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Does Access to Telephone Counseling Improve Smoking Cessation in Disadvantaged Populations?

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DOES ACCESS TO TELEPHONE COUNSELING IMPROVE SMOKING CESSATION IN DISADVANTAGED POPULATIONS?

by

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DEDICATION

This DNP project is dedicated to my mother, Sharon Adine Hanlon, whose continued love and support has been my tower of strength and source of wisdom all my life.

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ABSTRACT

Tobacco usage leads to the development of a multitude of diseases. Years of research have shown that evidence-based interventions such as counseling and pharmacotherapy increase smoking quit rates. Studies have demonstrated that either proactive or reactive telephone counseling has been beneficial in providing long term smoking abstinence particularly in disadvantaged populations (Haas et al., 2015). The purpose of the project was to improve smoking cessation by facilitating access to telephone counseling using an electronic medical order. The Stevens Star Model of Knowledge Transformation (Stevens, 2004), was the framework employed to support the process for change. This evidenced-based project occurred at a safety net hospital that served a population of socioeconomically disadvantaged. In total, twenty-four self-identified smokers, accessed through an electronic order, that utilized telephone counseling as an intervention for twelve weeks were assessed. Success of the intervention was measured by improved smoking outcomes in smokers and it was determined whether age was a factor in success comparing outcomes in those younger than 57 years old to those older than 57 years of age. Data expressed as mean and standard deviation, while Paired t tests were conducted on all comparisons. Overall, in the twenty-four individuals, when comparing week one with week twelve, daily cigarette usage declined between the two time points (mean difference of 2.13 ± 0.694, $p < 0.01$). When the difference in self-reported smoking was examined by age group, it was observed that cessation significantly declined in those younger than 57 (mean 2.3 ± 0.675, $p < 0.01$) and those older than 57 (mean 2.427 ± 0.700, $p < 0.01$). On average, both age groups declined smoking by two cigarettes over the twelve-week intervention. Results demonstrated that access to telephone counseling improved smoking outcomes.

CHAPTER 1

INTRODUCTION

Background

Years of research have acknowledged that evidence-based interventions such as counseling and pharmacotherapy that are used to facilitate smoking cessation, increase quit rates (Fu et al.,2016; Haas et al., 2015; Li, 2016; Whitaker et al., 2016). Primary care visits often provide the ideal opportunity to discuss available options to smokers that are either willing or unwilling to quit but are frequently limited due to a health care provider's lack of time or addressing other health issues non-related to smoking cessation. According to the Centers for Disease [CDC] (2015), counseling for smoking cessation occurs in only 20% to 50% of physician visit and 10% to 24% of dental visits, while smoking cessation medications are ordered in less than 8% of the visit. Research studies have shown that telephone counseling is an effective avenue in which education, support and referral regarding tobacco abstinence can be provided (Haas et al., 2015; Li, 2016; Whitaker et al., 2016).Telephone counseling is also convenient in that it provides continued care that is delivered to smokers in their homes and is cost effective (Fu et al., 2016; Haas et al., 2015; Li, 2016; Whitaker et al., 2016).

Patient views regarding interventions used to assist in smoking cessation can be an important resource in navigating care. A research study conducted by Halladay et al. (2015), explored the patient perspective on smoking cessation. This study examined possible resources that would support quit attempts and the ability to achieve better patient-centered outcomes. The study involved 33 patients from 3 primary care clinics that were part of a 90-minute focus group. The participants were either current smokers or had quit within 6 months. According to Halladay et al. (2015), smokers really have a desire to quit and expect that health care providers address this need at every visit. The participants also expressed that positive and targeted messages that were centered around smoking cessation and tailored to the needs of the

individual were the most effective (Halladay et al., 2015). Additionally, frequent verbal discussions that focused on the risks of smoking and the benefits of treatment options that were available were considered important. Finally, when time and office capacity were not adequate for providing comprehensive service, individuals engaged in the focus group expected that patients be referred to quit lines or other counseling resources (Halladay et al., 2016). Moreover, telephone counseling alone or as an adjunct to other treatment interventions [e.g. Nicotine replacement therapy and Wellbutrin] were noted to have a greater response in comparison to usual care [e.g. brochures] (Fu et al., 2016; Haas et al., 2015; Li, 2016; Whitaker et al., 2016). Therefore, to successfully enhance cessation rates, it is paramount that health care providers consistently identify smokers, advise them to quit and offer evidence-based cessation treatments.

Data from the Literature Supporting Need for the Project

Tobacco usage leads to the development of a multitude of diseases such as cancers, chronic obstructive pulmonary disease and cardiovascular disease that often results in deaths that could have been avoided. Individuals who are socioeconomically disadvantaged or minority groups, appear to suffer more from smoking related disorders than the general population (Whitaker et al., 2016). Socioeconomically disadvantaged can be defined as any adult who may be unemployed, either near or below the poverty line and have lower levels of education (United States Census Bureau, 2016). These vulnerable groups experience common obstacles to smoking in addition to barriers that are specific to them.

Studies have demonstrated that the adverse effects of tobacco use are not evenly distributed among population groups, but rather are disproportionately inflicted on disadvantaged populations; particularly racial/ethnic minorities and those of lower socioeconomic groups (Fu et al., 2016; Haas et al., 2015; Li, 2016; Whitaker et al., 2016). According to the CDC (2018), population groups living below the poverty line and who have

minimal levels of educational advancement have higher rates of tobacco usage compared to others that live above the poverty level. Data obtained from the National Survey on Drug Use and Health (2016), looked at the prevalence rate of cigarette, cigar and tobacco use among adults living at or below the poverty level in comparison with those that did not In the United States. The prevalence rate for cigarette use in the socioeconomically disadvantage was 60%, for cigar usage 11% and smokeless tobacco 4%. The prevalence rate for adults at more than twice the poverty level for cigarette use were only 16%, for cigar use 4% and smokeless tobacco 3%.

This survey also examined current use of cigarettes, cigars and smokeless tobacco among adults with less than a high school education with adults who graduated from college. Current use was defined as self-reported use of tobacco. Adults comprised smokers aged eighteen years and older over. The consumption of cigarettes, cigars and smokeless tobacco was assessed over a thirty-day period. The results demonstrated that adults with less than a high school education utilized 60 cigarettes, 12 cigars, and 5 smokeless tobacco in a thirty-day period at the time of the survey. Adults who graduated from college in contrast utilized 16 cigarettes, 4 cigars and 3 smokeless tobacco. Therefore, it can be surmised that in United States populations that live below the poverty line and have lower education levels have higher rates of cigarette consumption in comparison to the general population.

The CDC (2015) reported that 15% of the U.S national average were avid smokers. However, African Americans endure the greatest tobacco-related health burden in comparison to other ethnic groups (Whitaker et al., 2016). The data reported for smoking rate of African Americans was 16.7% in comparison to the rate of Caucasians at 16.6% (CDC, 2015). Although the rates appear comparable, African Americans smoke less cigarettes per day than Caucasians and yet, they are less likely to successfully quit smoking than other ethnic groups. Barriers, defined as influential factors that can impact a person's health across various levels such as genetic, physical, social and environmental (Twyman et al., 2014), associated with

smoking cessation disparities in African Americans are numerous. An example of this is seen in point-of-sale tobacco marketing. Targeted marketing strategies in African American communities are intensified through publications and bill-board signage geared towards the promotion of menthol cigarette use (Lee et al., 2015). According to Lee et al. (2015), menthol marketing strategies appear to have a disproportionate presence in more socioeconomically disadvantaged neighborhoods. Interestingly, menthol is a significant component in smoking addiction (Lee et al., 2015). According to the CDC (2015), nine out of ten African Americans smoke menthol cigarettes compared to two out of ten Caucasian and three out of ten Latino smokers. Menthol inhalation is associated with higher cotinine levels and carbon monoxide concentrations. Compared to Caucasian smokers, African American smokers have significantly higher cotinine and carbon monoxide levels per cigarette smoked (Watson et al., 2017). Menthol combustion produces carcinogenic compounds that have risks of lung, esophageal and or oropharyngeal cancers (Watson et al., 2017). African Americans have been noted to have significantly higher lung cancer rates of any given level of smoking compared to other population groups.

Additionally, disadvantaged populations may have difficulty accessing health care and thus fail to receive cessation treatment during attempts to quit. Financial burden and lack of insurance are common constraints that often contribute to the insufficient administration of treatment and lack of success. Skepticism about treatment effectiveness, poor self-efficacy and lack of knowledge are additional factors that can be considered as smoking cessation barriers among socially disadvantaged populations.

Safety net providers can also encounter barriers to providing smoking cessation interventions that apply most particularly to the socioeconomically disadvantaged and minority groups. According to Blumenthal (2007), discussion regarding barriers to the provision of

smoking cessation services in these populations had similar themes. Clinician time restraints, patient unreadiness for change, inadequate resources available to providers and provider inadequate smoking cessation clinical skills were central elements that were identified. Lack of time is a major factor for all providers regardless of the population served. Fifteen-minute clinical time slots can be quite daunting, especially if the patient has multiple co-morbidities. However, in socioeconomically disadvantaged populations the needs of the patient may manifest differently as in the use of a language interpreter to aid with communication of a patient. This increased valuable time utilized for patient care can often minimized problems addressed during the visit. Blumenthal (2007) postulated that providers feel that unreadiness to change in underserved groups were due to patients having less interest in smoking cessation in comparison to affluent groups and these patients often presented to clinical settings when in health distress. Furthermore, patients had a tendency in these groups to miss follow up appointments or lacked the ability to pay for pharmacotherapy especially if they were uninsured.

Blumenthal (2007) further noted that some providers felt they had inadequate access to smoking cessation material due to the fact it was usually in short supply, especially culturally sensitive and linguistically suitable material. Additionally, it was found that smoking cessation skills was a needed acquisition of providers in that they kept up with recent smoking cessation developments. Blumenthal (2007) noted that these barriers expressed in socially disadvantaged populations often provided risk of inadequate screening of patients requiring intervention, if they had a willingness to quit.

Social, individual and health organizational factors can affect the provision of smoking cessation efforts and intervention in socioeconomically disadvantaged populations. Smoking cessation interventions should be promoted in health care settings to maximize the participation by these vulnerable groups. The smoking interventions used by programs offered by health

systems have included nicotine replacement therapy, counseling [face-to-face], telephone counseling, interactive computer programs and quit lines (Fu et al., 2016; Haas et al., 2015; Li, 2016; Whitaker et al., 2016). Programs designed for quitting smoking are paramount in smoking cessation success.

Data from the Clinical Agency Supporting Need for the Project

The Healthy Lungs Initiative (HLI) founded in 2008 is a program launched to improve the clinical services for smoking cessation in a safety-net hospital setting that has proven effective. The program serves a patient population of socioeconomically disadvantaged that resided in communities that have high mortality rates, food deserts and poor infrastructure. HLI provides evidenced based guidelines for smoking cessation to patients in either outpatient care settings [e.g. primary care, specialty clinics and the emergency area]; or inpatient areas [e.g. medical surgical, coronary care and trauma/burn units]. The program focuses on smoking cessation education/treatment, asthma and other tobacco related conditions such as chronic obstructive disease (COPD).

There are six HLI counselors that are employed throughout the organizational system to help patients that are willing to quit tobacco usage, develop strategies tailored towards their smoking cessation goal. The healthy lung counselors also incorporate pharmacotherapy substitutes for smoking urges with the program design. Medication guides with standard dosing and time intervals for nicotine replacement therapy (NRT) [e.g. nicotine patches] are given to providers whose patients request cessation medications. Additional medications that are available through the health system used for smoking cessation in the program are nicotine gum and Bupropion. Medications are either free or require a co-payment of four dollars based on insurance. The healthy lung counselors also help with coping strategies for patients that are enticed to smoke. Additionally, these counselors educate smokers who are unwilling to quit on the risks of smoking and benefits of tobacco abstinence smoking. They also encourage and

promote patients in making a commitment to create a smoke-free environment and arrange a referral for follow up to the Illinois tobacco quit line.

Goldberg et al. (2016), conducted a study that evaluated the use of guide-line based tobacco cessation interventions delivered during primary care visits to determine if they improved smoking cessation rates with smokers. These Healthy Lung Initiative clinicians did a retrospective analysis that examined 755 minority smokers: [69% African American and 15% Latino]. Forty- one percent (40.9%) were from a primary care clinic; eleven percent [11.0%] were from the asthma clinic; inpatients were seventeen percent [16.7%], the emergency room twenty percent [19.7%] and the specialty clinic was twelve percent [11.7%] (Goldberg et al., 2016). The primary outcome for the study was sustained smoking cessation that was actualized by the patients' self -reported cessation for one year. The study population was compared to smokers who did not have routine HLI contact (Goldberg et al., 2016). Analytic strategy in this study compared data from the HLI with the National Health Interview Survey [NHIS].

The Goldberg et al. (2016), study demonstrated the following: participants in the study smoked 0.6 fewer cigarettes in comparison to those who did not have routine HLI contact [9.2 vs. 9.8 cigarettes per day, p= 0.04]. Participants with HLI contact were also more willing to quit smoking relative to those that were not willing to quit without HLI contact [64.9% vs. 59.4%, RR 1.8, 95% CI 1.02-1.38]. There was also no significant difference in smoke free homes between groups. Furthermore, for smokers with HLI contact the average number of cigarettes decreased from 9.6 at base line to 8.59 (p= 0.001). The cessation rate for the 755 smokers was 9.3% in comparison to the cessation rate in the National Health Interview Survey was 7.2% (Goldberg et al., 2016). It was also noted that direct screening by the healthy lung counselors and tobacco users that were referred by the medical providers to the HLI program may have had increased smoking cessation rates in comparison to smokers that were not referred.

Purpose of the Evidence-Based Practice Project

The safety-net clinic in this project was comprised of three provider teams [A, B and C]. Each team consisted of two to three physicians, six residents, two advanced practice providers, one registered nurse, four medical assistants and a clerk. There were three allotted clinic sessions per team daily: the morning shift (7:30 am - 11:30 am), the afternoon shift (11:30am to 3:30 pm) and the evening shift (3:30 pm to 7:30 pm) Each team had the potential of seeing 125 -150 patients per day based on the provider or patient show rates. It had been observed that referrals to the HLI for smoking cessation for outpatients had not been adequate since the movement of the clinic to a larger facility one year ago. Referrals for smoking cessation interventions had been challenging due to the following factors: (1) health educators and smoking cessation counselors were assigned to the clinic to see outpatients only three times a week (2) sessions for smoking cessation intervention were limited to only morning sessions (3) there were only six healthy lung health educators that were available system wide (4) there was only one health educator that provided coverage for all three teams three days a week (5) referrals to the healthy lung educator were based on either electronic page by the provider or the selective referral of patients seen by the health educator while on the unit (6) clinic patient capacity prevented efficient assessment of outpatient smokers willing to quit and (7) decreased provider referrals due to limited patient visit time that focused on “crisis” care.

The current process led to barriers of access of care for smokers. Therefore, the purpose of the EBP project was to improve patient outcomes by facilitating better access of care in patients seeking smoking cessation. This would be accomplished by the implementation of a new order for telephone smoking cessation counseling generated through the electronic medical record [EMR].

PICOT Question

In disadvantaged populations age fifty-seven years or older, does access to telephone counseling have improved smoking cessation outcomes in comparison to those under the age of fifty-seven in a three-month period?

Significance of the EBP Project

The project was important in that it would:

- Increase out-reach and identification of patients seeking smoking cessation.
- Provide ease of provider referral, through an order format in the patients EMR.
- Increase uptake of patients seeking telephone smoking cessation counseling in those willing to quit.
- Provide patient convenience [e.g. patients are not limited to face to face counseling].
- Utilize evidence-based practice recommendation for smoking cessation thus provide better patient outcomes.
- Identify success of intervention [smoking cessation] with disadvantaged smokers less than thirty years of age in comparison to those thirty years of age and older.

CHAPTER 2

EBP MODEL AND REVIEW OF LITERATURE

Evidence-based Practice Model

The Stevens Star Model of Knowledge Transformation

The Academic Center for Evidence-based Practice (ACE) located at the University of Texas health science center in San Antonio, Texas, is the home of the Stevens Star Model of Knowledge Transformation, formerly referred to as the ACE Star model. This framework is the conceptualization and design of Dr. Kathleen Stevens (2004). The model is an evidence-based practice standard that can be employed to guide and improve health care processes to achieve sought after health outcomes. The model illustrates how the extrapolation of evidence-based knowledge from research, derived through a systematic approach, can be transformed into clinical practice.

Figure 2.1

The model is represented by a five -pointed star with each point of the star depicting the five stages of knowledge transformation: (1) Discovery/Research (2) Evidence Summary (3) Translation to Guidelines (4) Practice Integration and (5) Process Outcome /Evaluation (Stevens, 2004). The cycle of transformation begins with the first point of the star or discovery/research. This stage is the initial conducting of primary research findings. The

second point of the star, or the evidence summary takes the research and synthesizes it into a single meaningful statement (Stevens, 2004). Translation to guidelines is the third point of the star. At this stage, research evidence is then converted into clinical guidelines that are then implemented into clinical practice, which is the fourth point of the star. Finally, the fifth point of the star evaluates the process and the changes of practice that occurred. This can be determined by health outcomes, patient satisfaction, efficiency, health impact and economic analysis (Stevens. 2004). This model of knowledge transformation will be the framework that will be employed to support the process for change in this project.

Application of EBP Model to DNP Project

Discovery

Tobacco control remains a critical public health care challenge today. Tobacco usage is a behavior that contributes to over 30% of all cancer deaths, 87% of lung cancer deaths and the progression of coronary heart disease (Center for Disease Control and Prevention [CDC], 2015). Lower socioeconomic status populations demonstrate significantly higher tobacco usage and suffer disproportionately from tobacco related illness (CDC, 2015). Furthermore, smokers of low socioeconomic status (SES) and are of a racial or ethnic minority have more difficulty with smoking cessation for several reasons. These can include limitation to treatment access, neighborhood disadvantage, discrimination and lack of social support (Haas, 2016). Subsequently, clinical smoking cessation programs have become the standard treatment in health care today. Although these programs are usually deemed effective, they may not always be applied in clinical settings due to barriers in service delivery. These barriers may be a result of failure of provider referral, or lack of provider time. According to Boccio et al. (2017), albeit 70% of tobacco smokers visit a primary care provider yearly, only 30% have reported having received evidenced based counseling or medication at the time of their clinic visit.

Evidence Summary

Evidence suggests that high intensity telephone counseling interventions are effective in patients with lower socioeconomic status (Li, 2016). Additionally, a significant number of randomized control trials have tested the effect of offering telephone counseling to tobacco smokers who are not utilizing quit-lines and demonstrate evidence that proactive counseling through a telephone-based service is also beneficial (Matkin et al. 2019).

Translation to Guidelines

Accessibility to telephone counseling is a beneficial intervention in smoking cessation in populations of lower socioeconomic status. Therefore, the implementation of an electronic order for telephone counseling would be a beneficial intervention in the General Medicine Clinic (GMC) in that it would (1) promote access of care to outpatient smokers (2) increase outreach and identification of smokers seeking smoking cessation and (3) support the outcome of improved smoking cessation and abstinence of out-patient smokers within the clinic.

Practice Integration

Stevens (2004), stated that integration requires a change. These practice changes can be individually or within the organizational system and the environment. It can be either formal or informal. The application of an electronic order within the electronic medical record (EHR) for telephone counselling for smoking cessation was the instrument utilized to promote change in this evidenced -based project. It would promote change by the following:

- promote patient access to telephone counseling for smoking- cessation; therefore, providing better health outcomes in smokers willing to quit.
- increase reach and identification of patients seeking smoking cessation through provider referrals.
- Increase uptake of telephone counseling among patients who are reached.

- Improve abstinence of smokers willing to quit.

Process Outcome/Evaluation

Stevens (2004) suggested that a process used to impact change could be measured by various end points. These process changes could be evaluated through end points such as improved health care outcomes, patient satisfaction, better system efficiency, changes in health status or economic analysis (Stevens, 2004). The evaluation of better system efficiency for access to care and improved health outcomes for smokers was quantified by the following:

- Monitoring and tracking of number of provider referrals.
- Monitoring and tracking number of patients successfully reached and navigated through the system.
- Assessment of self -reported abstinence in smokers 30 years of age or greater and smokers 30 years of age or less.
- Data collection and analysis of findings.

Strengths and Limitations of EBP Model for DNP Project

The Stevens Model of Knowledge Transformation will foster change through a rigorous systematic approach. The strengths of the model are as follows:

- It will provide the necessary framework to transform evidence -based knowledge into clinical practice thus facilitating quality improvement and better health outcomes.
- It will promote improvements in clinical communication thus providing a common language or change on practice issues.
- Evaluates needs for future research.

Limitations: There were no limitations with this model.

Literature Search

In order to ensure that the studies that were employed were relevant evidence, specific criteria for selection were determined. Studies that made use of random control trials (RCT) or systematic reviews that examined the effectiveness of telephone counseling as a single therapeutic intervention or used it as an adjunct to other treatments aimed at smoking cessation in the general population or in socioeconomically disadvantaged groups were used [e.g. appendix A]. A preliminary search of the Cochrane library, the Joanna Briggs Institute, CINAHL, PubMed and PsycINFO were completed. The search strategy was aimed at obtaining high level evidence. The data bases were searched by relevant keywords and phrases to identify articles for inclusion. The keywords or phrases used for the search were “cell*phone”, telephone, “mobile* phone” Quitline, counseling, counselling and “smoking cessation”. Boolean phrases [AND, OR] were adapted in the search. Limiters were studies that were published between Jan. 2014 – June 2019 and restricted to the English language and scholarly reviews. Exclusion criteria for the search were the following: studies that were greater than five years, not in the English language or scholarly reviewed.

Table 2.2.
Results of Literature Search

Database	Evidence Yielded	Duplicates	Non-Relevant Articles	Articles Reviewed	Accepted
Cochrane	16	0	13	3	1
Joanna Briggs	36	1	28	7	2
CINAHL	202	14	147	41	8
Medline	320	18	215	87	0
PsycINFO	135	20	75	40	0
PubMed	270	45	128	27	0
Total	979	98	606	205	11

Table 2.2 displays the various data engines used during the literature search. Cochrane Library was the first data base that was searched using the key words telephone and phrase “smoking Cessation”. The evidence yielded was 16 systematic reviews and of that 3 were reviewed and 1 was accepted. Joanna Briggs was the second search engine utilizing the same key words. It yielded 36 studies with 7 that were reviewed and 2 were accepted. CINAHL was

the third search engine utilizing key words “cell*phone”, telephone, “mobile*phone”, counseling, counselling and “smoking cessation”. It yielded 202 studies with 41 that were considered relevant to the topic yet 8 were accepted. Medline was then searched employing the same key words and yielded 320 articles; 87 were reviewed, although none were accepted. PsycINFO was searched using the same search key words with additional filter of scholarly peer review added. There were 135 yielded results with 27 that were reviewed. Of these 27 reviewed none were accepted. PubMed yielded 270 articles, with the filter full text added, 72 resulted and 45 were duplicate, 27 were reviewed, however none were accepted.

Levels of Evidence

The Johns Hopkins Nursing Evidence-Based Practice (JHNEBP) Research Evidence Appraisal tool and the Johns Hopkins Nursing Evidence-Based Practice (JHNEBP) Non-Research Evidence Appraisal tool were the resources used to level and appraise the evidence that were elected for use in this study [e.g. figure 2.3]. These are practical tools for appraising research evidence because they help determine the level of strength of the research article and its quality. According to the JHNEBP tool, there are five levels of strength of the evidence in a study. Level I (strong) consists of experimental studies that are randomized controlled trials (RCT) or Meta-analysis; Level II Quasi-experimental studies; Level III that can include: non-experimental, qualitative studies and meta-synthesis research studies (Newhouse et al. 2007). The JHNEBP tool for non-research evidence studies include Level IV and Level V. Level IV includes clinical practice guidelines. Level V (weak) is considered studies that may be inclusive of organizational studies such as financial analysis reports or reviews of quality improvement studies; and considered expert opinion, case studies or literature reviews (Newhouse et al. 2007). There were eleven evidence studies that were identified for this review. The levels of evidence for this study were indicated as follows: 8 studies for Level I;1 study for Level II and 2 studies for Level III.

Appraisal of Relevant Evidence

The Johns Hopkins Nursing Evidence-Based Practice (JHNEBP) Research Evidence Appraisal tool and the Johns Hopkins Nursing Evidence-Based Practice (JHNEBP) Non-Research Evidence Appraisal tool will be used to conduct an appraisal of the quality of the studies included in the review. The appraisal quality will be based on the following ratings: A, where A= high (consistent results, with sufficient sample size, adequate control and definitive conclusions; consistent recommendations based on literature review and includes thoughtful reference to scientific evidence) B where B= Good (reasonably consistent results with sufficient sample size, some control and some scientific evidence or C where C =low/poor quality (Newhouse et al. 2007)..

Table 2.3.
Results of Evidence Appraisal

	Strength of Evidence	Quality Rating
Ray et Al. 2014	I	B
Skov-Ettrup et al.2014	I	B
Haas et al. 2015	I	B
Skov-Ettrup et al. 2016	I	A
Fu et al. 2016	I	B
Whitaker et al. 2016	I	B
Vidrine et al. 2018	I	A
Matkin et al. 2019	I	B
Wu et al. 2016	II	B
Bernstein et al. 2016	III	B
Boyle et al. 2014	III	A

Note. © "The Johns Hopkins Hospital/The Johns Hopkins University" Nursing Evidence-Based Practice (JHNEBP) Research appraisal and Non-Research appraisal tools were used to level the evidence.

Level I Evidence

The following studies were rated as a Level I type of evidence because the evidence was obtained from an experimental study/randomized control trial (RCT) or meta-analysis of RCTs.

Ray et al. 2014

This randomized control trial compared two patient referral methods to assist smokers in getting into on-line tobacco cessation programs. The two referral methods were (1) prescription and (2) e-referral to a web assisted smoking cessation induction system called Decide 2Quit. org. Dental practices were recruited for the study from the national dental practice -based research network. (Ray et al., 2014). A recruitment letter describing the study and a brief survey were mailed to twenty-three thousand dentists. Eligibility of the study consisted of the clinics seeing five adult smokers per week, being a general dentistry office or clinic and have an office-based internet access.

There were only 929 of the recruitment surveys that were returned, and of that sampling, 828 were excluded leaving only 101 practices that were randomized. Fifty-one were allocated to the intervention group [e.g. Decide 2Quit] and fifty were allocated to the control group [e.g. prescription]. The outcome measurements were based on the referral numbers, Decide2Quit registration numbers, and the smokers quit rate. Statistical analysis included the Chi-square, *t*-tests, or corresponding nonparametric tests were utilized. Multivariable linear regression (ANCOVA) for adjusted measures was performed. The outcome measurements were the were the referral numbers, Decide2Quit.org web site registration numbers and the smokers quit rates.

The researchers found that the proportions of registrations among smokers referred to the Decide2Quit web site through the e-referral were four times higher in the intervention group compared to the control group [adjusted mean percentages: 29.5% vs 7.6% p=0.01] (Ray et al. 2014). The cessation rates among referred smokers were also three times higher [adjusted

percentages: 3.0% vs 0.8%, P=0.03] (Ray et al., 2014). The researchers determined that interventions that used an e-referral system had higher registration numbers and higher quit rates than the control group. These referrals were also effective in getting smokers to web assisted smoking cessation programs. Furthermore, the researchers suggested that on-line sources are effective tools to support patients in quitting tobacco use. The quality or rating for this research evidence was considered good (B). The results were reasonably consistent, there was ample sample size, and some control with a fairly, definite conclusion. The study was relevant in that it was applicable to the approach of intervention that would be used in this.

Skov- Ettrup et al. 2014

The objective of the trial was to investigate the proportion of smokers (reach) willing to participate in smoking cessation interventions with no face- to -face contact in a large population of smokers in Denmark. This was a parallel randomized controlled trial with an equal distribution of the population to four interventional conditions. The interventions were identified as follows (1) an internet-based smoking cessation program (2) proactive telephone counseling (3) reactive telephone counseling and (4) a self -help booklet. There were 9,924 persons who were invited via e-mail. Non-responders were 6,389 and those who refused to participate were 357. Individuals who stated that they no longer smoked were 1,307 and those who did not complete the survey were 57 (Skov-Ettrup et al., 2014).

There was a total of 1,809 who were randomized to the following interventions: internet-based program (n=453), proactive telephone counseling (n=452), and reactive telephone counseling (451). Follow-up was based on 1, 6 and12 month increments. Multivariate logistic regression analysis was used. The proportion of participation was highest among persons age 40-59, educated, women and heavy smokers. 1 month follow up noted 69% participation for internet -based program, 9% for reactive telephone counseling and 74% for proactive counseling (Skov-Ettrup et al., 2014). Eighty-four percent participation was noted for the self -

help books. The researchers noted that the use of an internet -based program was used by younger smokers. Individuals of lower education levels were associated with using proactive telephone counseling (Skov-Ettrup et al., 2014). At a 12 -month follow-up there was a prolonged abstinence found in the proactive telephone group when compared to the self -help group [7.3% vs 3.6%, odds ratio (OR) = 2.2, 95% confidence interval (CI) = 1.2 – 4.0] (Skov-Ettrup et al., 2014). However, there was no significant difference in prolonged smoking cessation found in the reactive telephone counseling, the internet -based program and the self-help booklet groups. Proactive telephone counseling appeared to be more effective than self-help guides or books. The results of the study demonstrated that smokers benefitted from a variety of different formats for support when trying to stop smoking.

The quality or rating for this research evidence was considered good (B). The results were reasonably consistent, there was ample sample size, and some control with a fairly, definite conclusion. The literature review, although not noted in the summary was minimal but consistent and had some reference to scientific evidence. This study was utilized in the current EBP because it compared the effectiveness of telephone counseling with other interventions that have been employed with smoking cessation.

Haas et al. 2015

The objective of this study was to address proactive tobacco strategies in smokers of low socioeconomic status in this randomized control study. The study looked at adult smokers who identified their ethnicity as either Black, Hispanic, or White and received primary care at 13 primary care offices. These primary care sites did not have on site tobacco treatment programs but could refer patients to a smokers help-line. The practices shared an electronic health record [EHR] that allowed identification of the smoking status. This provided an avenue for outreach. The researchers used an additional tool to provide opportunities for tobacco treatment facilitation to patients beyond their offices and this was an interactive voice response (IVR)

telephone technology. This technology allowed a computer to detect voice responses to either facilitate or sustain treatment delivery. The IVR in this study, would provide direct linkage to a tobacco treatment specialist (TTS) that would provide telephone based motivational counseling.

Smokers that were identified through the EHR were randomized in accordance to the date of the clinic visit [e.g. even dates and odd dates of clinic day]. The baseline telephone call for the IVR was the same initially for both the control and intervention groups. However, after the completion of the smoking history participants in the intervention group were asked if they wanted to speak with an TTS for additional assistance (Haas et al., 2015). The control group was not offered this option but received care from their own health care group. Participants in the intervention group were able to receive four counseling calls with additional calls placed at the request of the recipient and tailored to the individual need. To examine the socio-contextual mediators of smoking the interventional group were given personal referrals to a community-based web system they provided access to social resource services for a variety of care [e.g. food, domestic violence hotlines, employment and education] (Haas et al., 2015).

The statistical tools used for the data analysis were the 2-sample t tests, Wilcoxon tests, and X tests. It was concluded that individuals in the intervention group had a higher quit rate than the usual care or control group [17.8% vs. 8.1%; odds ratio 2.5; 95% CI, 1.5-4.0] (Haas et al., 2015). Individuals who participated in the in the telephone counseling were likely to quit than those who did not [21,2% vs 10.4%; P< .001] (Haas et al., 2015). The use of an HER allowed identification of smokers outside of the context of the visit to quit, provided systematic outreach to link smokers with treatment and the telephone- based care established treatment, targeted counseling and nicotine replacement therapy (Haas et al., 2015).

The quality or rating for this research evidence was considered good (B). The results were reasonably consistent, there was ample sample size, and some control with a fairly, definite conclusion. Although the literature review in the study was minimal, it was consistent and had some reference to scientific evidence. The study was relevant because it compared the

effectiveness of telephone counseling with other interventions that have been employed with smoking cessation. It also examined the use of an IVR as a means of improving reach or accessibility of smokers wanting help in smoking cessation. There may have been limitations however, in the utilization of an electronic health record. Data may not always be accurate due to input error.

Skov-Ettrup et al. 2016

This study was a randomized controlled trial conducted in Denmark that compared the effectiveness of various counseling methods for smoking cessation including (1) proactive telephone counseling, (2) reactive telephone counselling, (3) internet-and text-message-based intervention, and (4) a self-help booklet. The participants were daily smokers, 16 years old or older, with a mobile phone and email address. The study design was a parallel randomized controlled trail with participants assigned in equal distribution to one of the four counseling methods. After a 2- month intervention in one of the counseling groups, follow up was conducted at 1, 6, and 12 months. 9924 individuals were invited to participate in the trial. For between-group comparisons, logistic regression was used. Of the 9924 individuals invited to participate, 3474 people responded to the invitation. Of these, 1810 met eligibility criteria and agreed to participate. Individuals were randomized to the proactive telephone counseling group (n = 452), the reactive telephone counselling (n = 453), e-quit (n = 453), and the self-help booklet (n = 452). At 6 months, abstinence was lowest at 2.4% in the reactive telephone counseling group while abstinence was highest in the proactive telephone counseling group (8.6%). At the 12-month follow-up, abstinence remained lowest in the reactive telephone group (1.8%), followed by 3.6% in the booklet group. Both the e-quit group and the proactive counseling group had abstinence of 5.3% and 7.3%, respectively. The odds ratio (OR) for prolonged abstinence in the proactive telephone counseling group compared to the booklet group was 2.2 [95% confidence interval (CI) = 1.2-3.8] after 6 months and 2.2 [95% CI = 1.2-4.0] after 12 months. Thus, the researchers concluded that the proactive telephone counselling

was more effective in achieving prolonged abstinence for 12 months than the self-help booklet. Alternatively, no definitive evidence was found regarding the effectiveness of reactive telephone counseling or the e-quit method, when compared with the self-help booklet. The study was relevant because it compared the effectiveness of telephone counseling with other interventions There may have been limitations regarding randomization and biochemical validation of smoking cessation however, the large sample sizes were good. The quality or rating for this research evidence was considered high (A). The results were consistent, with an adequate sample size, and robust results.

Fu et al. 2016

This randomized trial tested whether a proactive tobacco treatment intervention would improve smoking outcomes of publicly uninsured smokers. This study involved 2,406 socioeconomically disadvantaged smokers regardless of their interest in quitting that were enrolled in a publicly funded health care system. They were randomly assigned to either proactive outreach or usual care (control group). Proactive outreach included free nicotine replacement therapy (NRT), intensive telephone counseling, and tailored mailings. Usual care consisted of access to a primary care physician, smoking cessation medications covered by the insurance and the states telephone Quitline (Fu et al., 2016). Participants were not blinded, however, study staff who collected primary outcome data were blinded to treatment allocation of the participants.

The following statistical measurements were used: Pearson's and two-sample t tests and logistic regression were used to adjust for stratification variables such as age sex and insurance type. The researchers determined that the proactive intervention group had a prolonged abstinence rate at one year than usual care [16.5% vs. 12% or .47, 95% CI 1.12 to 1.93] (Fu et al., 2016). Telephone counseling for smoking cessation was also higher in the proactive outreach intervention group in comparison to the usual care population [19.4% vs 2.9%] (Fu et al., 2016). The use of evidence -based tobacco treatments such as combination

telephone counseling and medications were noted to have a greater response use among proactive outreach participants in comparison to usual care [17.4% vs 3.6% OR 5.69, 95% CI 3.85 to 8.40] (Fu et al., 2016).

The study suggests that the influx of population based proactive treatment is a strategy that can be used to reduce the frequency of smoking and diminish disparities in care in disadvantaged populations. The quality or rating for this research evidence was considered good (B). The results were reasonably consistent, there was ample sample size, and some control with a fairly, definite conclusion. The study was considered relevant because it addressed possible smoking cessation strategies used in socially disadvantaged populations.

Whitaker et al. 2016

This systematic review composed of randomized and quasi-randomized trials examines how mobile phones may be an efficacious intervention for delivery of smoking cessation support. The population characteristics of the review were smokers of any age group that had a desire to quit smoking. The authors identified 12 studies with 11, 885 participants that examined smoking cessation over 6 months. The intervention that was commonly used was text messaging that was either paired with clinical visits or text messages that were linked to video. Measurements of smoking cessation varied. Six studies used biochemical results. The Mantel-Haenszel fixed-effect method was used for meta-analysis. The analysis for a 6 -month measure of abstinence yielded the following statistical data: RR of 1.67 [95%CI 1.46 to 1.90] (Whitaker et al., 2016). The researchers suggest that smokers who received support through mobile phone usage were 1.7 times more likely to have smoking abstinence in comparison to those who did not have support through the technology (Whitaker et al., 2016). However, most of the studies compiled in this analysis were done in countries where there was a higher socioeconomic status with mobile phone users therefore, creating a gap in evidence data for usage in lower socioeconomic groups (Whitaker et al., 2016). The quality or rating of this systematic review

was considered good or (B). The evidence was moderately consistent and the conclusions definitive.

Vidrine et al. 2018

This study looked at the efficacy of mobile phone delivered smoking cessation interventions in socioeconomically disadvantaged people aged 18 years and older. This was a randomized trial that utilized a neighborhood site as a sampling unit. There were 1, 177 smokers that were initially assessed for eligibility. Smokers were English or Spanish speaking, smoked 5 cigarettes or more daily. However, after exclusion factors, the population sample yielded a total of 624 individuals that were randomized into three smoking interventions: (1) nicotine replacement therapy [NRT] (2) NRT plus text and (3) NRT plus text plus proactive telephone counseling. Outcomes were based on smoking abstinence in 6 months with verification defined by biochemical negative findings of saliva cotinine [<20 ng/ml] and a self - reported abstinence of 30 days (Vidrine et al., 2018).

Statistical measurements included the 1-way analysis of variance test to identify differences in the groups, log-binomial mixed models to determine relative risk factors, and ITT methods were used to handle missing data (Vidrine et al., 2018). After the 6 month follow up the researchers noted the following self-reported abstinence in the three interventions: 64 participants (28.7%) in the NRT group; 70 (32.9%) in the NRT plus text group, and 80 (42.5%) in the NRT plus text plus telephone call groups (Vidrine et al., 2018). The researchers noted after ITT unadjusted models were applied, that participants in the NRT plus text group were no more likely to be abstinent in comparison to the NRT group [RR, 1.15; 95% CI, 0.81-1.63] (Vidrine et al., 2018). Albeit, participants that had NRT plus text and proactive telephone counseling were significantly prone to be abstinent compared with the NRT group [RR, 1.48; 95% CI, 1.06-2.06] (Vidrine et al., 2018). The researchers suggest the interventions that consisted of text messaging singularly may not increase smoking cessation rates for

socioeconomically disadvantaged smokers. However, text messaging plus telephone counseling may be more successful. The quality or rating for this research evidence was considered high (A). There were consistent in results and sufficient sample size. There were recommendations based on ample literature review and definitive conclusions. The study was considered relevant because it examined another vehicle form for intervention such as texting, to promote smoking cessation in socioeconomically disadvantaged populations.

Matkin et al. 2019

This systematic review evaluated the effects of telephone counseling including proactive and reactive on smoking cessation. The reviewers identified 104 trials that included 11,653 adult smokers from the general population. It included teenagers, individuals with mental health disabilities and pregnant women (Matkin et al., 2019). According to the researchers some studies investigated smokers who used smoking quit lines as an intervention for smoking cessation. There was moderate evidence to support the claim that individuals that used telephone helplines increased their chances for smoking cessation from 7% to 10% (Matkin et al. 2019). Among the trials with smokers who sought quit lines it was noted that rates were higher for smokers that received numerous sessions of proactive counseling compared to smokers who may receive self-help material and brief telephone counseling [risk ratio (RR) 1.38, 95% confidence interval (CI) 1.19 to1.61; 14 trials with a total of 32,484 participants] (Matkin et al., 2019). In smokers who did not use help lines telephone counseling helped promote better cessation rates (RR 1.25, 95% CI 1.15 to 1.35; in 65 trials with 41.2 participants] (Matkin et al., 2019). Smokers who did not use a quit line but received telephone counseling from providers or health educators demonstrated that their chances of stopping smoking enhanced from 11% to 14% (Matkin et al., 2019). The study had ample sample size, results were consistent, and the literature review gave insightful reference to evidenced based studies. The quality of the evidence was rated good or (B).

Level II evidence

Wu et al. 2016

This non-randomized study looked at whether telephone counseling after face to face counseling improved smoking cessation. The study compared the quit rates of one group that received face to face counseling (FC) [one session of 40 minute counseling], in comparison to a group (FCF) that received one session of face to face counseling and four additional follow-up sessions of brief phone counseling [15-20 minutes] at one week, 1,3 and 6 month intervals. No smoking cessation medication was administered to either groups. The groups consisted of Chinese male smokers, aged 18 years and older. A baseline questionnaire was provided to both groups. There were 547 eligible male smokers. They were divided into two groups that consisted of face to face counseling [n=149] and the FCF group [n=398] (Wu et al., 2016). The researchers noted the following: at a 12 -month follow-up; the 7-day point prevalence and 6-month continuous quit rates of FC and FCF were [14.8% and 26.4% and 10.7% and 1.6%] (Wu et al., 2016). The adjusted odds ratio [95% CI] of quitting in FCF in comparison to FC was 2.34 (1.34-4.10) (P=0.003) and 2.41 (1.28-4.52) (P=0.006). The study demonstrated the effectiveness of the additional follow-up of booster telephone sessions is a feasible and acceptable approach with smoking cessation in Chinese male smokers. The study had limitations that needs to be considered. There was risk for bias since the population was not randomized. The quality of the evidence was rated good or (B).

Level III evidence

Bernstein et al. 2016

This study was considered a secondary analysis of a two-arm randomized clinical trial of low -income individuals that was used to examine the relationship between tobacco abstinence and intensity of use of quit line services. This study was conducted in an adult ER. Participants were 18 years or older, English speaking, and had smoked at least 100 cigarettes in a lifetime; and presented with no mental health issues. Patients were uninsured or had Medicaid.

Consenting individuals were randomized to usual care or the intervention. Usual care consisted of a brochure that included the quit line number and services provided. The intervention included giving a brochure, a motivational interview by a trained assistant, six weeks of nicotine patches and gum, a proactive referral to the state quit line, and a booster phone call 2-3 days after the enrollment. Data was assessed at one, three, and twelve- month follow-ups. Univariate data was reported with both parametric and non-parametric statistics. Chi-square test and Z-test were used for categorical data. Of the 778 subjects, 197 (25.3%) reported use of quit line services at three months. Participants were placed in 3 categories: no quit line usage (no), call only (low), and greater than one call (high). When considering these 3 groups, at three months, the quit rates in these no, low, and high usage groups were 7.2%, 9.1%, and 15.3% respectively ($p = 0.03$). Thus, those in the high usage group had the highest cessation rate. Moreover, participants who used the quit line had an average of 28 minutes of telephone contact. The researchers determined that among low-income smokers, greater use of these services was associated with higher cessation rates. This study was determined relevant in that it examined the use and non-usage of quit line services in smoking cessation in socioeconomically disadvantaged groups. The quality of the evidence was rated good or (B).

Boyle et al. 2014

This study by Boyle et al. (2014), is a systematic mixed review that looked at the use of electronic health records to support smoking cessation. This systematic review looked at six group randomized trials, one patient randomized study and nine non-randomized trials. The criteria for study selection included any intervention that utilized an electronic health record (EHR) to improve status documentation or cessation assistance for individuals seeking assistance for smoking cessation. Meta-analysis was not capable due to the variance in measurement outcomes. It was noted that the studies examined did not include quit rates for patients that smoked. However, the researcher noted that the use of EHR helped support the linkage of patients to a telephone based quit lines in nine out of the sixteen studies.

The studies also did not assess similar outcomes. The study was considered relevant in that it demonstrated that EHRs assist in access to quit lines. However, the systematic review would be considered of moderate quality since further research would be indicated to assess improved smoking cessation with use of EHRs. The quality of the evidence was rated high or (A).

Construction of Evidence-based Practice

Synthesis of Critically Appraised Literature

A considerate amount of research evidence has been published regarding the use of telephone support to help smokers abstain from smoking. Evidence from Level I, Level II and Level III evidence-based studies suggests that proactive and reactive telephone counseling has been most beneficial in providing long term smoking abstinence. While other interventions have been utilized including nicotine replacement therapy, treatment centers, and quit lines, telephone counselling was more successful, particularly in disadvantaged populations. These studies were conducted in multiple countries and across wide age range, and yet telephone counseling consistently achieved the best results.

Best Practice Model Recommendation

The best practice recommendation as evidenced by the research studies is as follows (Li, 2016):

- Telephone counseling is more effective and accessible than counseling conducted through treatment centers, online, and work sites.
- Telephone counseling can be recommended and multiple sessions are likely most helpful for smoking cessation.
- In patients with lower socio-economic status, high intensity counseling delivered by telephone seems most promising. Considering telephone counseling is less expensive than face-to-face counseling, there are practical implications for instituting telephone counseling in this population.

CHAPTER 3

IMPLEMENTATION OF PRACTICE CHANGE

Patient access to health care is considered an important element in the promotion and maintaining of health. However, barriers to health care services often create delays in receiving appropriate care and preventive treatment. Clinical smoking cessation services are effective and strongly recommended albeit, they are not routinely applied. This often results in smokers that are willing to quit having unmet health care needs. Systematic reviews have demonstrated that various interventions such as pharmacotherapy agents, provider advice, group therapy and proactive telephone counseling are effective strategies for smoking cessation. However, only a minimum number of smokers utilize these interventions during their attempts to quit. According to Tzelepis et al. (2015), telephone quit lines increase the potential for individuals seeking intervention to have better smoking cessation success and reduce relapse. A primary care clinic in metropolitan Chicago discovered that despite smokers being provided effective quitting interventions, there were still individuals that were not being identified as smokers and provided access to treatment care if there were willing to quit. This proposed study addresses how improved patient access to telephone counseling can promote smoking cessation thus improving health outcomes.

The transtheoretical model is the behavioral change model that is suggested for use by a multitude of health care providers regarding smoking cessation and is considered most compatible with this study. The transtheoretical model (TTM) was developed by Prochaska and DiClemente in 1983. The model regards behavioral change as a process that occurs in four stages: precontemplation, contemplation, preparation and action. Precontemplation is the first phase that examines the pros and cons of smoking cessation. It determines the reasons for usage and addresses the ambivalence for change (Prochaska & DiClemente, 1983).

Contemplation is the second behavioral change that occurs that examines the reasons for wanting to quit smoking. It addresses the consequences of cigarette smoking and looks at the benefits of smoking cessation. This phase also reevaluates resistance or barriers to change while uncovering strategies for quitting (Prochaska & DiClemente, 1983). Preparation is the third stage that begins the process of developing a quit plan and sets a date for quitting. This stage promotes motivation for change as evidenced by the individual making a commitment to quit. It also provides effective strategies for support (Prochaska & DiClemente, 1983). Action is the final component of the behavioral change. In this stage, reasons for quitting are either affirmed or reviewed. Triggers that create the potential for relapse are identified. Progress is evaluated and continued support interventions used by the individual are addressed (Prochaska & DiClemente, 1983).

Participants and Setting

This study was conducted at a primary care clinic setting within a safety-net hospital in metropolitan Chicago, Illinois. The hospital was one of thirty-six hospitals that provided health care services to the Chicago land area and the residents of cook county. There are approximately 5,194, 575 people who live in the county area (Illinois Department of Public Health, 2019). 55% of the population are White; 24% are African American or Black; 23% are Hispanic or Latino; 6% are Asian; 10% are categorized as some other race and 2% are considered of mixed heritage. American Indian, Native Hawaii, and Pacific Islander are below 1% of the population (Illinois Department of Public Health, 2019). Adult smoking prevalence by strata in 2002 were noted to demonstrate the following: Urban smokers were 25%. Urban is defined as the following counties outside of Cook County. These counties include Champaign, DeKalb, Kankakee, Kendall, Mclean, Macon, Madison, Peoria, Rock Island, Sangamon, St. Clair, Yazewell and Winnebago. The collar counties were 20% smokers. These counties included DuPage, Kane, Lake, McHenry and Will (Illinois Department of Public Health, 2019).

Chicago has 23% smokers and Cook County has 19% for a combined total of 42% smokers for the regional area (Illinois Department of Public Health, 2019).

The safety net health system in this EBP had a patient population that consisted primarily of African Americans who were 69%of the total population and Hispanics that were 15%. The other 16% were comprised of Asian, White and groups of mixed heritage. It was estimated that 70% of this health care population were considered uninsured, while 13% were on Medicaid.

The primary care clinic within this hospital system, was comprised of 23 medical doctors, 6 advanced practice nurses [APNs], 8 registered nurses, 12 medical assistants [MAs], 8 clerks, 4 social workers, 6 health educators, 3 administrative assistants and 2 clinic managers. Rotating residents were also considered team members that were assigned to follow their preceptor during clinic hours. The clinic was divided into three teams: team A, team B and team C. Each team was composed of a varied distribution of providers assigned permanently to specific team groups, while the MAs and registered nurses were allocated as needed and rotated to teams. There were three shifts that catered to patient care: the morning shift from 7:30 am-11:30 pm; the afternoon shift from 11:30 am – 3:30 pm and the evening shift from 3:30-7:30 pm. On average, 200-300 patients visited the clinic per day.

Pre-intervention Group Characteristics

Participants in this project consisted of male and female smokers between the ages of thirty-five years of age or older and all resided in Cook County. Individuals identified as either African American or Black; Hispanic or Latino; White, Asian or Other. Participants had a smoking history of four to five cigarettes a day or more, were referred by their provider and were willing to quit smoking. They were also interested in telephone counseling as an intervention for use in smoking cessation. All participants were outpatients who were seen at this primary care/general medicine setting.

Intervention

The process for the program intervention can be outlined as follows:

- Identified the clinic problem.: there was a decrease in the number of referrals for smoking cessation in smokers willing to quit.
- Assessed the number of referrals made for smoking cessation/counseling done via provider referral at time of clinic visit or by paging of health care educator to clinic for intervention.
- Discussed with providers and smoking health care educators on barriers that may be linked to referrals and diminished access to care for smoking cessation.
- Ascertained how many patients were seen per week in the clinic that were currently identified as smokers and were currently seen or treated for smoking cessation.
- Discussed evidence-based practice solutions with stake holders; [e.g. patients, staff and administration] Intervention: the promotion of telephone counseling and implementation of an electronic order to facilitate ease of referral process.
- Discussed with Director of Healthy Lung Initiative [HLI] program goals and strategies to improve and institute greater access of care while facilitating better health outcomes in patients willing to quit smoking. Provided details of project design and benefits.
- Acknowledged the clinic and HLI vision and goal to promote greater access for outpatients throughout the hospital system.
- Determined what personnel would be required to participate [e.g. MDs, APNs, health educators, RNs] in the use of the electronic order and what user areas would be affected.
- Determined and identified what personnel would be required for implementation of the plan [e.g. healthy lung educators]

- Communication plan: institution of a systems alert notifying provider users of access once the electronic order becomes “live” in the Cerner system.
- Notified the hospital’s information systems of need for a template change for the electronic telephone smoking cessation order that would populate throughout the current Cerner system.
- Provided hospital information agents a brief detail proposal, identifying benefits and justification of usage for the electronic order.
- Completion of one-week review process with information systems for approval.
- Planned date for the start of the intervention estimated at being the first week in August or September of 2019.
- Tracked monthly number of referred smokers identified by electronic order for 12 weeks.
- Tracked monthly number of referred smokers successfully outreached by healthy lung educators (HLE) who received counseling and agreed to quit attempt.
- Weekly tracked total number of smokers reached that agreed to counseling and change smoking behavior as identified by HLE.
- Weekly monitored smokers by HLE that agreed to change smoking behavior as evidenced by the smokers self-reported usage of cigarettes.
- Data analysis of findings.
- Recommendations.
- The practice change will be as follows: a telephone counseling order for smoking cessation that improves provider referral and smoker access to care thus promoting better health outcomes.

Comparison

The project compared the effectiveness of access to telephone counseling and the facilitation of smoking cessation in two groups: smokers fifty-seven years of age and older and smokers that were younger than fifty-seven years of age.

Outcomes

The primary outcomes that results in the intervention will be as follows:

- Promotion of healthier smoking outcomes of smokers who have access to telephone counseling.
- Identification of success of the intervention.by comparing cigarettes usage in smokers less than fifty-seven years of age in comparison to smokers fifty-seven years of age or older.
- Increased out-reach and identification of patients seeking smoking cessation.
- Provided ease of provider referral.
- Utilize evidence-based practice recommendation for smoking cessation thus provide better patient outcomes.

Statistical Analysis

Pearson's correlation coefficient and the independent t-Test were the statistical measures that were used to analyze the data. Pearson's correlation coefficient examined the relationship between smoking abstinence of smokers that used telephone counseling in ages 57 years of age and older in comparison to those that were younger. A t-test was used to determine if there were any significant difference between the means of the two groups. Smoking cessation success will be measured by the smoker's self-reported cigarette usage in a 12-week period.

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Time

The timeline for the project was approximately four months. The first month was designated for the implementation of the plan and the following three months were utilized for monitoring, data collection and assessment. Project implementation began the first week of August 12, 2019 based on the successful completion and implementation of the telephone counseling order for smoking cessation.

Protection of Human Subjects

The principal investigator ensured that the project and subjects engaged in the study were not initiated until approval from the Valparaiso University IRB and the study site IRB had been obtained. The proposed study did not include children, pregnant women, prisoners, institutionalized individuals or others who may be considered vulnerable populations. The proposed study overall had minimal risks. The risk associated with the procedure [telephone counseling] was as followed: subjects may find questions regarding smoking cessation as discriminatory. Some people feel anxious, distressed, or uncomfortable when asked questions about their health and mood. Confidentiality of the data was always protected. Data was obtained according to routine practices outlined by CITI and the project site organization. Subjects were recruited from clinic referrals by their providers and assessment of cigarette usage was followed by smoking health educators and counselors. System standards were implemented to avoid breaches in confidentiality.

CHAPTER 4

The picot question of the evidenced based project (EBP) posed the following, “In disadvantaged populations aged fifty-seven years and older, does access to telephone counseling have improved smoking cessation outcomes in comparison to those under the age of fifty-seven within a three-month period?” According to Haas et al. (2015), accessibility to telephone counseling is a beneficial intervention in smoking cessation in populations of low socioeconomic status. It was concluded that individuals who participated in telephone counseling were more likely to quit than those that did not (Haas et al., 2015). Additionally, proactive telephone counseling also appeared to be more effective than self-help guides or books (Skov-Ehtup et al., 2014). Furthermore, smokers who did not use a quit line but received telephone counseling from providers or health educators demonstrated that their chances of smoking cessation enhanced from 11% to 14% (Matkin et al., 2019).

The goal of this EBP was to improve outreach and access to care of smokers in lower socioeconomic groups to telephone counseling for smoking cessation, thereby promoting better health outcomes for these patients. This was achieved through the following; (1) the implementation of an electronic medical order for smoking cessation telephone counseling, (2) tracking total number of smokers identified by electronic order for one month and (3) the weekly monitoring of smokers that were reached and agreed to telephone counseling as an intervention for twelve weeks. The primary outcome was smoking cessation success at the patient level defined by a self-reported decrease in cigarette usage over a three- month period.

Electronic Medical Order

Prior to the implementation of the electronic medical order: telephone counseling for smoking cessation, there were 52 smokers that were seen and reported by healthy lung educators from July through December 2017 via chart review. Subsequent data demonstrated

that from January through December 2018 there were 145 smokers and from January through July 2019, there were 79 smokers that were seen and reported by healthy lung educators. Since the initiation and utilization of the electronic medical order, from August to September 2019 there were 45 smokers reported via the Cerner system of which 24 were enrolled participants of this evidenced based project. Albeit, there were 131 additional smokers that were identified from October through December 2019 via the electronic medical order.

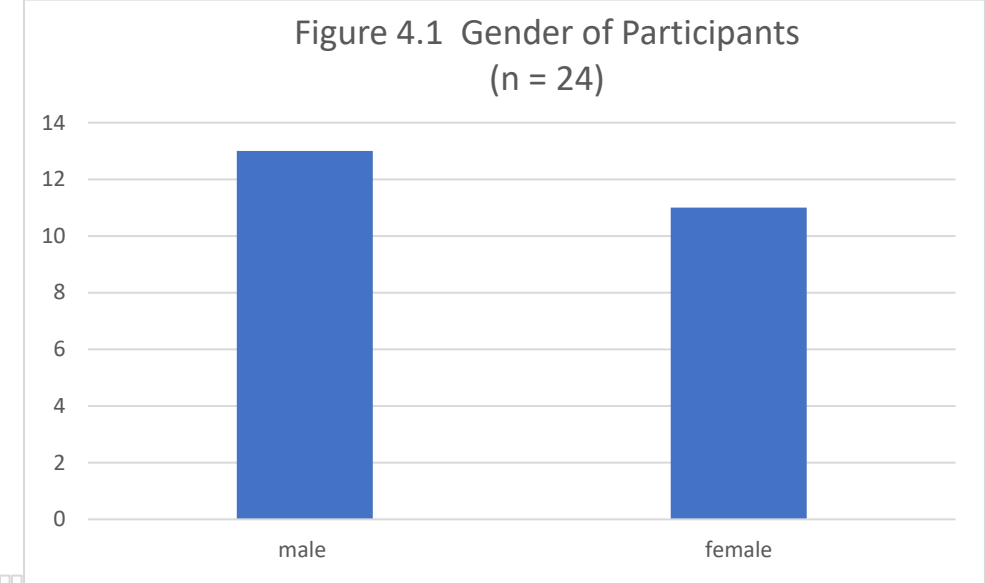
Participant Characteristics

This project looked at twenty-four adult participants that self-identified as smokers. Of these, one participant suspended participation following the third call and was therefore excluded from statistical analysis utilizing paired t-tests. The project also excluded children, pregnant women and the institutionalized. Demographics of the population were reported in table 4.0. Base line characteristics of the participants were demonstrated in figures 4.1, 4.2, and 4.3.

Table 4.0
Demographics of Population

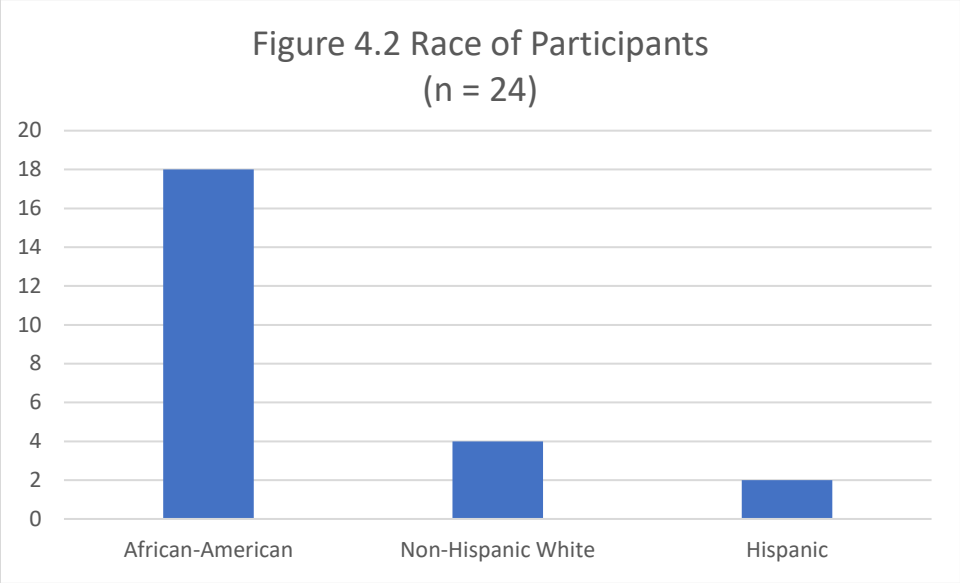
	Week one		**Week Twelve**	
Age (SD)	n (%)	M (SD)	n (%)	M (SD)
		58.46 (13.403)		58.46 (13.403)
Gender				
Female	11 (45.8)		11 (45.8)	
Male	13 (54.2)		12 (54.1)	
Race				
African American	18 (75)		18 (75)	
White	4 (16.7)		4 (16.7)	
Hispanic	2 (8.3)		1 (4.15)	
Education				
College degree	2 (8.33)		2 (8.3)	
Some College	7 (29.7)		7 (29.7)	
GED	2 (8.3)		2 (8.3)	
Some High School	5 (20.8)		5 (20.8)	
High School Graduate	8 (33.3)		7 (29.2)	
Insurance				
Blue Cross/shield	2 (8.3)		2 (8.3)	
Care link	3 (12.5)		2 (8.3)	
County-care	2 (8.3)		2 (8.3)	
Medicaid	7 (29.2)		7 (29.2)	
Medicare/blue cross	2 (8.4)		2 (8.4)	
Self-pay	8 (33.3)		8 (33.3)	

Gender



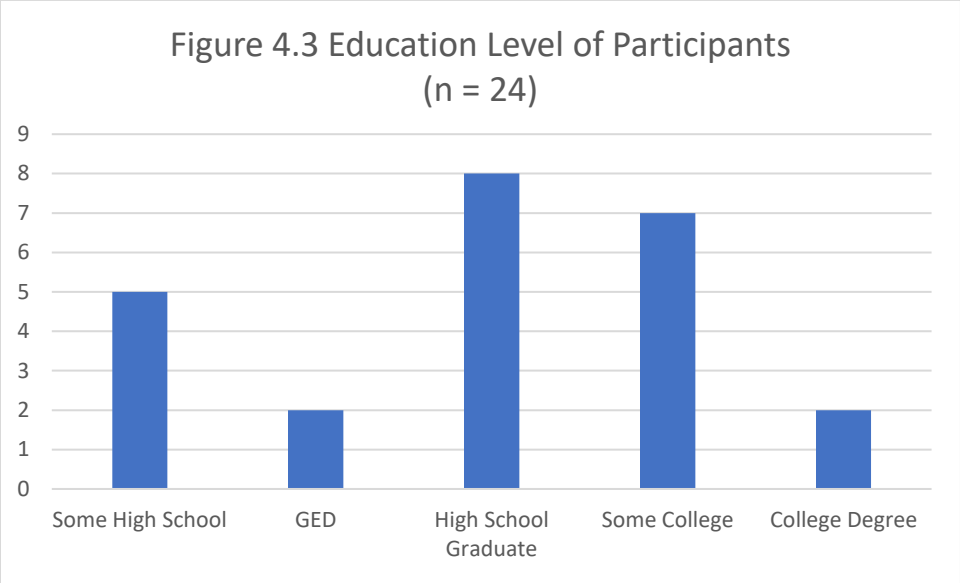
The median age of participants was 58.46 (age range, 24-81 years). Most participants were male at 54.2% and women constituted 45.83% of the sample group. Of the participants, 41.87% were younger than fifty-seven years of age while 58.33% were older.

Race



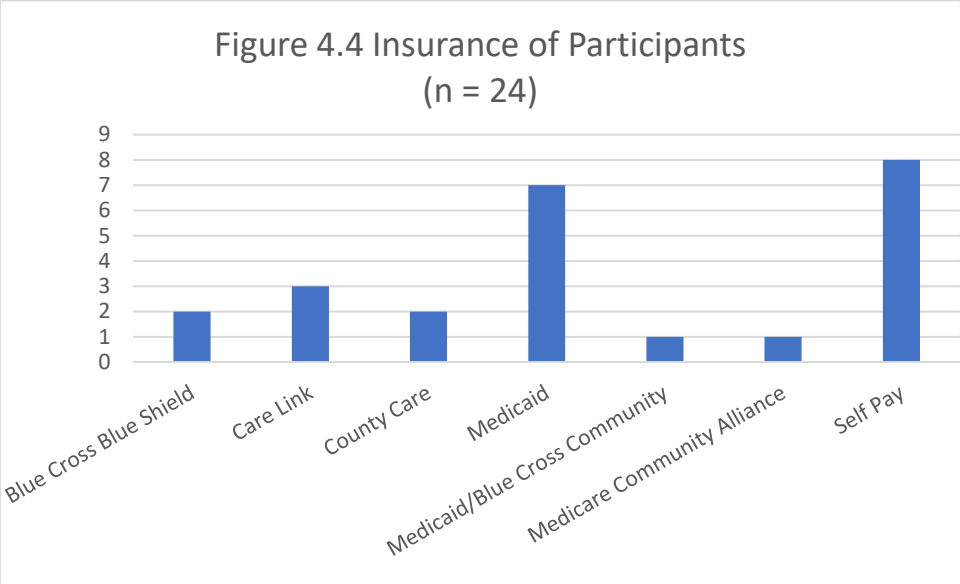
African Americans were 75% of the participants, non -Hispanic white were 16.7% and Hispanic were 8.3%.

Education



Of the twenty-four participants, 8.33% had a college degree and 29.17% had some college education. There were 33.33% that had a high school degree, 20.83% that some high school (1-3 years) and 8.33% that obtained a GED.

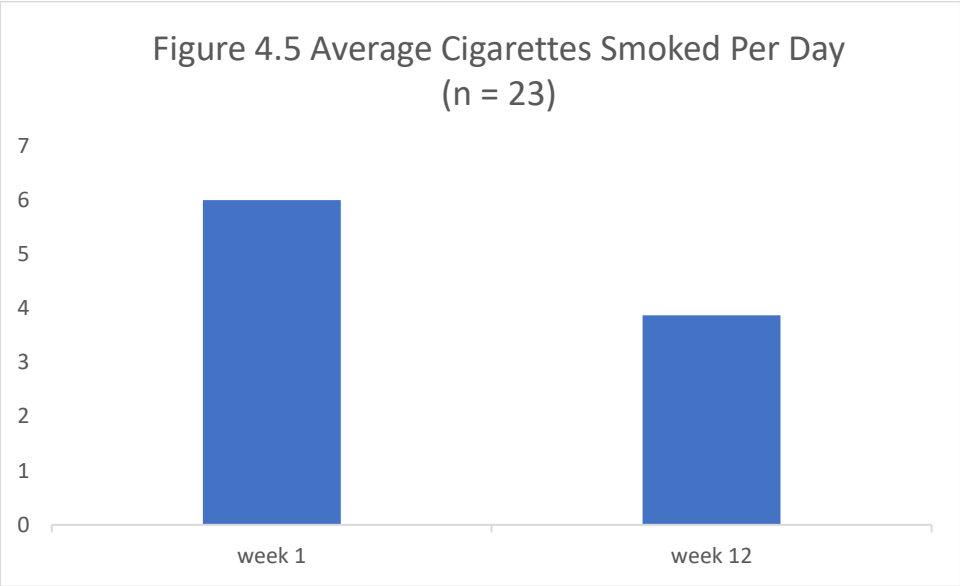
Insurance



There were various insurance programs associated with the participants. Blue cross Blue shield was 8.3%, Care Link 12.5%, County Care 8.3%, Medicaid 29.2%, Medicare/Blue Cross Community 4.2%, Medicare-community Alliance 4.2% and Self-Pay 33.3%.

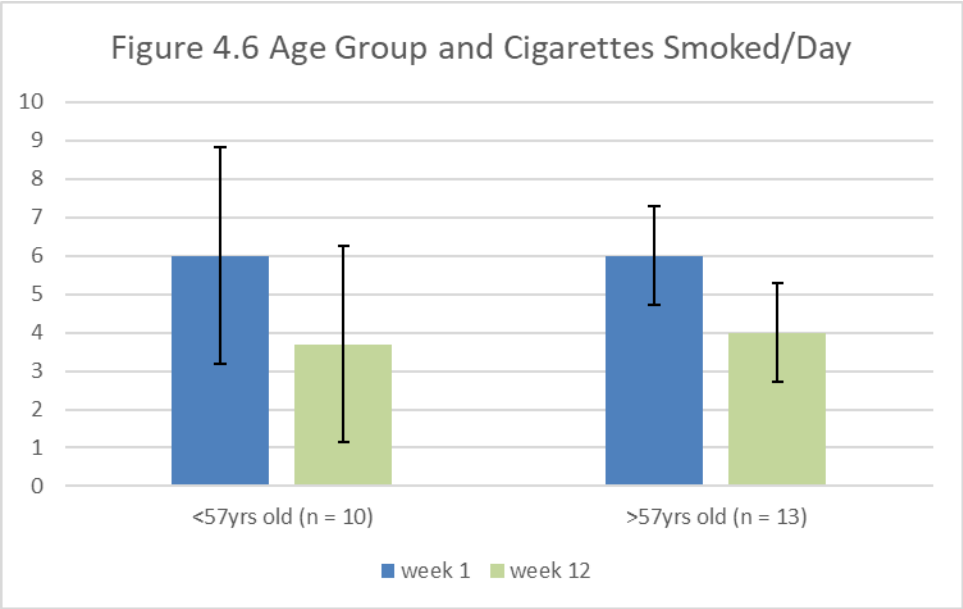
Statistical Analysis

All Subjects Week 1 to Week 12 Comparison



Statistical analysis was conducted on 23 subjects. Figures 4.5 and 4.6 report the statistical findings. One participant was excluded from analysis due to suspended participation after the third call, thus this participant did not have a full data set. Paired t-tests were used to compare self -reported number of cigarettes smoked in week one compared to week twelve. In week one, participants reported smoking 6.3 ± 2.04 cigarettes per day while at week twelve, on average, these participants reported smoking 3.87 ± 1.89 cigarettes per day. There was a mean difference of 2.13 (std=0.694) between the two-time points ($p < 0.01$), thus the mean difference was statistically significant. The number of cigarettes used per day was over two cigarettes higher in week one compared to week twelve.

Age Groups for Week 1 to Week 12 Comparisons

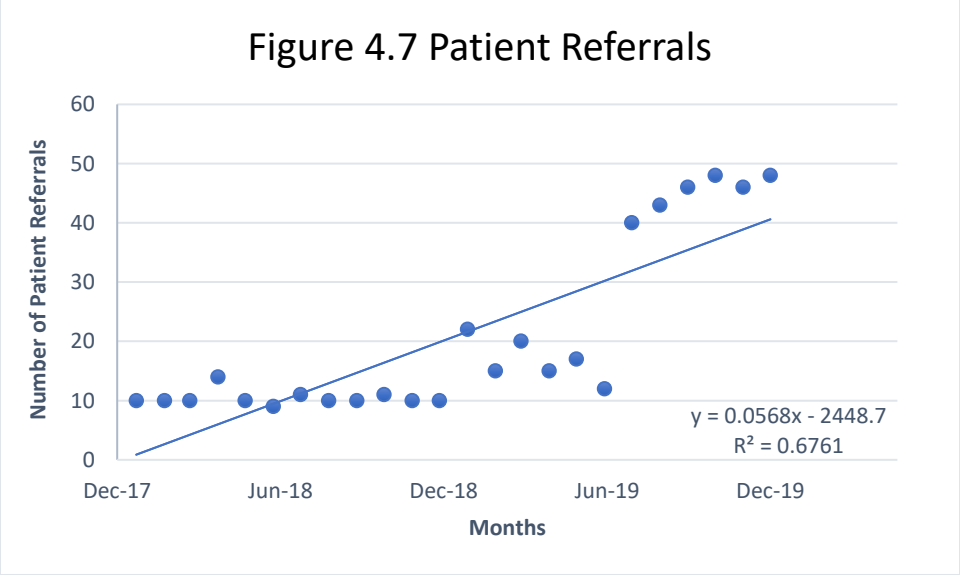


The paired t-test was used to compare the pre-and post-cessation by age group. The paired t-test was used to compare two time periods for a dependent variable. In week one, younger than 57 year -old participants reported smoking 6.0 ± 2.83 cigarettes per day while at week twelve, on average, these participants reported smoking 3.7 ± 2.54 cigarettes per day. The mean difference in cessation was statistically significant (2.3 ± 0.675, $p < 0.01$) for the younger than 57 age group. In week one, older than 57 year -old participants reported smoking 6.0 ± 1.29 cigarettes per day while at week twelve, on average, these participants reported 4.0 ± 1.29 cigarettes per day. The mean difference in cessation was statistically significant (2.4 ± 0.700, $p < 0.01$) for the older than 57 age group. On average, the younger age group smoked two cigarettes more in the pre- versus post assessment. This pattern was also observed in the older age group.

Effects of telephone counseling for smoking cessation

The results of the statistical analysis supported the evidence that accessibility to telephone counseling was a beneficial intervention in smoking cessation in populations of lower socioeconomic groups. Data from the paired t-tests demonstrated improvement in smoking outcomes from week one cigarette usage in comparison to week twelve in the twenty-three participants. The mean difference in cessation was statistically significant for both the younger than 57 age group and for the older than 57 age group.

Additionally, the implementation of the electronic order for telephone counseling for smoking cessation, significantly improved the outreach to smokers within the safety net clinic as seen in figure 4.7. patient referrals over the project period.



Prior to the onset of the electronic order, there were 52 smokers that were reported by healthy lung educators from July through December 2017 via chart review. Subsequent data demonstrated that from January through December 2018 there were 145 smokers identified and

reached by HLI. There were 79 smokers reported by healthy lung educators from January through July 2019. However, an additional 176 smokers were identified thru the Cerner system from August thru December 2019 post the initiation of the electronic order. Therefore, significant improvement was noted in the identification of 255 smokers from January to December 2019 in comparison to 145 smokers identified from January through December 2018 by healthy lung educators. The data demonstrated that the electronic order supported patient access to care.

CHAPTER 5

Discussion

The DNP proposal investigated the following picot question: “In smokers from disadvantaged populations aged fifty-seven years and older, does access to telephone counseling improve smoking cessation outcomes in comparison to those under the age of fifty-seven in a three-month period?” This question will be the focus for evaluation. In this chapter, the project findings are examined as well as the strengths and limitations of the project design. Future implications for practice, research, and education are also addressed.

Explanation of Findings

The provision of an electronic medical order for telephone counseling used as an intervention to promote smoking cessation among socioeconomically disadvantaged populations in this project proved efficacious. The primary outcome was to assess if telephone counseling was effective in improving smoking abstinence or cessation. Success of the intervention was measured by improved smoking outcomes in smokers and it was determined whether age was a factor in success comparing outcomes in those younger than 57 years old to those older than 57 years of age. Data expressed as mean and standard deviation, while Paired t-tests were conducted on all comparisons. Overall, in the twenty-four individuals when comparing week one with week twelve, daily cigarette usage declined between the two-time points (mean difference of 2.13 ± 0.694, $p < 0.01$). When the difference in self-reported smoking was examined by age group, it was observed that cessation declined in both those younger than 57 (mean 2.3 ± 0.675, $p < 0.01$) and those older than 57 (mean 2.427 ± 0.700, $p < 0.01$). On average, both age groups declined smoking by two cigarettes daily over the twelve weeks intervention. Results suggests that the use of telephone counseling was effective in reducing the frequency of smoking among socioeconomically disadvantaged smokers in a three- month period.

This finding broadly supports the findings of other studies in this area suggesting telephone counseling support as an effective strategy to reduce smoking in these populations. Fu et al. (2016), examined the use of telephone counseling as an outreach intervention for smoking abstinence in socioeconomically disadvantaged smokers in a six -month period. The group that was provided the intervention (e.g. telephone counseling) had a prolonged cessation rate at six months in comparison to the group that composed usual care (e.g. primary care provider, pharmaceutical usage and the state's quit-line) [16.5% vs 12.1%, or 1.47, 95% CI 1.12 to 1.93]. The study recommends that proactive telephone counseling is a strategy that can be used to reduce the frequency of smoking and diminish disparities of care in disadvantaged populations. Skov-Ettrup et al. (2016), in a random control trial compared various methods of interventions used in smoking cessation and concluded that proactive telephone counseling was more effective in achieving prolonged abstinence than self -help booklets. Matkin et al. (2019) also noted that smokers who received telephone counseling from providers or health educators demonstrated that their chances of smoking cessation enhanced from 11% to 14%. Macleod, Charles and Arnaldi (2003), investigated the effectiveness of telephone counseling as an adjunct to the use of nicotine patches and found that participants receiving telephone counseling abstinence rates were significantly greater than those that did not receive telephone counseling at three months (31.6% v 25.1%; $P < 0.04$). Thus, the current study adds to the literature suggesting that telephone counseling is an effective intervention to facilitate improved smoking cessation.

Access to smoking cessation counseling

Disadvantaged populations often have difficulty accessing health care. The provision of an electronic order for telephone counseling for smoking cessation improved access to care in this underserved group serviced by the safety net clinic. There was significant improvement in the identification of smokers through the electronic order in comparison to smokers identified by the healthy lung educators (HLE). There was a 43% increase in the total number of patients

identified from January to December of 2019 (n=255) compared to 147 patients identified from January and December of the previous year by HLE. Notably, there was a 23% increase in the number of smokers identified post the implementation of the electronic order within the twelve weeks period.

Several studies have examined the feasibility and use of various interventions to improve access to care in socioeconomically disadvantaged groups thus improving health outcomes. Haas et al. (2015), utilized an electronic health record that provided interactive voice response (IVR) which supported opportunities for either tobacco treatment facilitation or sustain treatment delivery in low socioeconomic groups. The IVR in this study, facilitated direct linkage to a treatment specialist that provided telephone based motivational counseling. Individuals who participated in the telephone counseling were more likely to quit than those that did not [21.1% vs 10.4%. $p < 0.001$]. Lazev et al. (2004) examined the use of cellular phones to increase access to smoking cessation in low income, HIV populations. It was determined that the provision of cellular phones encouraged the implementation of proactive telephone smoking cessation with a two weekend of treatment abstinence rate of 75%.

To date, various research studies have reported a significant benefit of telephone counseling support in smokers of low socioeconomic groups. The project findings demonstrated that telephone counseling can increase the likelihood of achieving smoking abstinence if it is accessible and used as an intervention for smoking cessation as evidenced by the literature.

Strengths and Limitations of the DNP Project

Strengths

The Stevens Star Model of Knowledge Transformation (2004) was the theoretical framework that was employed to support the process for change in the project. It was beneficial in that it provided the strategy to transform evidence of the literature into clinical practice. The five points of the star, (1) discovery research (2) evidence summary (3) translation (4) practice

integration and (5) process outcome and evaluation, identified the steps needed to formulate the clinical decisions needed to achieve the desired patient outcome. Discovery research, the first point of the star began with the identification of the clinic problem. The clinic's daily capacity of three hundred patients prevented efficient time, identification and assessment of outpatient smokers willing to quit by HLE and providers. This created potential barriers to care. Evidence summary, the second point of the star helped determine what worked best for smokers of disadvantaged groups based on the research. Review of the literature highlighted effective interventions and clinical practice guidelines identified for these populations. Through translation, the third point of the star, evidence was galvanized to determine what it meant clinically. It was determined that interventions that used e-referral systems had higher registration numbers and smoking quit rates (Ray et al. 2014). Smokers of low socioeconomic groups that participated in telephone counseling were more likely to quit than those who did not (Haas et al. 2015). Proactive telephone counseling was more effective in achieving prolonged abstinence for 12 months in comparison to the use of self-help booklets (Skov-Ettrup et al. 2016). Smokers who did not use a quit line but received telephone counseling from providers or health educators demonstrated that their chances of stopping smoking enhanced (Matkin et al. 2019). Practice integration, the fourth point of the model, was the process used to facilitate the change in clinical practice. The formulation of an electronic medical order for telephone counseling used as an e-referral through Cerner increased access of care. It created greater identification of smokers willing to quit while providing telephone counseling as an intervention. Process outcome and evaluation, the final component of the star model assessed the impact of the intervention. The primary outcome of the project was to assess if telephone counseling was effective in improving smoking abstinence or cessation. Success of the intervention was measured by improved smoking outcomes in tobacco users younger than 57 years old to those older than 57 years of age. Results demonstrated that access to telephone counseling improved smoking outcomes.

The rigor of the Stevens Star Model of knowledge Transformation (2004), promoted ease of use and application in a clinical setting. Therefore, it was beneficial as a framework. There were other strengths instrumental in the successful implementation of the project. The collaborative support of services such as the healthy lung educators, the director of the healthy lung initiative program, clinical staff and informatics team were essential proponents for the attainment of project goals. Healthy lung educators provided expertise in telephone counseling techniques and strategies that increased and offered choices to smokers while encouraging them to make informed choices and decisions regarding their care. The informatics team provided the skills needed to generate the application of the electronic medical order for telephone counseling for smoking cessation. Clinical staff helped promote a greater awareness of the new access for telephone counseling for smoking cessation during routine team huddles. New strategies or changes in any setting can be considered overbearing stresses or challenges. Notwithstanding, these resources worked diligently to provide the required assistance needed to meet the objectives of the project.

Limitations

This project had several limitations. First the generalizability of the design was limited. There were only twenty-four participants followed for twelve weeks. One participant was excluded from analysis due to suspended participation after the third telephone call and therefore, was not included in the statistical analysis. Robust statistical findings generally afforded thirty or more partakers in research studies although twenty-four participants were involved in this project, the findings were considered clinically significant.

Self-reported cessation by the smokers was the measure in which success of the intervention was determined. Some studies suggest that self-report of smoking status is potentially unreliable (Hilberink et al., 2011). Smokers may overestimate self-report success rates and may not provide valid information regarding their smoking status (Hilberink et al., 2011). Therefore, misreporting may occur when an individual fears disapproval regarding

disclosure of their smoking status to their health care provider. Additionally, the absence of biochemical verification of abstinence such as cotinine was not used. Cotinine a major metabolite of nicotine is often used as a measurement in smoking cessation that assesses tobacco exposure. The capability of exhaled sampling to measure exposure to tobacco was not available at the safety-net facility.

Implications for the Future

Practice

According to the CDC (2015), there are thirty-four million adult smokers in the United States. Over sixteen million have attained at least one disease associated or caused by tobacco smoking (CDC, 2015). Additionally, there are fifty-eight million people within the United States who are exposed to second -hand smoke (CDC, 2015). Smokers have a one-in-two chance that their cigarette addiction will result in their demise. Quitting smoking is the most essential step smokers can take to improve their health outcomes. Medical providers such as advanced practice nurses, registered nurses, physicians and physician assistants have a significant role to play in the efforts to reduce deaths and prevent chronic disease from its usage.

Best practice recommendations have suggested that telephone counseling is an important adjunct and thus be recommended with multiple sessions for smoking cessation (Li, 2016). It is also more effective and accessible than counseling conducted through treatment centers, on-line and work sites (Li, 2016). Furthermore, in disadvantaged populations, high intensity counseling delivered by telephone seems the most promising. It is also less expensive than face-to-face counseling thus having practical implications in this population. Health Care systems that employ accessibility and support to socioeconomically disadvantaged smokers using this intervention have improved health outcomes.

Theory

Stopping smoking can be a hard habit to change. This is especially true for those individuals who have smoked cigarettes for prolonged periods of time. The process of change of breaking an old habit (e.g. cigarette smoking) and adopting a new one (e.g. smoking cessation) is often beneficial. The Transtheoretical Model (Prochaska & Diclemente,1983), is a theory frequently used on smoking cessation that describes how people modify behavioral problems to a beneficial one. The theory suggests that individuals go through five various stages when changing a behavior. The five stages include the following;(1) precontemplation (2) contemplation (3) preparation (4) action and (5) maintenance. Since this project used telephone counseling as an intervention for smoking cessation, the Transtheoretical Model was an appropriate theory to describe the evolution of behavioral modification in a smoker.

The precontemplation stage is characteristic of individuals not being ready to make the commitment for change. This usually manifests as lack of motivation or resistance for help. The theory suggests that people may not be informed during this point or have enough knowledge for the change (Prochaska & Diclemente,1983). Contemplation is the stage in which an individual may weigh the risks and the benefits of the change. The theory determined that an individual in this transition is generally not ready for programs that expect immediate action. The phenomenon is referred here as behavioral procrastination (Prochaska & Diclemente,1983). Preparation is the third stage where action towards change is occurring. Individuals are ready to be recruited for programs that provide interventions for change (e.g. telephone counseling for smoking cessation). Action, the fourth stage of the theory, individuals have made some attempt to change their behavior. One example of this observed in the evidenced based project, was the reduction in the number of cigarettes smoked over twelve weeks by the twenty-four participants. Maintenance, the final stage, individuals are working persistently to continue their lifestyle modification. Researchers have estimated that maintenance on average last six months to five years. (United States Department of Human

services,1990). According to the data, 43% of individuals returned to smoking after 12 months although that risk for relapse drop to 7% after abstinence of five years (USDHHS,1990). Although this project only followed the individuals for twelve weeks continued data collection would be needed to ascertain how well the twenty- four individuals did after one year.

Research

The findings of this project suggest several avenues for future research. Tobacco smoking is both a behavioral and chemical addiction. The project findings demonstrated that telephone counseling can improve smoking cessation outcomes in disadvantaged populations. Future studies need to look at long term follow up of telephone counseling as an intervention and how it impacts maintenance of smoking cessation. Additional work is also needed to develop methods to integrate telephone care into existing health care systems, so that it reaches different populations thus improving strategies for patient recruitment and referral to treatment services in communities.

Education

The U.S. Preventative Services Task Force and Healthy People 2020 guidelines embolden providers to counsel smokers on cessation. Advising practices by health care providers who care for the underserved, are often limited by various barriers such as lack of time, inadequate patient resources, inadequate patient access to care and lack of resources available to the provider (e.g. pharmaceuticals). Additionally, providers' shortcomings in smoking cessation skills can arguably be the most crucial preventable impediment. The safety net -based hospital where the project design was implemented demonstrated many of these barriers. However, one of the themes noted was provider lack of time in providing cessation education in their practices. Therefore, it is important for clinicians to be educated on what preventive services are available to adult smokers to promote disease prevention, time and cost effectiveness. Information such as the use of telephone counseling as an intervention for

smoking cessation can be beneficial knowledge to providers in that its use leads to higher quit rates.

Conclusion

Smoking is a menace to public health. Tobacco usage leads to the development of a multitude of diseases including but not limited to cancer and chronic obstructive lung disease. Primary care settings provide the ideal setting to promote smoking cessation although counseling occurs in 20% to 50% of the clinic visit (CDC, 2015). Clinicians who provide care to the underserved face barriers to providing smoking cessation services. Barriers to the provision for smoking cessation intervention in these populations include barriers such as lack of time, inadequate patient resources, inadequate patient access to care and lack of resources available to the provider (e.g. pharmaceuticals). Studies have shown that high intensity counseling delivered by telephone seem most promising in disadvantaged populations. This project looked at twenty-four self -identified smokers accessed through an electronic medical order, that utilized telephone counseling as an intervention for twelve weeks. It was determined that on average, smokers declined their smoking by two cigarettes over a two-week period. The project demonstrated that access to telephone counseling may improve smoking outcomes.

Therefore, the promotion of smoking cessation must be a top priority for health care clinicians. The primary care provider has a central role in reaching as many smokers as possible and helping them quit. Telephone counseling is a supportive intervention that can help encourage smokers towards tobacco cessation and giving them their best chance to live smoke free.

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Karin Warden-Thomas

Karin Warden-Thomas received her associate degree in nursing, from the University of the Virgin Islands, in St. Thomas the United States Virgin Islands, in 1983. Subsequently, by 2010, Ms. Warden-Thomas received both her bachelor's and master's degrees in nursing, from Saint Xavier University, in Chicago, Illinois. Since 2010, she has practiced as a Family Nurse Practitioner and is certified through ANCC. Ms. Warden-Thomas has experience in cardiac intensive care as well as pre- and post-operative care. Ms. Warden-Thomas currently works as a Nurse Practitioner at John H. Stroger of Cook County Hospital, in Chicago, Illinois, where she has served patients for the past twenty-two years. During her time at Stroger, Ms. Warden-Thomas worked fifteen of her years as a Trauma Nurse Specialist often assuming the role of charge nurse and nurse leader. She also serves as an educational source–working as a preceptor for both students and peers. Ms. Warden-Thomas is currently enrolled as a doctoral student in nursing at Valparaiso University in Valparaiso, Indiana in which her primary research interests include examining whether access to telephone counseling improves smoking cessation outcomes in smokers in disadvantaged populations. She aspires to do mission work in the Sudan and other under-developed countries providing medical care and treatment while spreading the Gospel. Ms. Warden-Thomas has been awarded and is an honorary award recipient, for nursing excellence in the ER, by the National Black Nurses Association- Chicago Chapter. She is a member of Sigma Theta Tau International- the Alpha Omicron Chapter, member of the American Nurses Association (ANA), the American Association of Nurse Practitioners (AANP), CAPNI and the Illinois Nurses Association (INA).

ACRONYMS

ACE: Academic Center for Evidenced-Based Practice

CDC: Centers for Disease Control

COPD: Chronic Obstructive Lung Disease

EBP: Evidenced Based Practice

EHR: Electronic Health Record

EMR: Electronic Medical Record

HLE: Healthy Lung Educator

HLI: Healthy Lung Initiative

IDPH: Illinois Department of Public Health

IVR: Interactive Voice Response

JHNEBP: John Hopkins Nursing Evidence-Based Practice

NHIS: National Health Interview Survey

NRT: Nicotine Replacement Therapy

RCT: Random Controlled Trials

SES: Socioeconomic Status

TTM: Transtheoretical Model

TTS: Tobacco treatment Specialist

USDHHS: United States Department of Health and Human Services

APPENDICES

Appendix A
Summary of Evidence

Summary of Evidence							
Author(s), Year, Publication	Purpose	Method	Setting and Sample	Design	Analysis	Level of Evidence	Grade of Evidence
Bernstein, S.L., Weiss, J.M, Med, M.A., Toll, B., Zbikowski, S.M. (2016). Journal of Substance Abuse Treatment.	Examined the relationship between tobacco abstinence and intensity of use of quit line services	Brochure Motivational interviewing 3 booster telephone counseling Proactive referral to quit line	Low income smokers 18 years and older ER setting Uninsured Medicaid (n=778) 197 reported use of quit line 3 groups: no quit line usage; call only; and greater than one call	2-arm random trial	Chi square test and z-test used for analysis 3 groups: (n-197) No usage 7.2% Low usage 9.1% High usage 15.3% (p=0.03) Among low income smokers greater use of services were associated with higher cessation rates.	Level III	Grade B
Bombard, J.M., Farr, S.L., Dietz, P.M., Tong, V.T., Zhang, L., Rabius, V. (2013). Maternal and	Describe characteristics, referrals, service utilization and Examined telephone	Quit-line Usage in a 7 months self-reported quit rate, referral sources and	1,718 pregnant women and 24,321 non-pregnant women aged 18-44 years	Non-RCT	Chi square tests to compare quit rates by type of service received. Self -reported quit rates were 26.4% for pregnant women and 22.6% for non-pregnant women	Level II	Grade B

Child Health Journal.	smoking cessation quit line use among pregnant and non-pregnant women						
Boyle, R., Solberg, L., Fiore, M. (2014). Cochrane Database of Systematic Reviews.	Examined the use of electronic health records to support smoking cessation	EHR used to help support the linkage of patients to telephone quit lines	Smokers	Systematic Review Six randomized trials	The use of electronic health records helped support the linkage of patients. Interventions that used an electronic e-referral system had higher registration numbers and quit rates.	Level I	Grade A
Fu, S.S., van Ryn, M., Nelson, D., Burgess, D.J., Thomas, J.L., Saul, J., Clothier, B., Nyman, J.A., Hammett, P., Jospeh, A.M. (2016). Thorax.	Test proactive treatment on smoking cessation	Tailored mailings Telephone Calls	N=2406 Disadvantaged smokers	RCT	reduces prevalence smoking/socioeconomically disadvantaged groups	Level I	Grade B

Haas, J.S., Linder, J.A., Park, E.R., Gonzalez, I., Rigotti, N.A., Klinger, E.V., Kontos, E.Z., Zaslavsky, A.M., Brawarsky, P., Marinacci, L.X., St Hubart, S., Fleegler, E.W., Williams, D.R. (2015). JAMA Internal Medicine.	Eval. Proactive treatment on smoking cessation	Usual care Intervention program with telephone counseling/NRT	Low-SES Black, Hispanic and non-Hispanic white	RCT	Intervention group had higher quit rates. Individuals who participated in telephone counseling were more likely to quit	Level I	Grade B
Li, Y.(2016). The Joanna Briggs Institute Evidence Summary.	Examined Base evidence on Telephone counselin g	Summary of findings	smokers	RCT, cross-over RCTs, observat ional, systema tic reviews	3 or more calls increases quit rates; increased rate of abstinence compared to control, telephone recruitment therapy 45x's more successful than media based in attraction to smoking services, proactive counseling long term effect on quitting, mobile phone use increased long term quit rates……	Level 2	Grade A

Matkin, W., Ordonez-Mena, J.M., Hartmann-Boyce, J. (2019). Cochrane Database of Systematic Reviews.	Evaluate telephone support in smoking	Reviewed random -cont. trials or quasi pro or reactive telephone	104 trials Total 111,653 participants	Systematic review	Quit rates higher with multiple sessions of call compared to control conditions [self -help material, one call] Telephone counsel good as adjunct greater effectiveness	Level I	Grade B
Ray, M.N., Funkhouser, E., Williams, J.H., Sadasivam, R.S., Gilbert, G.H., Coley, H.L., Rindal, B., Houston, T.K. (2014). American Journal of Preventive Medicine.	Testing patient referral methods for smoking cessation	E-referral web-assisted vs. paper referral	100 based community dental practices	RCT	Patients referred through e-referral system to Decide2Quit were 4 X s higher than control	Level I	Grade B
Skov-Ettrup, L.S., Dalum, P., Ekholm, O., Tolstrup, J.S. (2014). Preventive Medicine.	Demographics and smoking characteristics in smoking cessation	Internet based smoking cessation; proactive telephone counseling; reactive telephone counseling and a self -help book	Denmark Smokers (n= 1,809)	4-arm RCT	Internet based smoking cessation; proactive telephone counseling; reactive telephone counseling and a self -help book	Level I	Grade A

Skov-Ettrup, L.S., Dalum, P., Bech, M., Tolstrup, J.S. (2016). Addiction.	The effectiveness of telephone and internet text messaging support for smoking cessation	Proactive telephone counseling Reactive telephone counseling Self- help book	Denmark smokers (n=9924) Participated (n=3474)	RCT	Proactive telephone counseling was more effective in achieving prolonged abstinence when compared to the self-help booklet. Odds ratio (OR) for prolonged abstinence vs. self -help booklet was 2.2 [95% CI= 1.2-3.8] after 6 and 12 months.	Level I	Grade A
Vidrine, D.J., Frank-Pearce, S.G., Vidrine, J.I., Tahay, P.D., Marani, S.K., Chen, S., Yuan, Y., Cantor, S.B., Prokhorov, A.V. (2019). JAMA Internal Medicine.	Efficacy of Mobile phone	Tele/call Text NRT	Socio/eco dis advantaged. smokers (n=377)	RCT	Participants in the NRT + text + call group were 2.11 times more abstinent	Level I	Grade A
Whittaker, R., McRobbie, H., Bullen, C., Rodgers, A., Gu, Y. (2016). Cochrane Database of Systematic Reviews.	Mobile phones used for delivery of smoking cessation support	Text messaging linked to video counseling	Smokers (n= 885)	RCT and Quasi randomized trials	Participants who received support through mobile phone usage were 1.7 times more likely to have smoking abstinence in comparison to those that did not have the technology.	Level 1	Grade B

					RR of 1.67 [95%CI 1.46 to 1.90]		
Wu, L., He, Y., Jiang, B., Zuo, F., Liu, Q., Zhang, L., Zhou, C., Liu, M., Chen, H., Cheng, K.K., Chan, S.S.C., Lam, T.H. (2016). BMC Public Health.	'Looked at effectiveness of telephone counseling vs. face to face	Face to face Telephone counseling	Chinese male smokers	Non-randomized control	Quit rates compared Demonstrated that the additional telephone follow-up counseling sessions doubled the quit rate	Level II	Grade B

Appendix B

Does Access to Telephone Counseling Improve Smoking Cessation In Disadvantaged Populations?

Karin Warden-Thomas MSN, APRN, FNP-BC
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Significance of the Problem

- Tobacco usage leads to the development of diseases including but not limited to cancer and chronic obstructive lung disease.
- 34.2 million adults in the united states currently smoke cigarettes (Center for Disease Control, 2015).
- Research has shown that evidence-based interventions such as counseling and pharmacotherapy increase smoking cessation rates.
- Primary care clinics provide the ideal setting to promote smoking cessation although counseling for it occurs in only 20% to 50% of physician visits and pharmacotherapy is prescribed in less than 8% of the visit (Center for Disease Control, 2015).
- Research studies have shown that telephone counseling is an effective avenue in which education and support regarding smoking abstinence can be provided.

PICOT

In smokers from disadvantaged populations, aged fifty-seven years and older does access to telephone counseling have improved smoking cessation outcomes in comparison to those under the age of fifty-seven within a three-month period?

Review of Literature

Search Engine
Keywords: "cell*phone", telephone, "mobile*phone", counseling, counselling and "smoking cessation"
Boolean phrases [AND, OR]
Inclusion: Publications between January 2014- June 2019

Restricted to the English language and scholarly-peered reviews.

Table 1
Evidence

Level VII					
DATA BASE	Evidence Yielded	Duplicates	Non-Relevant Articles	Articles Reviewed	Accepted
Cochrane	16	0	13	3	1
Joanna Briggs	36	1	28	7	2
CINAHL	202	14	147	41	8
Medline	320	18	215	87	0
PsycINFO	135	20	75	40	0
PubMed	270	45	128	27	0

Synthesis of Evaluation

John Hopkins Nursing Evidenced-Based Practice (JHNEBP) Research Appraisal and Non-Research appraisal Tools were used to level the evidence that were elected for use in this project.

Table 2
Levels of Evidence

Evidence Level	Articles Included	Quality
Level 1	8	(2) A; (6) B
Level 2	1	(1)A
Level 3	2	(1)B

Decision To Change Practice

- The out-patient clinic administration observed that referrals to the Healthy Lung Initiative (HLI) for smoking cessation for out -patients were not adequate.
- Healthy lung educators (HLE) for smoking cessation were assigned to the clinic three days a week with only one designated to accommodate daily coverage.
- Clinic daily capacity of 350 patients prevented HLE efficient identification and treatment of out-patient smokers willing to quit.
- Best recommendation as evidenced by research demonstrated that telephone counseling is more effective and accessible than counseling conducted through treatment centers, online and work sites (Li, 2016).
- Telephone counseling is more efficacious for smoking cessation and in disadvantaged populations, high intensity counseling by telephone seems most promising (Li, 2016).

Implementation

Model used: The Stevens Star Model of Knowledge Transformation (Stevens, 2004)

Participants: Twenty-four socioeconomically disadvantaged adult smokers; Six healthy lung counselors

Setting: Urban based public hospital's out -patient clinic

Strategy: Smokers who expressed a willingness to quit smoking were referred through an order for telephone counseling by their primary care provider. Follow up calls were made weekly by trained health educators to all referred participants. The content of the messages included counseling about smoking hazards, benefits of quitting, strategies for quitting, encouragement and lifestyle behavior coaching. Smoking cessation was actualized by the smokers' self –reported weekly cigarette usage.

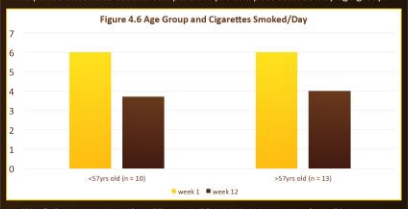
Time interval: Twelve weeks

Intervention: Facilitation of an electronic medical record order for telephone counseling for smoking cessation to improve access to care and promote better health outcomes.

Evaluation

Referrals increase after telephone smoking cessation order implemented.

The paired t-test was used to compare the pre and post cessation by age group.



Week One: Younger than 57 years-old participants reported smoking 6.0 ± 2.83 cigarettes per day.

Older than 57 years-old participants reported smoking 6.0 ± 1.29 cigarettes per day.

Week Twelve: Younger than 57 years-old participants reported smoking 3.7 ± 2 .54 cigarettes per day.

Older than 57 years-old reported 4.0 ± 1.29 cigarettes per day.

The mean difference in cessation was statistically significant (2.3 ± 0.68, $p < 0.01$) for the younger than 57 age group. The mean difference in cessation was statistically significant (2.4 ± 0.7, $p < 0.01$) for the older than 57 years. On average, the younger age group smoked two cigarettes more in the pre versus post assessment. The pattern was also observed in the older age group.

Conclusions and Recommendations

- Telephone counseling increases access to assistance and smoking cessation.
- In disadvantaged populations, high intensity counseling delivered by telephone seems most promising (Li, 2016).
- This strategy, integrated with approaches to encourage its utilization, is an important component of a comprehensive smoking treatment approach.

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