was population specific on influenza's risks, susceptibility, and the vaccine's safety attempted to dispel myths or misconceptions among college students. After implementation of the EBP project, intention in receipt of the vaccine rates increased subtly following, however the change

was not significant. The data showing improvements recognized the implications for future projects in this focused area as important specifically to the following areas of practice, research, theory and education.

Practice. Subtle improvements in the survey responses following project implementation even without statistical significance being present endorses the continued need for implementation of a multi-component intervention program for influenza vaccines in the college population. Benefiting the entire student population may be a tall task as indicated in this project, but with the right and improved methods in place it can equate to larger scale changes. The evidence found after project implementation indicates the college population needs continued education to change a health behavior. The survey responses from the students showed an increase in wanting more education on the vaccine to make an informed decision to receive the vaccine at an 8.3% increase between surveys. This evidence shows, similar to what was found in the research, the continued implementation of multi-component interventions can have a promising effect on future outcomes to receive the vaccine. Current literature researched for this EBP project suggests among college students the most common reasons for refusal of the influenza vaccine included misconceptions about the safety and importance of needing the vaccine. With the intervention being designed to address these misconceptions through population specific factual information, a continuing look into the best way to implement these targeted educational materials used in the EBP project across a campus may produce significance in future projects.

Continuation of the project implementation through the university SHC with increased acceptance by stakeholders at the university has the potential for greater benefits in the future. By helping to create a better understanding among key stakeholders in university settings can increase acceptance to implement different types of needed health promotion programs for college students throughout the nation. In the university setting, having acceptance by the stakeholders, can result on improvements made to this EBP project to create a significance in

larger scales helping to transform college students health promotion early in their life and improve on different disease states in the future. Utilizing a multi-component vaccination campaign may benefit other future health promotion needs if successful implementation of the limitations noted in this project are changed and utilized in future programs. Vaccination programs at universities can promote up and coming health promotion behaviors including the receipt of the meningococcal vaccine. Much of the research present to support implementation of interventions to college students relies on education to effect health behavior changes and nurse practitioners are in key positions to help with ensuring the appropriate education and disease prevention is taking place. Providing different modes of education, especially using social media and technology for this specific population, can offer healthcare providers with unique education tools to help populations complete informed decisions about their health. Further projects are recommended with the use of social media and technology including email to determine which combination of interventions will improve acceptance of the influenza vaccination among college students.

Theory. The HBM's conceptual framework and Stetler model informed and guided the project in various avenues. The Stetler model was the guide to formation and implementation of the project in regards to the research found. By connecting the HBM with the EBP project, the interventions which were implemented helped to promote knowledge and health promotion in regards to the need for influenza vaccine among college students. The educational components helped to address barriers and concerns of these individuals to dispel myths and perceptions about the vaccine. By having vaccination clinics available on campus several weeks into implementation, integration of the students' individual responsibility and cue to action was in place to promote the health promotion behavior. Even with only slight improvements noted from pre to post surveys, the students displayed learning the importance of the health promotion behavior to receive the vaccine as safe and appropriate for their population. The HBM has demonstrated direct applicability when changing health promotion behaviors in various settings.

If used in future EBP projects or research to promote influenza vaccine uptake in the college student population, the HBM can continue to lead others to impact a positive change in the vaccination uptake.

Research. In performing the review of literature to determine the necessity for the EBP project, an established need was implicated with a sufficient number of sources on college students' to different interventions to increase intention or receipt of the influenza vaccine. The research specifically showed the use of a multi-component intervention on college students can occur with significance in obtaining or intending to receive the vaccine. Within these multi-component interventions, a variety of educational tools including social media and formal posters and flyers have been tested with finding a required need for more research to implement in an EBP project. A need for future research in college students' knowledge of the influenza vaccine and educational programs in place will help with future increases in influencing college students' intention and receipt of the vaccine. In trying to better understand this population, more population specific research should be completed in order to improve the plan for implementation to reach more students which is limited in the literature. The outcomes of the EBP project shows the apparent need to understand the different necessary approaches with applying the research into practice when addressing this specific college population.

Education. The positive outcomes of this EBP project did not show an associated statistical significance, but the impact of the project showing improved changes continues to the need for further education in the college student population on obtaining the influenza vaccination. As APNs, providing education to this population will not only help to empower the students to begin better health promotion practices, but help to close the gap in understanding how to best provide health promotion behaviors to a college population nationwide. The outcome from this EBP specifically indicated that college students are looking for health education containing information regarding the safety, efficacy, and need for the influenza vaccine. Educational materials must continue to be created specifically for this population to be

effective in providing education to improve the population's knowledge and intentions. To continue the strides being made from this EBP project to future projects, the need for education must be disseminated through different education tools. Providing these different modes of education and population specific materials can provide multiple college settings the ability to create educational changes through APNs and RNs at SHCs which is what students want. With 3,026 four-year college campuses and 1,700 two-year degree the need to continue to educate many campuses is apparent (U.S. Department of Education, 2016). By disseminating the education widespread on other campuses, the ACHA proposed Healthy Campus 2020 target goal nationwide of college campus yearly influenza vaccination completion rates of 50% can increase eventually reaching achievement of the goal (ACHA, 2012).

Conclusion

Even though the DNP project resulted in no statistical difference, the need for knowledge and awareness on the health promotion behavior of receiving the influenza vaccine among college students should not be undervalued. With the improvements noted between the pre and post-survey, this only further indicates as well as reflects the continued efforts needed to positively change the receipt of the vaccine. After analysis was performed, the addition of collecting interval and ratio level quantitative data can increase analysis outcomes and determine better paths for future interventions. The APN plays an important role in communicating important health promotion behaviors specifically to at risk populations. As APNs and RNs, implementing a multi-component intervention similar to this EBP project affiliated at the university can continue to alter the college student populations' perception on their susceptibility to influenza as well as the severity of the disease. Rodas et. al. (2012) showed a significant association for college students to accept the need for the influenza vaccine when provided the educational information by a HCP with an increase in intention to receive at $p< 0.001$. Additionally, increasing participation from university boards and stake holders to work with the university SHC and all health education promotion programs can create

ample opportunities to benefit the college students' health in various ways. The APN has a responsibility to not only educate, but empower members of the university and students to warrant a change to occur. Taking personal responsibility in regards to healthy behaviors by everyone can decrease disease risk and spread in times of high disease states. By continuing to improve on implementation of multi-component interventions at universities in regards to the influenza vaccine, the highest chance for success in the future for achieving goals created by governing bodies for influenza vaccine receipt and other health promotion programs in college students can be achieved.

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BIOGRAPHICAL MATERIAL

Mrs. Heather Strickler completed a BS in kinesiology from Indiana University (IU) in 2007 and a BSN from Indiana University Purdue University Fort Wayne (IPFW) in 2010. While at Indiana University, she was a four year scholarship varsity athlete on the softball team and was captain for two years. During her time as a varsity athlete, she volunteered to help with different in need programs in the community and volunteered for youth sporting events in the summers. She has spent most of her nursing career in different ICU settings including trauma, neurological, cardiac, surgical, and medical. Currently she is working on a Trauma/Neurological ICU in Indianapolis. Within these various ICU settings, she played important roles including charge nurse and a preceptor to new registered nurses. Mrs. Strickler is currently attending Valparaiso University receiving a DNP in May of 2017. Heather is a current member of Sigma Theta Tau International Nursing Society and a member of the American Association of Nurse Practitioners. Volunteering at Indiana University during her softball career, along with employment in the trauma ICU, Heather found her passion working with younger adults, fulfilling the advocacy role of nursing. After working with different patient populations in clinic settings throughout the Valparaiso DNP program, her current interest is in vaccines and improving compliance among younger populations. Heather pursued an EBP project at Valparaiso University on the influenza vaccine in college students.

ACRONYM LIST

ACHA: American College of Health Association

APN: Advanced Practice Nurse

CDC: Centers for Disease Control

DNP: Doctorate of Nursing Practice

EBP: Evidence Based Practice

HBM: Health Belief Model

HCP: Healthcare Provider

ILI: Influenza Like Illness

IRB: Institutional Review Board

JBI: Joanna Briggs Institute

JHNEBP: John Hopkins Nursing Evidence Based Practice

NCIRD:

NKU: Northern Kentucky University

NP: Nurse Practitioner

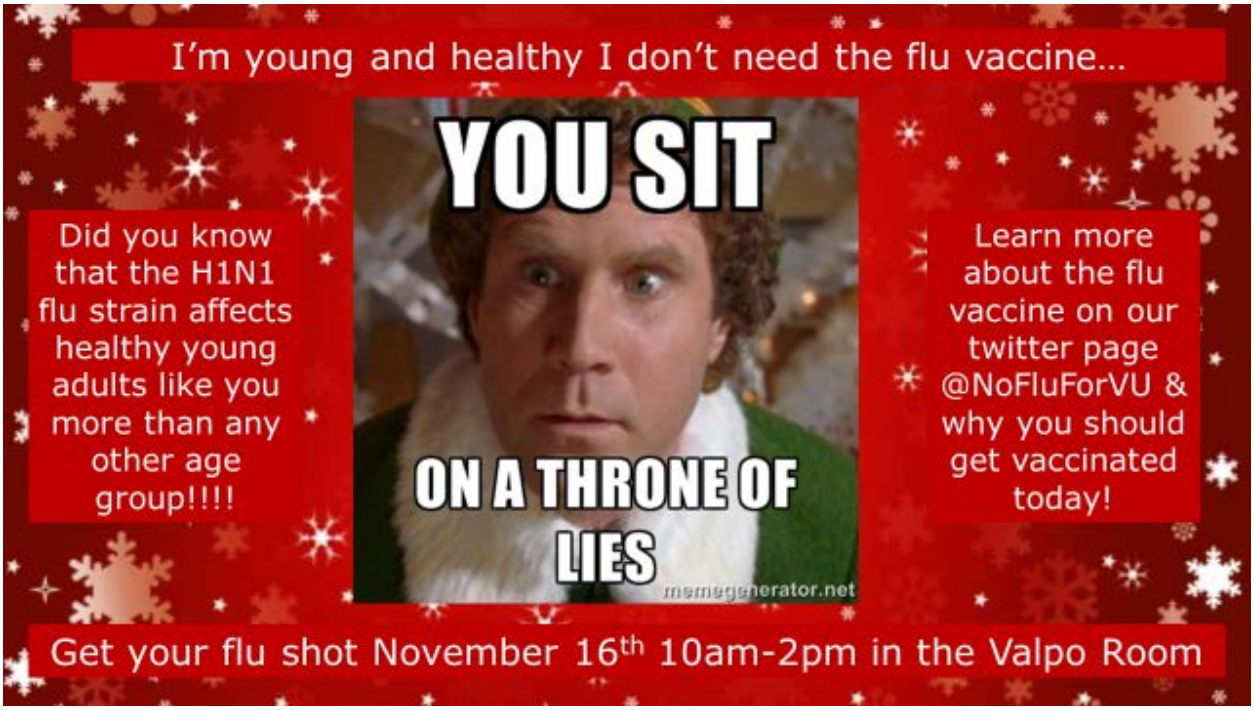
SHC: Student Health Center

URI: Upper Respiratory Infection

WHO: World Health Organization

Appendix A

Electronic Media Flyers



College students who **EXPERIENCE THE FLU** on average **SPEND 8 OR MORE SICK DAYS** away from school and have decreased academic performance.
Missed days at school = Affected grades & Added Pressure at Finals to Improve Grades!

So get your flu vaccine today, keep yourself and others around you healthy!

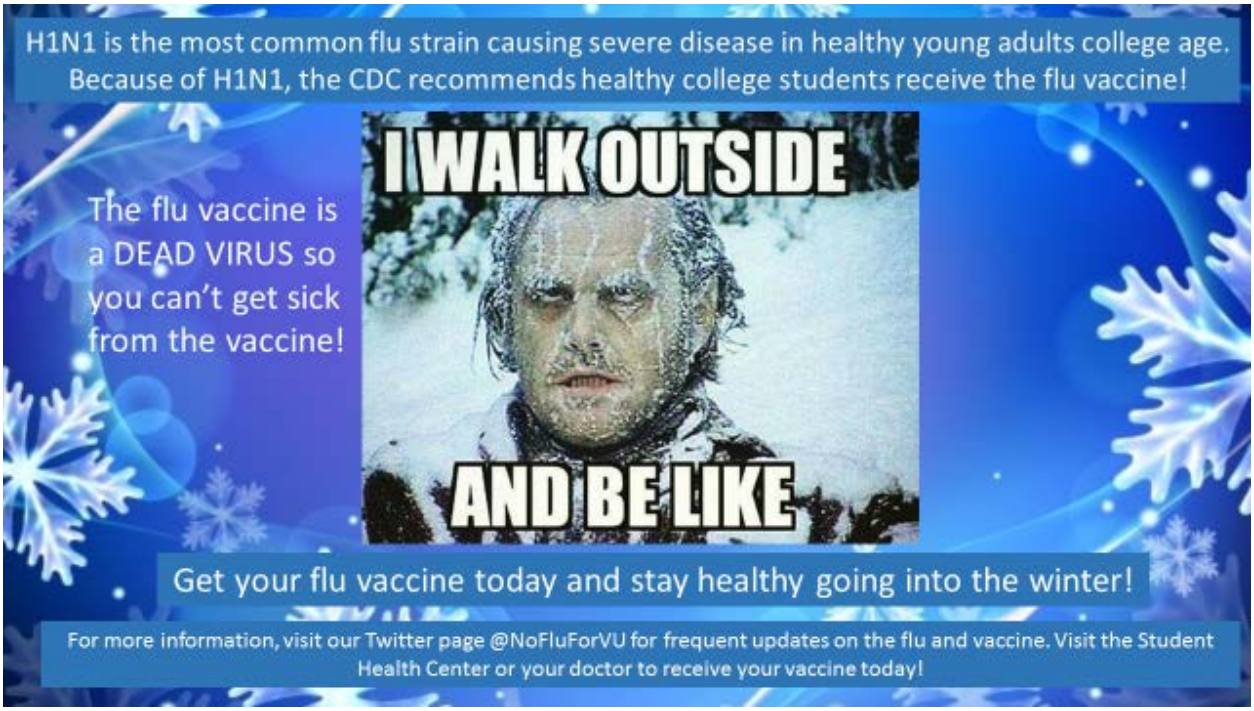
For more information, visit our Twitter page @NoFluForVU for frequent updates on the flu and vaccine. Visit the Student Health Center or your doctor to receive your vaccine today!

Healthy college students are ESPECIALLY SUSCEPTIBLE to the H1N1 strain leading to higher rates of hospitalization and morbidity.
Close proximity, including dorms, social gatherings, and classrooms INCREASE THE RISK of getting the flu compared to everyone else!

So get your flu shot today! And keep those around you from getting sick!

For more information, visit our Twitter page @NoFluForVU for frequent updates on the flu and vaccine. Visit the Student Health Center or your doctor to receive your vaccine today!


The flu virus mutates and so a new vaccine is created yearly.
The CDC recommends EVERYONE over the age of 6 months receive the flu vaccine every year!
After receiving the vaccine, it takes a FULL 2 WEEKS BEFORE FULL PROTECTION!!!
WHEN PROFESSOR ASKS HOW I SLEPT BEFORE FINALS
GREAT, I GOT A FULL 40 MINUTES
The flu vaccine is a DEAD VIRUS so you can't get sick from the vaccine!
Get your flu vaccine today keep yourself and others from getting sick over the holidays!
For more information, visit our Twitter page @NoFluForVU for frequent updates on the flu and vaccine. Visit the Student Health Center or your doctor to receive your vaccine today!


H1N1 is the most common flu strain causing severe disease in healthy young adults college age.
Because of H1N1, the CDC recommends healthy college students receive the flu vaccine!
The flu vaccine is a DEAD VIRUS so you can't get sick from the vaccine!
I WALK OUTSIDE
AND BE LIKE
Get your flu vaccine today and stay healthy going into the winter!
For more information, visit our Twitter page @NoFluForVU for frequent updates on the flu and vaccine. Visit the Student Health Center or your doctor to receive your vaccine today!

Appendix B

Visual Poster and Flyers

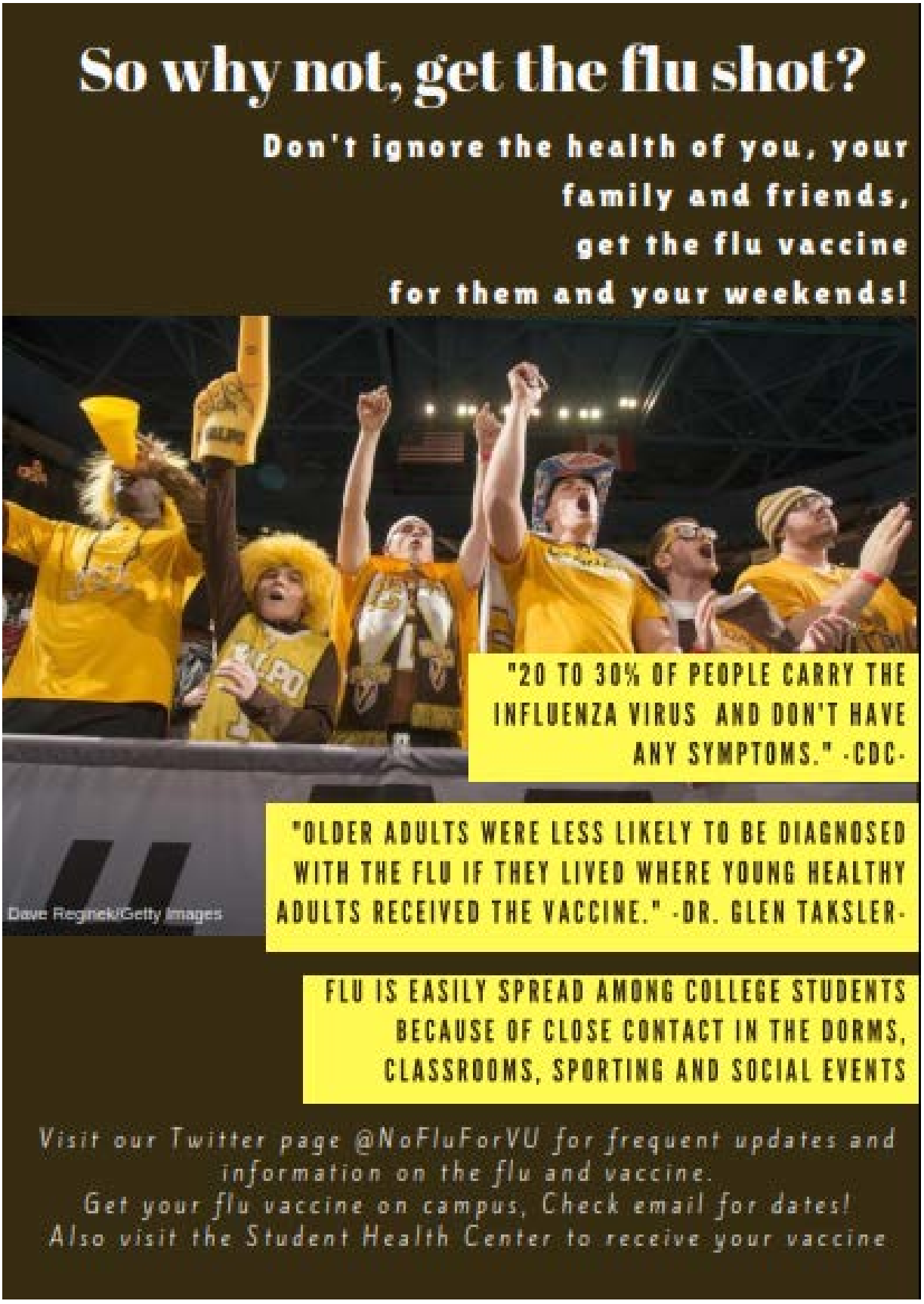
WHY GET THE FLU, WHEN THERE IS PREVENTION FOR YOU!

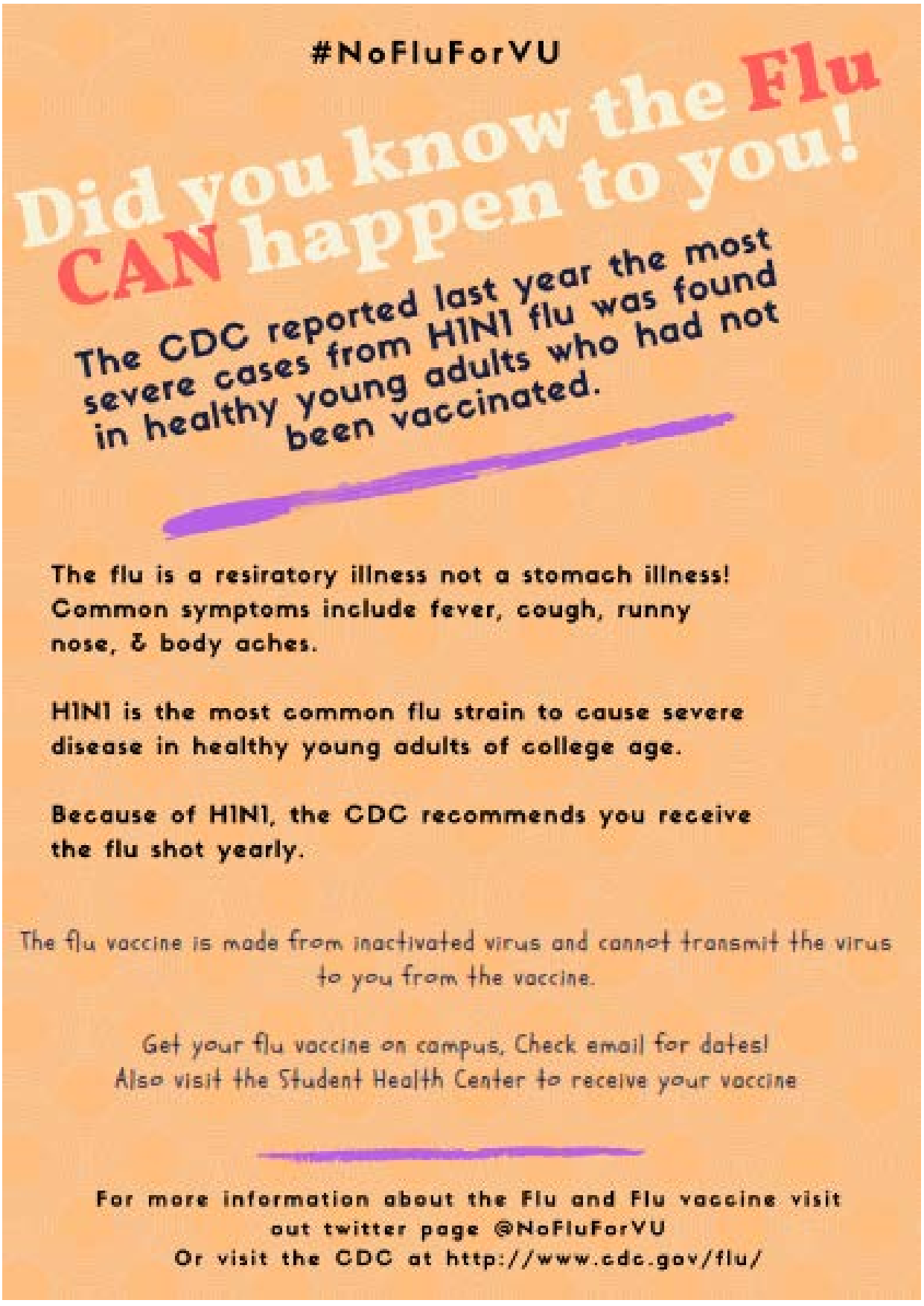
WHY DO WE NEED A FLU VACCINE EVERY YEAR? THE FLU VIRUS MUTATES AND SO A NEW VACCINE IS CREATED YEARLY. AFTER RECEIVING THE VACCINE, IT TAKES A FULL TWO WEEKS BEFORE FULL PROTECTION.

The flu vaccine has been recommended by the CDC as the single best way to prevent the flu.

Get your flu vaccine on campus. Check email for dates! Also visit the Student Health Center to receive your vaccine.

Visit our Twitter page @NoFluForVu for more information on the Flu and Flu vaccine.


So why not, get the flu shot?
Don't ignore the health of you, your family and friends, get the flu vaccine for them and your weekends!
"20 TO 30% OF PEOPLE CARRY THE INFLUENZA VIRUS AND DON'T HAVE ANY SYMPTOMS." -CDC-
Dave Reginek/Getty Images
"OLDER ADULTS WERE LESS LIKELY TO BE DIAGNOSED WITH THE FLU IF THEY LIVED WHERE YOUNG HEALTHY ADULTS RECEIVED THE VACCINE." -DR. GLEN TAKSLER-
FLU IS EASILY SPREAD AMONG COLLEGE STUDENTS BECAUSE OF CLOSE CONTACT IN THE DORMS, CLASSROOMS, SPORTING AND SOCIAL EVENTS
Visit our Twitter page @NoFluForVU for frequent updates and information on the flu and vaccine.
Get your flu vaccine on campus, Check email for dates!
Also visit the Student Health Center to receive your vaccine


#NoFluForVU
Did you know the Flu CAN happen to you!
The CDC reported last year the most severe cases from H1N1 flu was found in healthy young adults who had not been vaccinated.
The flu is a resiratory illness not a stomach illness! Common symptoms include fever, cough, runny nose, & body aches.
H1N1 is the most common flu strain to cause severe disease in healthy young adults of college age.
Because of H1N1, the CDC recommends you receive the flu shot yearly.
The flu vaccine is made from inactivated virus and cannot transmit the virus to you from the vaccine.
Get your flu vaccine on campus, Check email for dates!
Also visit the Student Health Center to receive your vaccine
For more information about the Flu and Flu vaccine visit out twitter page @NoFluForVU
Or visit the CDC at http://www.cdc.gov/flu/

KNOCK OUT THE FLU

Did you know the flu significantly impacts your school work?! When sick with the flu the average school days missed is 8 days!!!!!

Missed days leads to poor school performance, affected grades, and more pressure at the end during finals!

Visit our Twitter page @NoFluForVU for frequent updates and information on the flu and vaccine.

Get your flu vaccine on campus. Check email for dates!

Also visit the Student Health Center to receive your vaccine

THE FLU VACCINE GIVES YOU THE FLU, WHAT?

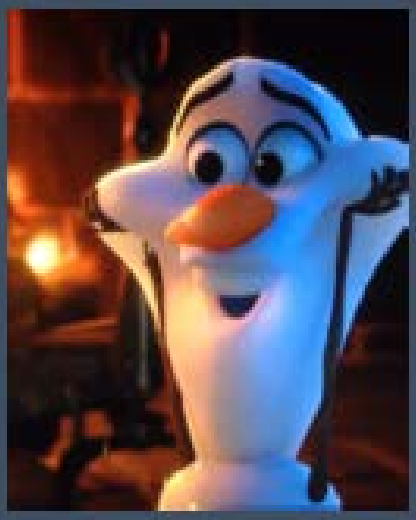
The flu virus is not a live virus! It cannot give you the flu!

Some people can have a low grade fever, body aches, and feel sick after the vaccine because your body is building immunity, not sick with the flu.

Visit our Twitter page @NoFluForVU for frequent updates and information on the flu and vaccine.
Get your flu vaccine on campus. Check email for dates!
Also visit the Student Health Center to receive your vaccine


The flu vaccine is NOT for healthy people...
IT'S
A TRAP
Due to H1N1 being more harmful to young adults, the CDC recommends everyone get a flu vaccine!
FLU SEASON IS HAPPENING NOW
GET YOUR FLU SHOT
VISIT THE STUDENT HEALTH CENTER TODAY
For more information on the flu visit @NoFluForVU

20 TO 30% OF PEOPLE CARRY THE FLU VIRUS AROUND AND DON'T HAVE ANY SYMPTOMS!



Because those around you are worth melting for...
Get your flu vaccine today!

Flu vaccine is available at the student health center. It is not too late!
Visit @NoFluForVU for more information

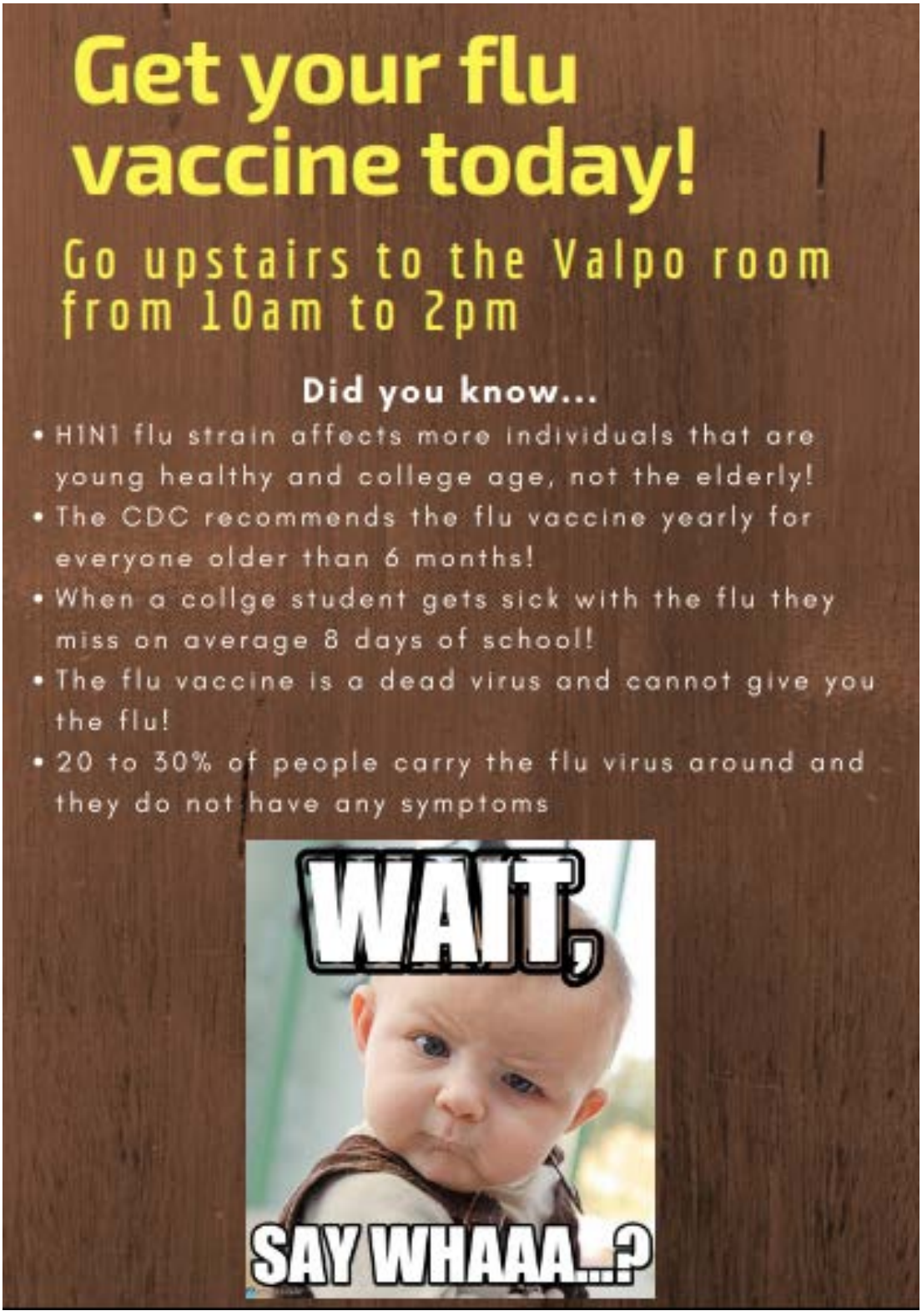

When you didn't get your flu shot and it is now flu season...
MAY THE ODDS
BE EVER IN YOUR FAVOR
memegenerator.net
EVERY YEAR, THE FLU EFFECTS 5% -20% OF THE GENERAL POPULATION... INCLUDING HEALTHY YOUNG ADULTS
JANUARY IS PEAK FLU SEASON WITH 60% OF PEOPLE GETTING SICK IN THIS TIME PERIOD
FLU VACCINE IS AVAILABLE AT THE STUDENT HEALTH CENTER.
IT IS NOT TOO LATE!
VISIT @NOFLUFORVU FOR MORE INFORMATION

Appendix C

Twitter Home Page

Appendix D

Vaccination Clinic Posters

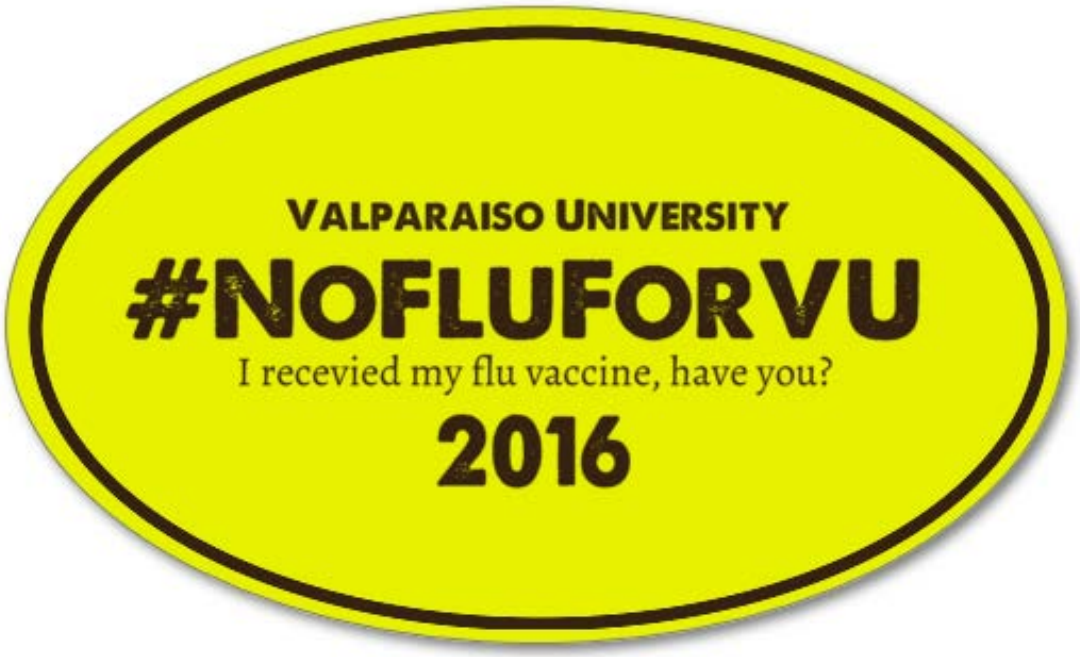


FLU VACCINES HERE!!!!

Getting your flu shot today?!
Get them here in the Valpo room from 10am to 2pm
Let your friends know and keep everyone flu free! #NoFluForVu

Appendix E

EBP Project Sticker



Appendix F Pre and Post Surveys

Pre-Survey

Are You Thinking About Receiving the Flu (Influenza) Vaccine?

The Flu (Influenza) Vaccine and You

The purpose of this survey is to gather information for an Evidence-Based Practice research project taking place at your university on a multi-component intervention on influenza vaccination in the college population.

The survey looks to examine the effects of intention to receive the influenza vaccination in the college population. The survey given will gather specific information on demographics, influenza vaccination history, intent, motivation, and beliefs about the vaccine. After the pre-survey and throughout a time period of three months from the beginning of October to December 12th, multiple educational interventions will be implemented throughout the campus on the influenza vaccine. At the end of the time period, a post survey will be emailed and gather the same information as the pre-survey. Any and all information reported will maintain confidential, private, and no personal information will be collected.

Thank you for your time and participation.

Below is a link to Surveymonkey privacy policy:
https://www.surveymonkey.com/mp/policy/privacy-policy/

Are You Thinking About Receiving the Flu (Influenza) Vaccine?

The Flu (Influenza) Vaccine and You

We are seeking to find out your thoughts on the flu (influenza) vaccine and whether you plan on receiving it this year.
Please answer the following 12 questions, no short answers, all multiple choice, that will take you less than 5 minutes to complete.
Thank you for your time!

* What is your gender?

- ◯ Female
- ◯ Male

* What grade are you in?

- ◯ Freshman
- ◯ Sophomore
- ◯ Junior
- ◯ Senior
- ◯ Graduate student
- ◯ Law Student
- ◯ Other

* What is your ethnicity?

- ◯ American Indian or Alaskan Native
- ◯ Asian or Pacific Islander
- ◯ Black or African American
- ◯ Hispanic or Latino
- ◯ White / Caucasian
- ◯ Other

* Where is your campus residence?

- ◯ On Campus
- ◯ Off Campus

* Did you receive the flu (influenza) vaccination last year?

- ◯ Yes
- ◯ No

* If you did not receive the flu (influenza) vaccine, what was the main reason? (If you received the vaccine last year, select N/A from below and move to question #7)

- ◯ I'm healthy and I do not need the vaccine
- ◯ The vaccine has too many side effects or is unsafe
- ◯ I am afraid of needles
- ◯ It was not convenient for me to receive due to location or time
- ◯ I have had prior reactions to the vaccine in the past
- ◯ Cost
- ◯ N/A (I received the vaccine last year)
- ◯ Other

* If you received the flu (influenza) vaccine, what was the main reason? (If did not receive the vaccine last year please answer N/A and move to the next question).

- ◯ Educated by a healthcare provider
- ◯ Family and friends received it
- ◯ Educated and saw information on the university campus about the vaccine
- ◯ Educated with information from outside sources including the T.V., in the newspaper, or online
- ◯ Had insurance to receive it
- ◯ N/A (Did not receive it last year)
- ◯ Other

* Do you feel the flu (influenza) vaccine is important for college students and people your age?

- ◯ Yes
- ◯ No
- ◯ Unsure

* Do you feel that the flu (influenza) vaccine will give you the flu?

- ◯ Yes
- ◯ No
- ◯ Unsure

* Do you feel the flu (influenza) vaccine is safe?

- ◯ Yes
- ◯ No
- ◯ Unsure

* Do you feel that with more education you would receive the flu (influenza) vaccine?

- ◯ Yes
- ◯ No
- ◯ Maybe

* Do you intend to receive the flu (influenza) vaccine this year?

- ◯ Yes
- ◯ No
- ◯ Unsure

Post-Survey

What are Your Thoughts About Receiving the Flu (Influenza) Vaccine This Year?

The Flu (Influenza) Vaccine

The purpose of this survey is to gather information for an Evidence-Based Practice research project taking place at your university on a multi-component intervention on influenza vaccination in the college population.

The survey looks to examine the effects of intention to receive the influenza vaccination in the college population. The survey given will gather specific information on demographics, influenza vaccination history, intent, motivation, and beliefs about the vaccine. This survey is a post-survey being conducted after having multiple educational interventions implemented throughout the campus on the influenza vaccine. Any and all information reported will maintain confidential, private, and no personal information will be collected.

Thank you for your time and participation.

Below is the link to Surveymonkey privacy policy:
https://www.surveymonkey.com/mp/policy/privacy-policy/

What are Your Thoughts About Receiving the Flu (Influenza) Vaccine This Year?

The Flu (Influenza) Vaccine

We are seeking to find out your thoughts on the flu (influenza) vaccine and whether you plan on receiving it this year.
Please answer the following 13 questions, no short answers, all multiple choice, that will take you less than 5 minutes to complete.
Thank you for your time!

* What is your gender?

- ◯ Female
- ◯ Male

* What grade are you in?

- ◯ Freshman
- ◯ Sophomore
- ◯ Junior
- ◯ Senior
- ◯ Graduate student
- ◯ Law Student
- ◯ Other

* What is your ethnicity?

- ◯ American Indian or Alaskan Native
- ◯ Asian or Pacific Islander
- ◯ Black or African American
- ◯ Hispanic or Latino
- ◯ White / Caucasian
- ◯ Other

* Where is your campus residence?

- ◯ On Campus
- ◯ Off Campus

* Did you receive the flu (influenza) vaccination this year?

- ◯ Yes
- ◯ No

* If you have received the flu (influenza) vaccine this year, what location did you receive it? (If you have not received the vaccine please answer N/A and move to question #7).

- ◯ Home physician or private physician office
- ◯ University Student Health Center or through campus vaccination clinics
- ◯ Hospital, Health Department, or Clinic
- ◯ Pharmacies including places like Walgreens or CVS
- ◯ Other
- ◯ N/A (I have not received the vaccine yet)

* If you did not receive the flu (influenza) vaccine yet, what is the main reason? (If you have received the flu vaccine, select N/A from below and move to question #8)

- ◯ I'm healthy and I do not need the vaccine
- ◯ The vaccine has too many side effects or is unsafe
- ◯ I am afraid of needles
- ◯ It has not been convenient for me to receive due to location or time
- ◯ I have had prior reactions to the vaccine in the past
- ◯ Cost
- ◯ N/A (I received the vaccine this year)
- ◯ Other

* If you received the flu (influenza) vaccine, what was the main reason? (If have not yet received the vaccine this year please answer N/A and move to question #9).

- ◯ Educated by a healthcare provider
- ◯ Family or friends received it
- ◯ Educated and saw information on the university campus about the vaccine through email, posters, stickers, or twitter page
- ◯ Educated with information from outside sources including the T.V., in the newspaper, or online
- ◯ Had access to the immunization clinics held on campus
- ◯ N/A (Did not receive yet this year)
- ◯ Other

* Do you feel the flu (influenza) vaccine is important for college students and people your age?

- ◯ Yes
- ◯ No
- ◯ Unsure

* Do you feel that the flu (influenza) vaccine will give you the flu?

- ◯ Yes
- ◯ No
- ◯ Unsure

* Do you feel the flu (influenza) vaccine is safe?

- ◯ Yes
- ◯ No
- ◯ Unsure

* Do you feel that with continued education about the vaccine you will receive the flu (influenza) vaccine?

- ◯ Yes
- ◯ No
- ◯ Maybe

* Do you intend to receive the flu (influenza) vaccine this year? (If you have already received the vaccine please answer N/A).

- ◯ Yes
- ◯ No
- ◯ Unsure
- ◯ N/A (I received the vaccine this year)