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A Survey of Primary Care Providers' Strategies to Affect Influenza Vaccination Rates

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**A Survey of Primary Care Providers' Strategies
to Affect Influenza Vaccination Rates**

by

Jennifer Moffett
Tracy Mitchell
Vera Simmons

A Clinical Research Project
Submitted in Partial Fulfillment of the Requirements for the
Degree of Master of Science in Nursing, College of Nursing
and Health Sciences
Mississippi University for Women

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Graduate Committee Approval

The Graduate Committee of
Jennifer Moffett, Tracy Mitchell, and Vera Simmons
hereby approves this research project as meeting partial
fulfillment of the requirements for the Degree of
Master of Science in Nursing

Date _____

Approved _____

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Dedication

We would like to dedicate this manuscript to the One who is love and light and to the ones who have loved us so well over the last year. “Love one another. As I have loved you” and “let your light shine” (John 13:34, Matthew 5:16). Although the three members of this research team and our advisor were the “older women” of the class, we were all in different stages of our lives and had different obstacles to overcome to complete this study. We relied on the love and support from our Lord, our family, and our friends. We can only hope to be that kind of light and encouragement for others when they are in need. We thank you all with gratitude forever in our hearts for all you have been and done for us.

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Finally, we want to extend a special thanks to all the graduate instructors of Mississippi University for Women for sharing their vast knowledge throughout this program. This enriching education opportunity has prepared us to be confident, competent, and professional practitioners. Our achievements would not have been possible without each of you.

Abstract

Influenza is a vaccine preventable disease that affects millions of Americans and causes thousands of deaths and billions in healthcare costs. Annual influenza vaccination is regarded by researchers and healthcare governing bodies as the most effective way to prevent contracting the flu. A large body of research exists supporting primary care providers as influential in regard to patients' healthcare decision making. However, if strategies are consistently being implemented to affect influenza vaccination rates remains unclear. The purpose of this study was to identify strategies being implemented to affect influenza vaccination rates by asking two questions: 1. Do primary care providers recommend influenza vaccinations to every patient, and 2. Are primary care providers implementing strategies to affect influenza vaccination rates? A total of 93 voluntary, anonymous surveys were collected from primary care providers in Mississippi and analyzed utilizing descriptive statistics with frequency distribution. The survey reflected that 100% of participants offered the influenza vaccination to all eligible patients. Of the providers using strategies to affect influenza vaccination rates, 96.8% reported advertising as the prevalent strategy. Following advertising, the next most predominant strategy utilized was a visible notation of the patient's current vaccination status on the chart or electronic health record (EHR). Notably, the study found that one third of existing primary care patients were not notified of the need for the influenza vaccination. The findings have implications for both primary care providers and administration in that improvement in systematic implementation of strategies to affect influenza vaccination rates are needed and more research is needed to identify barriers to patient willingness to receive the influenza vaccination.

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Chapter I: Dimensions of the Problem

Seasonal influenza (flu) is a widespread, vaccine-preventable, respiratory virus that affects most people at some point (Centers for Disease Control and Prevention [CDC], 2019). Most often, symptoms are mild and include fever, cough, sore throat, and body aches. High risk populations, such as the elderly, very young, and people with certain health conditions, and people who are immunocompromised, are predisposed to serious flu complications, hospitalizations, poor outcomes, and death. The flu vaccine remains the most effective tool to reduce flu-related illness and death (CDC, 2019). Receiving the flu vaccination offers individual protection and reduces the chance of a flu outbreak by offering herd immunity, which protects high risk populations (Cunningham et al., 2017). Recommendations and guidelines have frequently changed but were simplified and broadened in 2010 when the Advisory Committee on Immunization Practices (ACIP) of the Centers for Disease Control and Prevention (CDC) changed recommendations for influenza vaccination to include patients six months and older who do not have contraindications (Cunningham et al., 2017). Multiple provider-dependent strategies have been determined to be effective in increasing influenza vaccination rates.

Influenza prevalence and immunization rates fluctuate from season to season. From October 1, 2019, through April 4, 2020, there were between 39 million and 56 million flu illnesses in the United States (Centers for Disease Control and Prevention [CDC], 2020a). There were between 410 thousand and 740 thousand influenza-related hospitalizations with 24 thousand to 62 thousand flu deaths (CDC, 2020a). The adult, aged 18 years and over, immunization uptake rate was 45.3% for 2017 to 2018 (Centers for Disease Control and Prevention [CDC], 2020b). Over half the population was left

unprotected from influenza. Szilagyi et al. (2020) found in 2018 to 2019, vaccination coverage rates by age were 62.6% for six to 17 year olds, 34.9% for 18 to 49 year olds, 47.3% for 50 to 64 year olds, and 98.1% for individuals 65 years or older. The vaccination coverage rates were significantly lower than the Healthy People 2020 vaccination coverage goals of 80% for individuals younger than 65 years and 90% for individuals 65 years or older (Szilagyi et al., 2020).

Despite repeated reports of low vaccination rates, whether or not primary care providers are routinely implementing strategies to affect influenza vaccination rates remains unclear; although ample research and resources exist to assist with implementation (Szilagyi et al., 2020). Bjork et al. (2020) offers a chapter dedicated to guidelines, links to video series, suggestions for quality improvement projects, and other resources to assist providers and healthcare organizations in implementing evidence-based strategies to affect influenza vaccination rates. Primary care providers can create a culture of immunization within the practice by implementing evidence-based strategies of vaccination delivery (Bjork et al., 2020). Multiple strategies have been determined to be effective in affecting influenza vaccination rates within primary care. The Task Force on Community Preventive Services recommends combining interventions to improve vaccination rates; specifically, the multicomponent interventions that combine one or more interventions from the following three categories: enhancing access to care and reducing administrative barriers, implementing provider and system-based interventions, and increasing vaccination demand among patients (Loskutova et al., 2020). Huffman et al. (1992) concluded when patients were well-informed of the importance of the

influenza vaccination and the healthcare team made a conscious effort, the influenza vaccination rate improved markedly.

Background of the Problem

The United States government appointed a group of researchers in the 1950s to investigate human beliefs and behavior related to health promotion activities after a trend of poor uptake of tuberculosis screenings was noted (Rosenstock, 1974). Lack of adherence to preventive measures is not a new issue. In 1979, *The Journal of Family Practice* published an article that examined the relationship between a postcard reminder and influenza vaccination uptake. Lawson et al. (1979) found that a postcard reminder improved vaccination rates from 30% to 59.7%. Despite the low cost of implementation and known effectiveness, few providers utilize patient reminders, which is concerning given the susceptibility of chronically ill patients to influenza (Davis et al., 2002).

Influenza is a viral illness spread primarily by droplets when people cough, sneeze, or talk (CDC, 2019). A person is most contagious in the first three to four days after the illness begins. Some infected persons may never have symptoms but can still spread the virus to others. For most of the population, influenza is a relatively minor illness. Older people, young children, and people with compromised immune systems are at greatest risk of serious complications (CDC, 2019). Research and healthcare governing bodies agree vaccination is the best measure to prevent contracting the flu (Centers for Disease Control and Prevention [CDC], 2020c). Receiving the influenza vaccination has been proven to have many benefits, such as reduced likelihood of contracting the influenza virus, decreased hospitalizations, and decreased deaths related to influenza in

children. Receiving the influenza vaccination every year is the best way to help protect against influenza illness and complications (CDC, 2020c).

Loskutova et al. (2020) concluded primary care providers are critical to affecting influenza vaccination rates and provider reminders, either through the electronic health record (EHR) or flagging the chart, are the most effective strategies. There is a strong correlation between vaccination rates and missed opportunities in adult vaccinations (Loskutova et al., 2020). Missed opportunities to vaccinate were present in various health care settings even though adults visit a primary care provider an average of three times per year. Loskutova et al. (2020) measured missed opportunities rather than comparing population-wide immunization rates alone. The study recognized missed opportunities as a better measurement of provider and healthcare organizational performance related to influenza vaccine uptake because missed opportunities are directly correlated with a patient visit. Many barriers to implementing strategies to affect influenza vaccination rates, such as provider reminders, have been noted in the literature. One reason vaccination rates remain below target is recommendations in the past have been complicated by frequent changes year to year based on age and comorbidities. There was also a deficiency in provider and staff initiated patient engagement related to patient awareness and acceptance of vaccination recommendations (Loskutova et al., 2020).

A culturally relevant approach to implementing a system to affect influenza vaccination rates is provider and patient reminders via the EHR and patient portals, but limited resources have been reported as a barrier to implementation (Szilagyi et al., 2020). Many providers reported limited access to patient lists and access to flag charts for reminders. Limited resources were cited as a reason few primary care providers send

reminders despite evidence that utilizing patient portals to send centralized patient reminders is a scalable model. Although the Task Force on Community Preventive Services recommends reminders, few primary care practices send reminders for any vaccine (Szilagyi et al., 2020). An inexpensive and quick way to send patient reminders regarding influenza vaccination is through secure messaging using email and text messaging. As an added motivation to implementing strategies related to the EHR and documentation, Cunningham et al. (2017) brings awareness of reimbursement on value-based payment methods, such as Medicare, as a quality measure, stating influenza vaccination rates affect the patient's health and the provider's income.

Another influential factor is a person's preventive healthcare practice beliefs. Huffman et al. (1992) points out the physician's likelihood of recommending influenza vaccination reflects beliefs regarding the severity of influenza, susceptibility of contracting influenza, effectiveness of the influenza vaccine, and associated risk of side effects. Attitudes of physicians and staff can also be a barrier to implementation (Loskutova et al., 2020). Loskutova et al. (2020) and Huffman et al. (1992) stressed provider beliefs and actions can be affected by reminding providers regularly about guidelines and availability of the vaccine, providing tips for patient education, and educating providers on improving patient engagement. Provider audits and feedback using peer pressure and alternative improvement strategies, such as ranking, competition, and incentives, were suggested as part of team development for informing provider beliefs regarding influenza vaccination (Loskutova et al., 2020).

Both Cunningham et al. (2017) and Huffman et al. (1992) stress the importance of an organized approach to affect influenza vaccination rates, and a lack of planning results

in missed opportunities to vaccinate, low patient engagement, and overall lower vaccination rates. Although juggling flu vaccination with many practice responsibilities and priorities is a challenge, a well-planned, organized approach of implementing strategies will lead to healthier patients (Cunningham et al., 2017). Good intentions are not enough and an organized approach and outreach are necessary to improve influenza vaccination rates (Huffman et al., 1992).

Given the severity of influenza, reaching the Healthy People 2020 vaccination goals of 80% for individuals younger than 65 years and 90% for persons aged 65 years and older is a worthwhile endeavor (Szilagyi et al., 2020). Providers in the primary care setting are best positioned to make strides toward established goals. This study seeks to assess strategies primary care providers have implemented to affect influenza vaccination rates.

Statement of the Problem

The problem addressed in this study is implementation of strategies by primary care providers to affect influenza vaccination rates. Each year, influenza causes illness affecting work, home life, and personal finances for millions of individuals, and results in billions in healthcare costs (CDC, 2020a). In 2017 to 2018, there were 41 million symptomatic influenza cases and 61 thousand flu-related deaths (Yan et al., 2020). The CDC (2019) recommends persons over the age of six months receive the influenza vaccine yearly. Only one-third of the U.S. population received the influenza vaccination in 2018 (Yan et al., 2020). Although many family practice physicians recognize the importance of influenza vaccination, some clinics do not have a well-established system

to provide the vaccine and opportunities for vaccination are missed (Huffman et al., 1992).

Purpose of the Research

The purpose of this study is to determine strategies implemented by primary care providers to affect influenza vaccination rates. Specific strategies under evaluation are strategies recommended by the CDC, Task Force on Community Preventive Services, and Healthy People 2020. Of specific interest is if primary care providers have an organized approach to affecting influenza vaccination rates and what particular strategies are included in the plan.

Significance of the Research Project

Vaccines are one of the greatest accomplishments of modern medicine; however, vaccines are only as effective as people make them (National Foundation for Infectious Diseases [NFID], 2017). Despite fluctuating severity of influenza each year, influenza causes Americans millions of illnesses with hundreds of thousands of individuals requiring hospitalization and thousands of influenza cases resulting in death. Although there are numerous locations across the United States that administer the flu vaccine annually, the 2017 vaccination rate plateaued. The influenza vaccine's effectiveness ranges between 40% to 60%, which implies a vaccinated person's risk of becoming ill with the flu and requiring medical attention is 40% to 60% less than an unvaccinated individual (NFID, 2017). While there is room for improving the effectiveness rate, the rate of patients declining annual vaccination continues to contribute significantly to the spread of a preventable illness. Health providers play a vital role in motivating all

patients over the age of six months to get immunized, which is the principal approach in preventing influenza.

Conceptual Framework

The Health Belief Model (HBM) is a theoretical framework utilized for numerous healthcare-related studies researched since the original publication (Rosenstock, 1974). In the 1950s, in an attempt to explain the lack of participation in preventative health programs, a group of psychologists with the United States Public Health Service developed the HBM. The model proposed health-seeking behaviors directly influence a person's perception of susceptibility and severity of a disease or illness. If the perceived benefits of the preventative action proved worthy, and the barriers were minimal compared to the perceived severity, compliance with the recommended health-related measures would increase an individual's compliance (Rosenstock, 1974).

Perceptions have been influenced by a realm of modifying variables, including an individual's structural, sociopsychological, and demographic factors (Rosenstock, 1974). In the HBM, motivating circumstances have been referred to as cues to action. A cue to act, or stimulus, must occur to motivate a person to implement appropriate health-seeking behaviors. An individual can gain motivational factors through a positive experience, such as a family member surviving a near-death experience by accepting a recommended health action (Rosenstock, 1974). Consequently, an individual can gain motivation after witnessing the downstream effects of non-acceptance of a preventative action through disease progression, diminished quality of life, and potentially the unexpected death of the loved one (Becker et al., 1974).

Creators of the HBM hypothesized four key areas impact an individual's health beliefs (Rosenstock, 1974). The first area, severity of a potential disease or illness, is the perceived level of impact the individual would sustain if acquiring the condition. Second, susceptibility is the perceived chance of contracting the disease and becoming "sick" if the individual was exposed. The third area, perceived benefits, states complying with recommended actions would improve health and overall outcomes and reduce susceptibility and severity. Lastly, barriers to participation include reasons why an individual declines preventative action (Rosenstock, 1974).

The HBM focuses on compliance and preventative health practices (Rosenstock, 1974). External components affect the individual's beliefs and knowledge that result in decision-making. Primary care providers are vital in educating patients and promoting treatment pathways that result in compliance. The current researchers seek to gain knowledge about the providers' current role and strategies utilized to affect vaccination compliance through surveys. The HBM was chosen as the theoretical framework for the study because of the strength in identifying areas where providers could provide further educational support to individuals to improve knowledge gaps and increase influenza vaccination compliance.

Research Questions

The following research questions were the focus of this study:

1. Do primary care providers recommend influenza vaccinations to every patient?
2. Are primary care providers implementing strategies to affect influenza vaccination rates?

Definitions of Terms

For the purpose of this study, the following terms were defined:

Primary Care Provider

Theoretical. A person who helps in identifying or preventing or treating illness or disability (TheFreeDictionary.com, 2020).

Operational. A nurse practitioner, medical doctor, osteopathic doctor, or a physician's assistant in a primary care setting.

Influenza

Theoretical. A highly contagious and often epidemic viral disease characterized by fever, prostration, muscular aches and pains, and inflammation of the respiratory passages (Dictionary.com, 2020b).

Operational. A highly contagious viral illness that causes mild to severe symptoms that can affect all ages with effects being more severe for the very young and very old.

Vaccination

Theoretical. Any preparation used as a preventive inoculation to confer immunity against a specific disease, usually employing an innocuous form of the disease agent, as killed or weakened bacteria or viruses, to stimulate antibody production (Dictionary.com, 2020e).

Operational. A medication given to prevent disease or decrease severity.

Patient

Theoretical. An individual awaiting or under medical care and treatment (Dictionary.com, 2020b).

Operational. An individual who presents to a primary care setting for care or treatment.

Implement

Theoretical. To put into effect according to or by means of a definite plan or procedure (Dictionary.com, 2020a).

Operational. Action toward increasing vaccination rates.

Strategies

Theoretical. A plan of action or policy designed to achieve a major or overall aim (Dictionary.com, 2020c).

Operational. Tools intended to be used to increase vaccination rates.

Rates

Theoretical. A quantity, amount, or degree of something measured per unit of something else (Merriam-Webster, 2020).

Operational. The number of eligible patients who obtain the influenza vaccination in relation to the number of eligible patients who do not.

Assumptions

Assumptions in this study included the following:

1. Providers will answer the interview questions in an honest manner.
2. All providers will have some understanding of vaccination compliance strategies.
3. Providers will be sincere in participating in the research.

Limitations

Limitations in this study included the following:

- There is lack of truth or consistency in the replies given.
- Unknown conditions or factors at the facility where participants work could influence the responses of the participants.
- The design of the questionnaire and multiple choice questions with the preconceived categories could be viewed as bias.

Chapter II: Literature Review

Chapter II is a presentation of the review of literature. The current researchers examined articles regarding influenza vaccination implementation. The HBM was used to guide the research study.

Theoretical Framework

The Health Belief Model is a widely used theoretical framework based on a value-expectancy theory (Rosenstock, 1974). The theory was developed in the 1950s by a group of social scientists with the U.S. Public Health Service. The HBM was one of the first theories of health behavior ever introduced. The theory was developed to understand individuals' failure to engage in disease prevention, responses to symptoms, and compliance with recommended medical treatments (Rosenstock, 1974).

The premise of the HBM is that individuals will comply with therapeutic recommendations by the health care provider and take action to screen for or control a health condition (Norman & Conner, 2017). Two components steer an individual's action of health-related behavior. If the individual possesses the desire to avoid illness and believes a specific action will provide illness prevention or a cure, positive behavior changes are potential. Consequently, the action taken will often depend on the perception of benefits and barriers related to the adopted behavior. Overall, the HBM theorizes

behavior depends on six key concepts, including perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy (Norman & Conner, 2017).

In 2010, Baghianimoghaddam et al. performed a cross-sectional statistical study on three high school campuses in Yazd, Iran, in the spring of 2009, analyzing knowledge about prevention and spread of human immunodeficiency virus (HIV).

Baghianimoghaddam et al. (2010) utilized the HBM during a study in which 180 female students participated in targeting preventative behaviors for contracting HIV. Believing there was a low tendency of being affected by the disease and disregarding the seriousness of HIV, Baghianimoghaddam et al. (2010) considered the students might, in turn, lack putting forth efforts needed to cease risky actions that could result in exposure to the illness. Practicing unsafe behaviors contributing to any health problem can directly correlate to a knowledge deficit linked to perceived susceptibility and severity.

Conclusively, through the use of the HBM, researchers believed data learned from the study was relevant because the information could guide future research, identifying gaps in knowledge that lead toward a lack of safe sex habits in the high school population (Baghianimoghaddam et al., 2010). Without closing the gaps, potential exposure to HIV will continue. Optimistically, Yazd area high schools could use the data to build successful educational programs focused on decreasing high-risk behaviors, which could reduce HIV incidence.

Ratnapradipa et al. (2017) performed a descriptive analysis to gain knowledge to predict college-aged students' intent to receive the influenza vaccination. Due to the close living conditions of dormitories, large classrooms, and frequent social interactions

involving groups of young people, college students have historically been considered highly susceptible to contracting and spreading influenza (Ratnapradipa et al., 2017). In the fall of 2015, when reviewing influenza vaccination and vaccination intentions of first-year college students, researchers utilized the HBM to conduct a study. At a private, Midwestern university, a total of 184 freshmen students completed a survey distributed by a multi-mode (paper and online) method. The first-year students were chosen for the study because researchers thought freshmen should make the first influenza vaccination decision independently while not under the direct supervision of parental influence. The data collected while applying the HBM strategy equipped researchers with a deeper understanding of the freshmen's health-seeking actions. Results indicated students' past vaccination compliance and families who participated in annual vaccination were more substantial factors reflecting compliance than HBM constructs. Overall, the study provided researchers some understanding and guiding motives to promote advantages of influenza vaccination for university students who are new to controlling personal health decisions and the importance of advertising preventative care to elicit compliance from freshmen. Researchers chose the HBM model to guide the study regarding college-aged students' intent to vaccinate because of the strength the model reflected in identifying obstacles that could provide a direction for further educational improvements with influenza vaccination compliance (Ratnapradipa et al., 2017).

Ratnapradipa et al. (2017) suggested, as of 2015, the lack of vaccination compliance remained a concern. The public needs improved awareness of the harmful threat and impact on health influenza can have, along with believing in the therapeutic recommendations' effectiveness to change any current non-compliant behavior actions

(Ratnapradipa et al., 2017). The HBM does not apply a specific strategy but assists with improving perceptions of an illness, such as influenza, by assisting a person with identifying susceptibility, severity of influenza, benefits of following health recommendations to get vaccinated, and barriers to performing the health action of annual influenza vaccination. Furthermore, the HBM suggests if cues to prompt action, such as messaging through social media, advertisements, and communicating via paper or electronic reminders, are put into play, presumably more patients will comply with recommendations (Norman & Conner, 2017). Personal providers taking action to lead the charge will help with compliance related to the patient-provider respect and trust bond.

The research articles reviewed in this paper solidify the appropriateness of the HBM as the theoretical framework for the current study of providers' strategies to affect influenza vaccination rates for three reasons. First, the basis of the current research will indirectly measure the providers' understanding of patients' beliefs regarding influenza vaccination. The current research is focused on providers' cues directed toward patients to elicit uptake of a health protective behavior and returning to the original psychology of the model is necessary in that the HBM is a social-psychological theory that is concerned with individual humans and not objective data. The application of the model is to better understand the link between beliefs of individual human beings and the healthcare decisions made. For providers to initiate effective cues, the providers must understand the patients' healthcare decision-making process concerning preventive measures, such as vaccinations. Effective strategies consider perceived susceptibility, perceived severity, perceived benefit, perceived barriers, cues to action, self-efficacy, and modifying variables. Secondly, the HBM is useful to the current research as the model will guide

development of the provider survey questions. Questions will be based on modifying variables, such as use of educational material, mass media, social media, emotional appeals, and personal (provider) influence. Questions will also be based on researchers' anticipation of factors that affect perceived susceptibility, perceived severity, perceived benefit, perceived barriers, cues to action, and self-efficacy. Lastly, the research will indicate the provider's personal health protective behavior beliefs regarding current influenza vaccination guidelines from the CDC and Healthy People 2020, based on the provider's strategies taken to affect influenza vaccination rates, especially if none are taken. Research reviewed in this paper indicates more research is needed to study the use of cues to action while supporting the HBM variables as important contributors to the explanation and prediction of healthcare decision-making.

Review of Related Research

Santaulari et al. (2016) conducted a cross-sectional study in regard to the risk factors of the influenza vaccine through a random digit dial telephone survey. The study was performed in Kansas in 2013 from January 2 through December 31, which was approved by the Department of Health and Environment Institutional Review Board (Santaulari et al., 2016). Data was acquired through a random digit dial telephone survey from individuals 18 years of age and older. There were a total of 20,712 respondents who participated in the study. The study examined the effectiveness of the influenza vaccination among high-risk groups. The study outlined individuals with high risk factors, such as pre-existing conditions, who may suffer greater complications from the flu if the flu vaccine had not been received. Providing vaccinations in a timely manner

can later reduce health care costs as a whole by preventing consequences of the illness (Santaulari et al., 2016).

The study was conducted in English and Spanish via phone, either through landline or cellular phone (Santaulari et al., 2016). The study focused on whether respondents received a seasonal flu vaccine in the past 12 months in relation to having health risks or being categorized within a risk group. Respondents were asked if the individual had been diagnosed with any of the five health risk factors including diabetes, high blood pressure, cancer, chronic obstructive pulmonary disease (COPD), or asthma. The study also categorized five high risk groups, including people aged 65 years and older, pregnant women, American Indians, adults living with children, and adults with a BMI of 40 or greater. Independent variables were health conditions and high risk groups. The dependent variable was the influenza vaccine. The study showed respondents with high-risk factors who received the flu vaccination were greater than the respondents who did not have risk-factors (Santaulari et al., 2016).

Santaulari et al. (2016) discovered respondents who did not have health care and had lower incomes did not receive the influenza vaccination. People between the ages of 18 to 49 years had lower vaccination rates (Santaulari et al., 2016). The study reflected vaccination rates increased with age of the respondents; basically pointing out the older an individual is, the more likely the person is to receive a vaccination. The study also showed respondents who do have health risk factors likely received an influenza vaccination, as opposed to respondents who did not have health risk factors. Health risk groups that had a greater number of respondents who received the influenza vaccine were highest among people aged 65 years and older and pregnant women. More awareness can

be implemented overall to each a broad demographic of people. People who go to a primary care provider regularly are persons aged 65 years and older. The particular group of people naturally suffer from more health problems compared to young adults. Pregnant women can account for receiving the flu vaccine because pregnant women also see a health care provider regularly (Santaulari et al., 2016).

Barriers to increasing vaccination coverage were identified by Santaulari et al. in the cross sectional study published in 2016. One barrier was conveyance of the need for influenza immunization between providers and patients (Santaulari et al., 2016). In Kansas, vaccination coverage was low. Informing the patient of the need for vaccination was noted as an area needing improvement. Public awareness among persons who have inadequate medical coverage should be increased. As with many health issues in society today, efforts to educate and inform the public about influenza vaccinations is ongoing. The research concluded providers can improve strategies to inform patients and families about risks versus benefits of receiving an influenza vaccine, thus increasing vaccination rates (Santaulari et al., 2016).

Cataldi et al. (2019) performed a descriptive analysis for the purpose of assessing general internal medicine (GIM) and family physicians' (FP) knowledge of administration and recommended practices for adult influenza vaccination. Patient refusal reasons for vaccination and provider strategies utilized to execute the course of action required to persuade patients to receive the influenza vaccination were also analyzed (Cataldi et al., 2019). Studies have shown physicians sharing personal experience efforts with patients on how to stay healthy and keep loved ones safe and healthy has been an

effective strategy with other initiatives, not just vaccination compliance (Cataldi et al., 2019).

The intention of assessing GIM and FP providers' perspectives was to obtain better insight of influenza vaccination knowledge by primary care physicians with an end goal of contributing to the improvement of influenza vaccination compliance (Cataldi et al., 2019). Researchers analyzed objectives by assessing physician recommendation efforts, barriers preventing routine physician conversations with adult patients regarding receiving the influenza vaccine, patient refusal reasons, and physician-reported successful strategies for vaccination compliance (Cataldi et al., 2019).

The survey study was conducted in collaboration with the CDC by the Vaccine Policy Collaborative Initiative (Cataldi et al., 2019). The quota sampling survey was disseminated based on physician preference through internet or mail surveys in February 2017 through March 2017. The focus group was a national sample of GIM and FP physicians whose practice time was at least 50% in primary care. Respondents and non-respondents were compared. Additionally, researchers performed a multivariable analysis using a variable focus of physician self-efficacy. The study compared the ability to convince patients to accept the vaccine to patients who refused the vaccine. The research group used new and previously formulated questions from information learned in prior influenza vaccination publications for the survey. Utilizing a four-point scale, researchers assessed how frequently a physician recommended the influenza vaccination and how often patients followed the recommendation, did the provider experience any discussion barriers, whether participants felt actions could potentially change a patient's mindset about vaccination, were a variety of communication efforts utilized, and did the physician

feel each of the efforts to be effective. Respondents were provided answers, such as rarely to always, none to many barriers, few to multiple, and not effective to very effective. Additionally, physicians were polled on specific strategies utilized by the practice, such as reminders sent or standing orders to improve vaccination compliance. The GIM focus group reflected a 61% participation rate, while 73% of the FP group participated, yielding an overall 67% response rate (Cataldi et al., 2019).

Key data was identified by researchers following the statistical analysis from respondents on practice strategies, including 98% of physicians always or almost always recommended the influenza vaccine to adults over 64 years old, 90% to adults 50 years to 64 years old, and 75% to adults 19 years to 49 years old (Cataldi et al., 2019). Furthermore, 66% of adults over 64 years old always or almost always followed the physician recommendation to receive the influenza vaccination, compared to 29% of individuals aged 50 years to 64 years, and 10% for persons aged 19 years to 49 years. An array of practice strategies were utilized, ranging from technology-enhanced efforts such as standing orders, electronic alerts, and reminder/recall systems, to lists provided by staff to physicians of patients not yet vaccinated. Physicians reported a list of barriers not routinely discussed. The most common barriers identified were discussions of other health issues took precedence, an additional amount of time was needed for the conversation, and participants felt the provider would be unsuccessful at changing the patients' minds. Refusal reasons to take the flu vaccination were multifactorial. According to the physicians, 57% of patients believed the vaccine would cause illness, 38% reported the vaccine would give recipients the flu, and 33% believed the individuals were unlikely to contract the flu. Based on the aforementioned refusal reasons, strategies

reported to be successful in convincing patients of the need for vaccination included 63% reported already receiving the flu vaccination; 56% discussed morbidity and mortality statistics related to patients being unvaccinated; 55% shared that immunization protects the patient and others close to the individual, especially those who are high-risk for contracting the illness; and 54% discussed disease prevention related to vaccination. The most prevalent strategy physicians thought was "somewhat effective" was the importance of protecting others close to the patient who fall into a high-risk bracket. Few physicians reported any of the strategies being "very effective." Overall, most physician respondents reported using multiple communication strategies to promote adult vaccination compliance, but many were unsuccessful. In conclusion, gaps were identified, reflecting that future additional research could be beneficial regarding communication effectiveness of personal physician experience messaging versus generic recommendations and technology-based practice level strategies versus other methods (Cataldi et al., 2019).

Interpretation of the study yielded weaknesses (Cataldi et al., 2019). Although the sample included GIM and FP physicians, findings may not be generalizable. Another limitation noted by the researchers was that study findings were based on practices reported by physicians rather than observed patterns. Finally, the survey was not inclusive of patient perspectives or non-physician healthcare providers, so the study examined a limited scope (Cataldi et al., 2019).

The study is highly relevant to the current research project for many reasons. Both studies are focused on raising awareness for the importance of provider recommendations for influenza vaccinations being regularly implemented in routine practice patterns (Cataldi et al., 2019). Additionally, successful strategies must be planned and

implemented to decrease the number of patients refusing the influenza vaccine. Overall, the influenza vaccine protects everyone and saves thousands of lives each year; therefore, all individuals who meet the recommended guidelines should be vaccinated.

Loskutova et al. (2020) performed a prospective, interventional, before-and-after, non-randomized study for the purpose of testing a primary care-based, multicomponent intervention to increase immunization rates and reduce missed opportunities to vaccinate adults. The research aimed to test the generalizability of interventions recommended by the Task Force on Community Prevention Services to improve vaccination rates (Loskutova et al., 2020). The authors desired to measure the rate of missed opportunities for vaccination of adults. Loskutova et al. (2020) previously explored missed opportunities in adult vaccinations in a meta-narrative literature review and suggested missed opportunities could represent a more accurate measure of provider and organizational performance because missed opportunities are clearly linked to a patient visit. Primary care providers are able to administer vaccines to patients across the life span. A great number of the over 560 million office visits annually are not utilized for vaccine education and are considered to be missed opportunities (Loskutova et al., 2020).

The study was conducted in internal and family medicine settings in a large, North Carolina health organization (Loskutova et al., 2020). Forty-three providers participated; 23 primary care providers were in the interventional arm, and 20 providers were in the comparator group. Providers included family practice physicians, nurse practitioners, and general internal medicine physicians. The trial was pragmatic, with no direct patient recruitment or enrollment, and was conducted as a quality improvement project. The study included patients 18 years and older receiving services from the 43

providers throughout the year, including flu season, from 2013 through 2015. The multicomponent intervention included provider reminders, standing orders, quarterly provider audit feedback, improving documentation, provider education, and enhancing patient outreach (Loskutova et al., 2020).

Data was obtained from the EHR (Loskutova et al., 2020). The total number of visits for each provider was collected. Patient data extracted from the EHR included demographics, smoking status, current diagnosis, refusals, reasons for refusals, and vaccinations administered outside the health system. Data was collected every three months and summarized for provider review. To show missed opportunity, vaccination rates were presented as the percentage of vaccinated individuals over all eligible persons within the three-month period (Loskutova et al., 2020).

Lower vaccination rates were strongly associated with more missed opportunities (Loskutova et al., 2020). The study found improvements in vaccination rates in the intervention group by 18% and comparator group by 16% for pneumococcal vaccines in older adults, and smaller improvements in influenza and zoster vaccination. For providers, the study demonstrated improvements in both provider groups that received point of care reminders, corroborating previous reports that provider reminders remain the most effective way to improve vaccination rates. After 12 months, influenza vaccination rates increased 6.9% in the intervention group and 6.2% in the comparator group. Missed opportunities for influenza reduced after 12 months between 9.1% and 10.1%. The authors determined missed opportunity methodology needs further study, but concluded from the study that a high level of correlation among vaccination rates and

missed opportunities suggested provider-related factors result in missed opportunity (Loskutova et al., 2020).

Loskutova et al. (2020) identified several limitations of the study. First, the study design was a non-randomized design (Loskutova et al., 2020). Additionally, providers who volunteered to test the multicomponent intervention may have placed a higher priority on vaccinations, leading to more success in vaccinating adults. The majority rule technique used to assign patients to the provider most seen could have affected findings for missed opportunities. Also, due to the short duration of the study, there were limitations on the ability to measure the impact of standing orders and demonstrated the challenge of implementing organizational-wide quality improvements from clinical trial to real world clinical settings in such a short time. Plus, there was no measure of the effect of practice staff on vaccination rates or missed opportunities (Loskutova et al., 2020).

The study is relevant to the current study. First, the study examines multiple interventions providers can implement to affect vaccination rates (Loskutova et al., 2020). The current study seeks to determine strategies primary care providers are implementing to affect influenza vaccinations. Missed opportunities measured in the study speak to the research question in the current research asking if the primary care provider is recommending the influenza vaccination to every patient. The correlation found in the study between increased vaccination rates and reduced missed opportunities can be a guide for the current research survey.

Saville et al. (2018) performed a descriptive analysis for the purpose of assessing provider perceptions on successful strategies to achieve widespread influenza vaccination

in children. The Advisory Committee on Immunization Practices recommends every individual over the age of six months receive the influenza vaccination annually (Saville et al., 2018). As of 2018, vaccination rates in children remained below the standard of quality. Healthy People 2020 quotes a 70% goal for childhood vaccination (Saville et al., 2018). Modern and collaborative efforts are needed to successfully accomplish the goal, given the limited time span between when the vaccine is dispensed and the start of the influenza season.

The research objectives analyzed include strategies required for accomplishing universal vaccination based on providers' perceptions utilizing two different approaches to boost coverage rates across two states (Saville et al., 2018). The first approach analyzed was the implementation of a centralized reminder/recall (C-R/R) system. The system works in cooperation with the immunization information system (IIS), which contains childhood vaccination data and public health departments push out reminders. Historically, providers have been responsive to the utilization of the C-R/R system to improve childhood immunization compliance, but if providers would support the reminder/recall system as a strategy to enhance influenza vaccination rates similarly due to multiple challenges associated with the influenza vaccination remains to be determined. Some obstacles include the narrow time frame between the vaccine's availability until peak outbreak season, parental concerns, and vaccine unavailability during the season (Saville et al., 2018).

The second potential approach suggested to improve delivery of vaccinations is administration of the vaccine by complementary community vaccinators (CCV), such as drug stores, health departments, and schools, versus primary care providers (PCP) who

have traditionally vaccinated (Saville et al., 2018). One view is that CCVs could alleviate the burden of widespread, high-volume vaccination of children during a narrow timeframe. Alternatively, CCVs could be viewed as diverting patients from clinics (Saville et al., 2018).

The study was conducted in Colorado and New York based on contrasting differences in regulatory guidelines for CCVs, IIS reporting laws, and previous exposure to C-R/R utilization by public health departments (Saville et al., 2018). A convenience sampling method was utilized for the non-experimental, descriptive research study. A sample of pediatric, community health, and family medicine clinics was selected using the Colorado Immunization Information System (CIIS). New York utilized the New York State Immunization Information System (NYSIIS) to select a sample from all primary care provider clinics. Colorado and New York used the last known immunization site to determine an equal proportion of children. A paper-based survey was conducted from February 2016 to April 2016, using approved questions through a pilot study by 10 primary care providers from Colorado and New York. The survey was to be completed by the senior physician partner within the practices selected (Saville et al., 2018).

Researchers identified key factors following the statistical analysis from respondents at 1052 practices (Saville et al., 2018). Colorado yielded 569 respondents, and New York yielded 483 respondents. There was an overall response rate of 56%. In the review of the incidence of the clinic-based C-R/R effort results, researchers noted 75% of Colorado practices surveyed reported compliance with entering vaccination data into the IIS system, in comparison to 100% compliance for New York. Approximately 75% of providers in Colorado and 50% in New York agreed families would welcome the

option to be vaccinated at a CCV for convenience. Both states' providers identified concerns and barriers to CCV vaccination locations, including loss of clinic revenue and lack of appropriate documentation into the state system. Reducing the demand burden of administering the vaccine would be positive and influenza vaccine administration was revenue-generating for clinics. In conclusion, gaps were identified, reflecting that future additional research could be beneficial regarding the need for a standardized notification system and/or processes through either a C-R/R or a local R/R approach to ensure widespread distribution versus notification in pockets (Saville et al., 2018). Additionally, further research on joint funding opportunities supporting public-private collaborations, such as public health working with clinics and CCVs to improve pediatric influenza vaccination rates, could be vital in enhancing universal population health.

Saville et al. (2018) reported the high response rate for an influenza vaccination survey as a strength of the study. The research was the most extensive, recent study about influenza vaccinations of PCP reminder/recall practices and provider preferences (Saville et al., 2018). The researchers identified the following limitations: respondents versus non-respondents' may have varying attitudes, not a national representation since only two states were surveyed, and recall bias (Saville et al., 2018).

The study is highly relevant to the current research project for many reasons. Both studies are focused on raising awareness of the importance of achieving an optimal influenza vaccination status among the pediatric population (Saville et al., 2018). Providers' perspectives and strategy implementation are key elements to successfully accomplishing universal immunization. Through collaborative efforts between providers,

technology, and complementary community vaccinators, universal influenza immunization rates can increase, and national goals can be met.

Szilagyi et al. (2020) performed a randomized clinical trial for the purpose of evaluating the effect of patient reminders sent via patient portal by a health care system on influenza vaccination rates. Influenza is a cause of major illness, medical visits, hospitalizations, and deaths each year (Szilagyi et al., 2020). Despite recommendations from the ACIP, coverage rates are significantly lower than the Healthy People 2020 vaccination coverage goals of 80% for adults younger than 65 years and 90% for people aged 65 years or older. Although patient reminders are recommended by the Task Force on Community Prevention Services, few primary care practices comply (Saville et al., 2018).

Szilagyi et al. (2020) wanted to determine if reminders sent via a patient portal would increase influenza vaccination rates. The researchers hypothesized portal reminders would increase influenza vaccination rates at the population level and in certain subgroups (Szilagyi et al., 2020). The study design was a four-arm, pragmatic, intention-to-treat, randomized clinical trial performed from October 1, 2018, to March 31, 2019. The setting was all 52 University of California Los Angeles (UCLA) Health System primary care practices, which included internal medicine, pediatric, and family specialties. A total of 164,205 patients who had used the patient portal in the preceding 12 months were included. Lastly, for the study design, statisticians randomized index patients to one of four arms, including the control group, one reminder group, two reminder group, and a three reminder group. The reminders were grounded in the Health Belief Model (Szilagyi et al., 2020).

Following analysis, researchers determined patient portal reminders had a 1% increased effect on influenza vaccination rates across the UCLA Health System (Szilagyi et al., 2020). Subgroup (age, sex, race/ethnicity, insurance, and influenza vaccination prior years) findings mirrored the findings of the entire population. Vaccination rates were higher in the portal reminder groups than the control group (Szilagyi et al., 2020).

Szilagyi et al. (2020) identified several weaknesses of the study. First, possibly after receiving a portal reminder, patients received an influenza vaccination outside the health care system that was not recorded in the EHR despite multiple mechanisms in place to capture external vaccinations. Thus, incomplete data on vaccinations received elsewhere may have negated the benefit of the intervention. Second, researchers found the effectiveness of reminders weakened over time due to the increase in patient-targeted health communications received. Thirdly, complexity of the message content might influence the effect. Even if the patient opened the reminder letter, few patients opened and viewed the linked website inside the reminder. Lastly, vaccine hesitancy, which is a fear of vaccines or a personal conviction to not receive a vaccine, may limit effectiveness of portal reminders. The patient portal reminders were not designed to address or measure vaccine hesitancy. The researchers noted lack of generalizability as a limitation, as well as inability to track all vaccinations received outside the UCLA health care system. Strengths of the study includes the large size of the pragmatic trial, randomization, and adjustments for many unmeasured confounders (Szilagyi et al., 2020).

The clinical trial is relevant to the current research for several reasons. First, the trial addressed the same root problem current research is addressing, which is suboptimal

influenza vaccination coverage rates in primary care practices (Szilagyi et al., 2020). The basis of the research was to identify effective strategies to increase vaccination coverage rates by testing the use of patient portal reminders. The current research seeks to identify if primary care providers are implementing such strategies. Secondly, the study and current research are both grounded in the Health Belief Model (Szilagyi et al., 2020).

Benedict et al. (2018) performed a study to show how an influenza vaccination reminder may prompt more people to receive an influenza vaccine. The data was analyzed on adults aged 18 years and older via telephone from March 1, 2012, through March 29, 2012, from the National Flu Survey (Benedict et al., 2018). The survey was a random digit dial survey that examined the effectiveness of reminders regarding influenza vaccination. Awareness is key and beneficial with any health-related illness. The research proposed the more people are informed and educated about health, the better decisions people can make. The purpose of the study was to show a correlation between vaccination reminders and improved vaccination uptake (Benedict et al., 2018).

The study was conducted through a landline or cellular phone (Benedict et al., 2018). The sample size was a total of 15,630 adults. Only respondents who fully participated in the survey were recorded as data. All other incomplete calls were excluded from the study. The hypothesis examined whether a reminder is an effective notification to prompt an individual to receive a vaccination. Reminders were classified in numerous ways, such as mail, email, phone call, text message, and pamphlet. Independent variables that played a role in the study were sex, age, education, race/ethnicity, health insurance coverage, and whether an individual possessed a high-risk health condition, such as asthma, diabetes, or heart disease. The dependent variable was the receipt of reminders

for the influenza vaccination. Patients were called and asked if the participants received an influenza vaccination, and if so, did the individual receive any form of reminder. Hispanics and non-Hispanic blacks reportedly received reminders more than Caucasians, but the study showed that more Caucasians participated in the study overall (Benedict et al., 2018).

There are a few factors that can be taken in consideration as to why Hispanics and non-black Hispanics received more calls. The type of clinic and/or if the participant has health coverage must be considered. Health departments, free clinics, pharmacies, and numerous grocery store chains offer influenza vaccinations for free or with a very small co-pay (Benedict et al., 2018). Findings indicate participants who received a reminder were more likely to receive an influenza vaccination as opposed to those who did not get a reminder. Additional questions, such as how often a participant went to a healthcare professional (HCP) and whether the patient was classified with high-risk health factors were included in the study (Benedict et al., 2018).

The study shows there were more respondents between the ages of 18 years and 49 years (Benedict et al., 2018). The two most favorable methods of reminders were by mail and from the participant's doctor's office. The study shows there were more female participants than male, and more than half of the participants in the study did have health coverage. If a respondent was unclear, refused to answer a question or answered "don't know," the data was omitted from the survey. In order to provide a detailed and accurate account of data to report, responses will need to be clear and direct (Benedict et al., 2018).

Benedict et al. (2018) discovered non-medical settings were reported to have been favorable for influenza vaccinations as opposed to a doctor's office. Researchers also add that reminders for Hispanics and non-Hispanic blacks may not be as effective due to stigmas and vaccination hesitation surrounding the administration of vaccinations (Benedict et al., 2018). Researchers encouraged providers to communicate with the demographic of people and promote exploring why reminders may not be as effective in certain cultures. In the past, influenza vaccinations were advertised to the elderly and individuals with chronic illness and high-risk health conditions and this population was encouraged to receive the influenza vaccination. Researchers acquired a large sample base for the study. Although telephone surveys are time consuming, the surveys are the easiest to conduct. The study did show reminders for influenza vaccinations were effective overall (Benedict et al., 2018).

Barriers were discovered as researchers analyzed the data. One barrier identified was the provider's lack of use of technology (Benedict et al., 2018). Patients have electronic health records that can be accessed to generate reminders. Providers usually focus on appointment reminders, but researchers suggest providers include influenza vaccinations as well. Providers taking the initiative to develop more informative ways to reach patients regarding influenza vaccination may encourage more patients to get vaccinated. A limitation of the study was the dependency of self-reported information. Researchers were not able to verify information provided by participants (Benedict et al., 2018).

The foundation of the research can be interpreted as strong. With a large sample base to rely on, how each call was interpreted must be questioned (Benedict et al., 2018).

Although the basis of the study was the use of patient reminders on influenza vaccination uptake, further research could determine the direct influence. The researchers did make an interesting observation in regard to providers being transparent in acknowledging cultural differences, which will allow all patients to have an overall understanding of the importance of personal health (Benedict et al., 2018).

Reminders of influenza vaccinations can be effective (Benedict et al., 2018). If a patient received a reminder, the likelihood of receiving the influenza vaccination increased. Participants were divided into smaller subgroups to better understand where problems that exist that hinder people from receiving the influenza vaccination. The current study can be compared to the Benedict et al. (2018) study. Both studies utilized some form of patient reminders to affect the vaccination rate. The Benedict et al. (2018) study had a larger data source and collected more detailed demographic information than the current study. The current study also indicated that primary care providers in Mississippi utilize patient reminders of various forms.

Chapter III: Design and Methodology

The purpose of this study was to ascertain if primary care providers were recommending the influenza vaccination to every patient, and if so, determine strategies implemented to affect influenza vaccination rates. Millions of patients see primary care providers each year, and many visits are missed opportunities to vaccinate (Loskutova et al., 2020). The CDC (2020b) recommends every individual over the age of six months receive the influenza vaccination yearly. Yet, two-thirds to one-half of the U.S. population is left unprotected from influenza annually (Yan et al., 2020). The CDC, Healthy People, and the Community Task Force publish up to date recommendations to

assist in increasing uptake of the influenza vaccination. This chapter provides information regarding the design, setting, population, sample, methods of data collection, and data analyses of a survey of primary care providers' strategies to affect influenza vaccination rates.

Design of the Study

A quantitative, descriptive study aimed at determining strategies implemented by primary care providers to affect influenza vaccine rates was utilized. The Health Belief Model supported the theoretical framework for this study. The design is appropriate for the study due to research time constraints and availability of quantifiable data.

Anonymous surveys were distributed to a convenience sample of primary care providers.

Population and Sample

The target population was Mississippi primary care providers, including medical doctors, osteopathic doctors, and nurse practitioners, working in hospital systems, stand-alone clinics, and urgent care centers. Primary care providers were chosen based on accessibility to large numbers of patients who qualify for vaccinations, not the provider's level of experience. This population was thought to be best positioned to potentially have an organized system in place to implement strategies to affect influenza vaccination rates. Data was obtained from ninety-three completed surveys that met the criteria and provided a convenient sample. Paper surveys were distributed and collected through a professional organization meeting and in primary care clinics in Mississippi.

Protection of Subjects

The data for the study was gathered from anonymous surveys completed voluntarily by primary care providers. No identifying information was collected. At the end of the study, the paper surveys were destroyed, and statistical data was erased.

Methods of Data Collection

After approval was obtained from the Mississippi University for Women's Institutional Review Board, a descriptive, quantitative survey tool titled, A Survey of Influenza Vaccination Strategies (Appendix A), was distributed to Mississippi primary care providers utilizing the Hand Delivered Survey Script (Appendix D) and Letter to Survey Participants (Appendix E). The anonymous surveys were made available through direct contact and distributed at a professional organization meeting. The survey consisted of questions regarding strategies used to affect influenza vaccination rates and the providers' demographics.

Methods of Data Analysis

Data was analyzed using descriptive statistics with frequency distribution to answer the two research questions: 1. Are primary care providers recommending the influenza vaccination to every patient? 2. Are primary care providers implementing strategies to affect influenza vaccination rates?

Chapter IV: Results

Influenza is a virus known to many, but despite the commonality, the vaccination rate remains well below target. One reason influenza vaccination rates remain below target is that recommendations in the past have been complicated with frequent changes year to year based on age and comorbidities (Loskutova et al., 2020). Findings indicate

an increase in vaccination rates could depend on the provider but strategic strategies to promote vaccination need to be implemented. Providers taking the initiative to develop more informative ways to reach patients regarding influenza vaccination may encourage patients to get vaccinated.

Profile of Study Participants

A statistician was used to analyze data collected. Descriptive statistics were performed using frequency distributions. There were a total of 93 participants surveyed. The majority of respondents were NPs (96.8 %), with only a small portion of MDs (2.2 %) and DOs (1.1 %). Due to the low number of MDs ($n = 2$) and DOs ($n = 1$), there was no statistical significance when analyzing these categories. The practice locations included family clinics, internal medicine, pediatrics, urgent care, women's health, and other settings. The majority (74.2%) of providers ($N = 69$) were associated with family practices. Additionally, there were (8.6%) urgent care locations ($n = 8$) and (7.5%) internal medicine locations ($n = 7$). Approximately 10% of the practice locations were specialty clinics, such as women's health ($n = 3$), pediatrics ($n = 1$), and other non-specified locations ($n = 5$).

Table 1

Practice Location

	Frequency	Percent	Valid Percent	Cumulative Percent
Family Clinic	69	74.2	74.2	74.2
Internal Medicine	7	7.5	7.5	81.7
Pediatric	1	1.1	1.1	82.8
Urgent Care	8	8.6	8.6	91.4
Women's Health	3	3.2	3.2	94.6
Other	5	5.4	5.4	100
Total	93	100	100	

Statistical Results

This study attempted to answer two research questions: 1. “As a provider, do you recommend the vaccine to all patients that qualify?” The data showed 100% of participants stated the provider recommends the influenza vaccine to all patients who qualify. A total of 97.8% of practice locations administer the influenza vaccination. Two providers said the influenza vaccination is not administered at the practice location. One of the two providers offered information on an alternate location to obtain the vaccination, but the second provider did not. 2. “Are primary care providers implementing strategies to affect influenza vaccination rates?” To evaluate, multiple questions were asked to determine if there was a strategic plan, and if so, what strategies were used.

Table 2

Has Your Practice Location Implemented a Systematic Strategic Plan to Recommend the Influenza Vaccine?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	68	73.1	73.1	73.1
No	25	26.9	26.9	100
Total	93	100	100	

Note. As evidenced in Table 2, 73.1% implemented a plan, and 26.9% admitted to having no plan for recommending the influenza vaccine.

Methods of advertisement varied. Data shows signage at clinics was utilized as a means of advertisement at a rate of 82.8%, word of mouth at 76.3%, and social media use at 55.9%. Text messaging alerts to existing patients were utilized least often with a rate of 16.1%. Only 14% of those surveyed used all the above methods, leaving 86% of participants that did not utilize all listed methods of advertisement. Even though providers did not use all methods, 79.6% used multiple methods. Some providers ($n = 7$) used other methods of advertising that were not listed in the survey.

Figure 1
Methods of Advertising

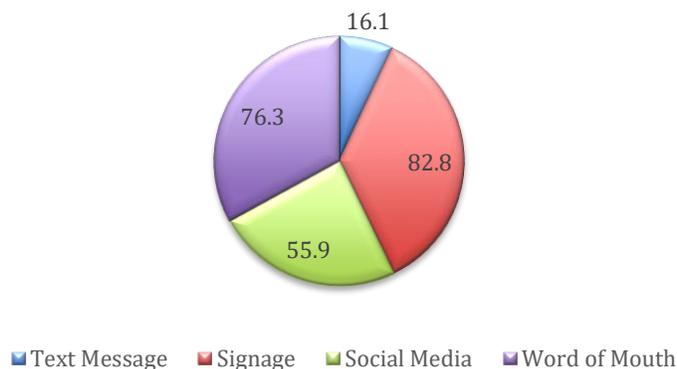


Table 3

Does Your Practice Location Notify Established Patients of the Need for Influenza Vaccination?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	58	62.4	62.4	62.4
No	31	33.3	33.3	95.7
NA	4	4.3	4.3	100
Total	93	100	100	

Note. Table 3 assisted researchers in evaluating whether practice locations notify established patients of the need for influenza vaccination. Only 62.4% of clinics notified patients, while 33.3% had no direct notification to established patients.

Researchers evaluated if providers were informed of a patient's current influenza vaccination status. The majority of providers were informed of patients' influenza vaccination status, but one-fourth of providers were not assisted with the status of immunization. For vaccination rates to increase, there must be an increase in efforts on the provider's behalf to reach more patients.

Table 4

Does Your Practice Location Personnel/EHR Make Any Visible Notation to Inform You of the Patient's Current Influenza Vaccination Status?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	71	76.3	76.3	76.3
No	22	23.7	23.7	100
Total	93	100	100	

Chapter V: Implications

This quantitative, descriptive research study examined strategies implemented by primary care providers to affect influenza vaccination rates. The CDC (2020b) recommends individuals over the age of six months receive the influenza vaccine yearly. Each year, millions of people's work, home life, and personal finances are affected by influenza. For vulnerable populations, influenza can exacerbate chronic conditions, such as asthma, chronic obstructive pulmonary disease, and diabetes, and cause complications in pregnant women, very young children, and the elderly. In 2017 through 2018, there were 41 million symptomatic cases of influenza and 61 thousand influenza related deaths, leading to billions in healthcare costs. Despite reports, over one-half of the U.S. population is left unprotected against influenza annually. Because primary care providers perform over 500 million office visits each year, the providers are uniquely positioned to affect influenza vaccination rates (Loskutova, 2020). Thus, the problem addressed in this study was the implementation of strategies by primary care providers to affect influenza vaccination rates.

The Health Belief Model (HBM) was used to guide this study. The model is appropriate because the HBM speaks to motivation and belief behind actions related to health (Norman & Conner, 2017). In an attempt to explain the lack of participation in preventative health programs, a group of psychologists with the United States Public Health Service developed the HBM in the 1950s. The HBM states health preventative behavior depends on six concepts, including perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. The HBM asserts if the desire to avoid illness or get well if already ill and the belief a specific health action

will prevent or cure illness outweighs the risk and severity of the illness, the person is more likely to participate in the health preventive action (Norman & Conner, 2017).

The HBM is utilized to better understand the link between individual beliefs and the healthcare decisions individuals make (Norman & Conner, 2017). The actions taken by healthcare providers and patients depend on beliefs regarding benefits, risks, and barriers related to the health preventive actions. Consequently, the HBM was applied in this study to examine beliefs and actions of healthcare providers and patients regarding influenza vaccination by determining strategies implemented by primary care providers to affect influenza vaccination rates.

The current researchers developed the following two questions to guide data collection regarding strategies being implemented:

1. Do primary care providers recommend influenza vaccinations to every patient?
2. Are primary care providers implementing strategies to affect influenza vaccination rates?

This study has significant implications for primary care providers. Despite evidence of influenza being a vaccine preventable disease, influenza vaccination rates remained around 45% for the 2017 to 2018 influenza season (CDC 2020b). The current research sought to identify if primary care providers were implementing strategies to affect influenza vaccination rates and identify weaknesses in implementation for future application to increase vaccination rates.

Findings of the current research will be discussed in this chapter. Interpretation of data collected from the survey will be analyzed along with discussion of the limitations

discovered. Findings will be compared with previously reviewed literature. Implications for nursing practice and recommendations for future research will be discussed.

Summary of the Findings

This research study evaluated the prevalence of primary care providers implementing systematic strategies to affect influenza vaccination rates. Researchers also examined if primary care providers were adhering to the ACIP recommendations for patients who should receive the influenza vaccine. A total of 93 surveys were collected and analyzed from primary care providers. The population consisted of 96.8% nurse practitioners, 2.2% Doctors of Medicine, and 1.1% Doctors of Osteopathic Medicine. The data also surveyed the practice location of participants. The family clinic setting was the predominant response of 74.2%. Internal medicine, pediatric, urgent care, women's health, and others made up the remaining 25.8% of the respondents' practice locations.

The current study reflected that unanimously, 100% of the time, 93 of 93 providers recommended the influenza vaccination to all qualifying patients. Survey findings revealed 73.1% of providers responding ($n = 68$) utilize a systematic recommendation plan to impact flu vaccines. Of providers using strategies, 96.8% reported advertising as the prevalent strategy to increase compliance rates. Multiple advertisement methods, such as word of mouth, posted signage, social media posts, text message alerts, and other means were utilized by 79.6% of respondents. Advertising through posted signage at the clinic location was the prevalent intervention reported by 82.8% of respondents.

Following advertising, the next most predominant strategy utilized to impact vaccination compliance was documentation of the patient's current vaccination status.

The research revealed visible notation, made by clinic personnel or in the EHR, was present for 76.3% ($n = 71$) of the responding providers. The remaining 23.7% of participants without visible current vaccination status, could have possibly been informed of such verbally, as this was not an answer choice. Lastly, the survey evaluated the frequency of established patients being notified of the need for influenza vaccination. Although 62.4% of responding providers stated existing patients were notified, more importantly, one-third of the established patient population was not informed.

Discussion of the Findings

In 2016, Santaulari et al. conducted a study of influenza vaccination compliance concerning increased health risks. One question focused on whether respondents with health risks or pre-existing conditions received a seasonal influenza vaccination in the past 12 months (Santaulari et al., 2016). The data reflected that groups with higher risk factors were more likely to receive the vaccination than respondents who lacked high-risk factors. In this study, individuals aged 65 years and older and pregnant women were among the highest category to receive the vaccination. Individuals who visit a PCP's regularly are more likely to receive the vaccination (Santaulari et al., 2016). The older population and pregnant women are two classifications of patients that typically adhere to regular checkups as recommended by providers.

Additionally, the study concluded the vaccination rate was overall low and could be increased with providers improving communication strategies by informing patients about risks and benefits of the influenza vaccine (Santaulari et al., 2016). Data in the current study revealed 100% of providers surveyed recommend the vaccine to all patients who qualify. In addition, 73.1% of respondents reported utilizing a systematic, strategic

plan to increase compliance. There was no evidence from the small sample surveyed outside of family practice to support a hypothesis that implemented strategic plans were associated with the practice locations. In conclusion, the providers surveyed optimized opportunities to recommend the influenza vaccine to patients who presented to the clinic setting.

In a 2019 study conducted by Cataldi et al., the knowledge of adult practices and perspectives of general internal medicine and family physicians was assessed. The analysis concentrated on administration knowledge of influenza vaccination, refusal reasons by the patient, and executed provider strategies devised to improve vaccination compliance (Cataldi et al., 2019). Providers were queried on strategies that improved vaccination compliance. The respondents reported using multiple strategies, ranging from technology-enhanced efforts, like alerts and reminder systems, to paper lists provided to the physicians of unvaccinated patients. The data concluded physicians felt few strategies were "very effective" and additional research could be beneficial regarding further use of technology-based strategies versus other methods of communication (Cataldi et al., 2019). In the current study, the data reflected multiple strategies used by the respondents. Regarding technology-enhanced strategies, 55.9% of respondents utilized social media platforms, but only 16.1% of responding providers advertise the need for vaccination through text message alerts. The results of the current study reflected room for improvement in terms of technology usage.

Loskutova et al. (2020) reported, despite millions of office visits annually, a concerning portion of providers continue to miss opportunities to offer influenza vaccination. Multiple component interventions can increase immunization rates and

minimize missed opportunities (Loskutova et al., 2010). The current study reflected 96.8% of provider clinics were committed to advertising the need for influenza vaccination. Additionally, 23.7% of providers reported there was no visible documentation provided during the health care visit indicating the patient's vaccination status. In conclusion, despite robust efforts being made by clinics to impact vaccination compliance rates, innumerable patients still potentially experienced missed vaccination opportunities.

Salville et al. (2018) conducted a descriptive analysis to assess successful strategies to improve influenza vaccination status in the pediatric population. One significant finding suggested widespread administration of the vaccine by complimentary community vaccinators (CCVs), such as drug stores and schools, versus a limited number of primary care providers (PCP) clinics, may improve vaccination compliance (Salville et al., 2018). In the study, 75 % of Colorado providers and 50% of New York providers stated CCV locations would be an embraced option to increase vaccination convenience. However, in the current study, although 97.8% of providers indicated the clinic location administers the vaccination, 97.8% were unsure if the clinic distributes a list of local CCVs to patients in the event the clinic may not be providing the vaccination. In conclusion, the current study does not provide details regarding vaccination convenience for the respondents' patient populations, such as practice location subtypes providing vaccinations or geographical information, such as rural or urban settings.

Benedict et al. (2018) conducted a study on the effectiveness of influenza vaccination reminders. The purpose of the study was to show a correlation between uptake of the vaccination and generated reminders through technology (Benedict et al.,

2018). Many clinics have adopted electronic medical record platforms that can produce appointment reminders. The same platform could also generate influenza vaccination reminders, but the technology was underutilized for that action.

Szilagyi et al. (2020) also performed a randomized trial evaluation of electronic reminders sent via the patient portal. Despite recommendations by the Task Force on Community Prevention Services, few clinics complied (Szilagyi et al., 2020). One area the analysis identified as a weakness was an increasing number of health-related communications being sent to the public potentially diluting the effectiveness of the reminders over time. In the current study, 62.4% of respondents reported that established patients at their clinic location are notified of the need for the influenza vaccination. More importantly, the data additionally revealed that one-third of the patient population was not notified. Although the results support the hypothesis that the majority of patients are being notified, further details of the notification mode are lacking. In conclusion, retrospectively, the question in the current study would have been more statistically significant had the question been directed toward the utilization of EMR reminder platforms or a patient portal.

The limitations of this study identified prior to data collection regarding PCP strategies to affect influenza vaccination included the following:

- There is lack of truth or consistency in the replies given.
- Unknown conditions or factors at the facility where participants work could influence the responses of the participants.
- The design of the questionnaires and multiple choice questions with preconceived categories could be viewed as bias.

One limitation of the study was the lack of consistency of replies and validity of objective versus subjective responses. Another limitation to the study was unknown factors at clinic locations that could influence responses, such as a lack of technology available, lack of a social media platform, or lack of staff. In addition, the design of the questionnaire and bank of multiple choice answers used for data collection were developed by the researchers. The face validity of the survey was not established nor validation of each question achieved prior to delivering the survey. Therefore, the dependability of the survey could have been lacking.

Lastly, another limitation of this study was the lack of responses for the practice location variable to be analyzed separately on categories other than family practice. Therefore, there was no way to adequately evaluate if implemented strategic plans were associated with practice locations without a sufficient sample size.

Implications

The implications of the current research are based on the significance of the research project. Primary care providers play a vital role in motivating patients to get immunized, which is the principal approach in preventing influenza. Vaccines are one of the greatest public health achievements of modern times, yet less than one half of the population is vaccinated against the influenza virus annually (U.S. Department of Health and Human Services [HHS], 2017). The research implied primary care providers are aligned to affect influenza vaccination rates. The survey results showed 100% of the 93 respondents offer the influenza vaccination to all patients who qualify, and 96.8% responded that the practice location advertises the vaccine. The findings inform primary care providers and nursing practice of the strategies currently implemented to affect

influenza vaccination rates and reveal practice gaps and additional research questions to be addressed in the future. While the findings are overwhelmingly positive, how the vaccine was offered or how much of the advertising was simply word of mouth when in the clinic remains unclear. Findings also indicate 62.4% of practice locations notify the patient of the need for influenza vaccination leaving many patients without notification. Exactly 76.3% of personnel or the EHR make a visible notation to inform the provider of the patient's current influenza vaccination status, which leaves 23.7% of providers having to ask the patient or look back in the chart to know if the patient had the influenza vaccination for the current season. This finding indicates the need for improvements in systematic implementation of strategies, and correlates with the finding that 26.9% of practice locations have not implemented at a systematic strategic plan to recommend the influenza vaccine. The findings have implications for both the provider and administration in that improvement in systematic implementation of strategies to affect influenza vaccination rates are needed.

The Health Belief Model was developed to explain and predict the health preventative behaviors; thus, the model was appropriately applied to the current research study regarding primary care providers' strategies to affect influenza vaccination rates (Ratnapradipa et al., 2017). The HBM asserts that individuals will comply with health promotion and preventive recommendations if the individual believes the threat of illness is real, desires to avoid illness and believes an action will provide prevention. If an individual felt likely to contract influenza, that influenza is a serious illness, that the vaccine would reduce susceptibility and severity, and if there were few or no obstacles, then the individual would be likely to receive the influenza vaccination (Ratnapradipa et

al., 2017). Thus, effective strategies are likely to be based on the HBM. The HBM was useful to the current researchers in forming the survey questions and identifying gaps in knowledge and practice when interpreting results.

Throughout the review of literature and the results of the current research survey, the use of the HBM identified obstacles that could provide future research topics, such as possible gaps in provider recognition of effective strategies, the provider's personal beliefs regarding the influenza vaccine, and the provider's ability to affect the patients' willingness to receive the vaccine. Implications for theory include expansion on the application of the HBM as a guide in developing and implementing a systematic strategic plan to affect influenza vaccination rates in the primary care setting. Future research implications include the need to look more closely at particular systematic strategies such as protocols, internal audits, and quality improvement projects to affect influenza vaccination rates in the primary care setting.

Recommendations

Recommendations from the current research for changes in primary care practice to affect influenza vaccination rates include improvements in implementation of systematic strategic plans in the primary care setting. The survey results indicated room for improvements in several areas, including advertisement, individual patient notifications through text or EHR, and visible notation of the patient's current vaccination status for the provider prior to seeing the patient. The recommendations are applicable to the provider, staff, and administrators as all team members are needed to implement a plan effectively. Recommendations are as follows:

- Each practice should have an evidence-based, systematic, strategic plan as a clinic protocol, adjusted and reviewed with each influenza season, to implement at the beginning of the season. The protocol should address every staff person involved, utilization of the EHR as notification to the nurse and provider of the patient's current immunization status, and for patient reminders.
- Quality improvement projects should be performed to increase vaccination administration, and chart audits should be performed annually to measure adherence to protocols.
- Each clinic should have a system in place to notify patients of the need for vaccination.
- Each clinic should have a strategy in place to notify the nurse and provider of the immunization status of every patient throughout influenza season.
- Each clinic should have a strategy for advertising the availability of the influenza vaccine at the practice location and should be reviewed annually to stay relevant.

Recommendations for future research include looking at barriers to influenza vaccination for both the provider and the patient. The research findings revealed gaps in practice for future research regarding provider perception of the consistency of the strategies performed, effectiveness of strategies implemented, and the perception of the public regarding the influenza vaccine. There is a common misconception that influenza vaccinations are unsafe, cause influenza, or do not work, which makes increasing vaccination rates difficult (Hart, 2019). More research is needed regarding vaccination

hesitancy. Effective methods to increase public trust in vaccinations must be established (Hart, 2019).

The purpose of this research was to examine strategies implemented by primary care providers to affect influenza vaccination rates. According to the results of this study, primary care providers are offering the influenza vaccination to every eligible patient. More research is needed to determine effectiveness of providers' approach to offering the vaccination and barriers to patients' willingness to receive the vaccination. The researchers have garnered valuable information to be utilized by primary care providers who adhere to the Health Belief Model in attempts to implement strategies to affect influenza vaccination rates. This research is relevant to other disease prevention and health promotion decisions in primary care and across other healthcare disciplines.

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Appendix B

Letter to Research Committee

October 26, 2020

Dear Dr. Lester,

On behalf of Dr. Pearson's 2020/2021 research group, I would like to request your participation as a member of the faculty committee for our research project. Group members include myself, Vera Simmons, and Tracy Mitchell. Your experience and knowledge in the field of nursing research would be a great asset to our project.

The title of our research is: *A Survey of Primary Care Providers' Strategies to Affect Influenza Vaccination Rates*. The purpose of this study is to determine the strategies implemented by primary care providers to affect influenza vaccination rates. Our research design is quantitative, descriptive. We plan to request approval from the review board to distribute surveys to primary care providers in Mississippi via paper surveys, standard mail, email, and/or social media, likely utilizing Survey Monkey. Our goal is to obtain 100 completed surveys. The Health Belief Model will be used to guide this study because it speaks to motivation and belief behind actions related to health and can be applied to primary care providers' beliefs and patients' beliefs.

The two research questions we have settled on so far are:

1. Do primary care providers recommend influenza vaccinations to every patient?
2. Are primary care providers implementing strategies to affect influenza vaccination rates?

Influenza vaccination is of special importance this year due to the Coronavirus pandemic. It will be interesting to learn what strategies providers in our state are implementing to affect rates.

We look forward to working with you and the other committee members in advancing this research. Thank you so much for your consideration.

Sincerely,
Jennifer Moffett

Appendix C

Internal Review Board Approval Letter



March 3, 2021

Dr. Sally Pearson
shpearson@muw.edu

Dear Dr. Pearson:

I am pleased to inform you that the members of the Institutional Review Board (IRB) have reviewed the following proposed research and have approved it as submitted:

Name of Study: A Survey of Primary Care Providers' Strategies to Affect Influenza Vaccination Rates

Research Faculty/Advisor: Sally Pearson

Investigators: MSN Research Group

I wish you much success in your research.

Sincerely,

Scott Tollison, Ph.D.

Provost and Vice President for Academic Affairs

ST/tc

pc: Irene Pintado, Institutional Review Board Chairman

Appendix D
Hand Delivered Survey Script

To Potential Participants,

My name is _____, I am a Master of Science in Nursing student at the Mississippi University for Women. I am conducting research regarding Primary Care Providers' Strategies to Affect Influenza Vaccination Rates. Participation is strictly voluntary. We are asking you to participate in our study by completing and submitting a brief questionnaire. This questionnaire should take only about 5 minutes of your time. Participation is strictly voluntary. The answers provided on the questionnaire will remain completely anonymous and personal responses will not be attributed to any individual provider. Once you complete this short survey, please place it in the envelope, seal it, and turn it into the designated person.

Any question you may have can be directed to our principal investigator, Jennifer Moffett (jennifermoffett96@gmail.com) or the chair, Dr. Sally Pearson at shpearson@muw.edu.

Thank you for your willingness to help us with our data collection for this research.

Appendix E

Letter to Survey Participants

Dear Potential Participants,

We are graduate nursing students in the Family Nurse Practitioner tract at Mississippi University for Women. We are conducting a research study titled, A survey of Primary Care Providers' Strategies to Affect Influenza Vaccination. We are asking you to participate in our study by completing and submitting a brief questionnaire. This questionnaire should take only about 5 minutes of your time. Participation is strictly voluntary. The answers provided on the questionnaire will remain completely anonymous and personal responses will not be attributed to any individual provider. Once you complete this short survey, please place it in the envelope, seal it, and turn it into the designated person.

If you have any questions feel free to contact our Principal Investigator, Jennifer Moffett (jennifermoffett96@gmail.com) or the chair, Dr. Sally Pearson at shpearson@muw.edu.

Thank you for your willingness to help us with our data collection for this research.

Sincerely,

Jennifer Moffett, Principal Investigator, Graduate Student
Tracy Mitchell, Graduate Student
Vera Simmons, Graduate Student