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ASSESSMENT OF A MIDWEST SMOKING CESSATION PROGRAM FOR PREGNANT WOMEN TO INVESTIGATE QUIT AND DROPOUT PERCENTAGES FOR TYPE OF PROVIDER SITE

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ASSESSMENT OF MIDWEST SMOKING CESSATION PROGRAM FOR PREGNANT WOMEN TO INVESTIGATE QUIT AND DROPOUT PERCENTAGES AND SITE PERFORMANCE

By Catherine Gangi

We recommend acceptance of this thesis in partial fulfillment of the candidate's requirements for the degree of Master of Public Health in Community Health Education.

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ABSTRACT

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Smoking during pregnancy has an adverse effect on the health of 400,000 infants each year in the United States. As part of a state level response to this public health need, a Midwest smoking cessation program operates in partnership with 160 prenatal care sites enrolling over 11,000 pregnant women between the years of 2005 and 2015. Over 900 trained healthcare specialists at these sites provide smoking cessation programming as part of existing prenatal care. The intervention includes: individualized smoking cessation counseling, incentives, quit-line information and optional support programming. This descriptive study analyzed data collected via surveys at program enrollment and postpartum to calculate quit and dropout percentages from each provider site type. High performance sites (high quit-low dropout) were compared to low performance sites (low quit rate-high dropout) based on provider site type, and participant characteristics. Top high and low performance provider site types were identified and descriptive statistics established similar characteristics between the provider site types' participants, such as education level, age, marital status, and race. This translational research provides smoking cessation program coordinators with characteristics to guide overall programmatic changes as well as unique recommendations for program sites and positive quit rate outcomes for pregnant women.

Keywords: Pregnant women, smoking cessation program, quit percentage

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INTRODUCTION

Within the U. S., smoking rates during pregnancy have decreased over the years. In 1990, 18% of pregnant women reported smoking and this rate fell to 9% in 2013 (Palmersheim, 2015). When looking specifically at the Midwest, the U.S. Census reported this region as having the highest prevalence of smoking (Jamal, Agaku, Connor, King, Kenemer, & Neff, 2015). Smoking rates during pregnancy in Wisconsin (WI) have been reported to be similar to the national trends: 23% of women who were pregnant smoked in 1990, and 13% of women who were pregnant smoked in 2013 (Palmersheim, 2015). The decrease in smoking rates between 1990 and 2013 equates a 39% relative percent decrease in smoking among Wisconsin pregnant women. However, it is important to note that the most significant change occurred between the years of 1990 and 2003, with smoking during pregnancy trends leveling off from 2004 to 2013.

According to the Behavioral Risk Factor Surveillance System (BRFSS), 17.4% of Wisconsin's adult population (18+) smoked cigarettes in 2014. Women in Wisconsin who are 18 to 24 years old are more likely to smoke during pregnancy (Palmersheim, 2015). In 2008-2010 the prevalence of smoking during pregnancy among women with less than a high school education, or high school graduates were 14 times more likely to smoke during their pregnancy compared to college graduate (Palmersheim, 2015). For marital status, women who were not married in 1990-1992 were 2.5 times more likely to smoke than married women and this rate increased to four times more likely to smoke between 2011-2013 (Palmersheim, 2015).

Across the United States there are multiple smoking cessation programs that are successful: Baby and Me, Tobacco Free Pregnancy Initiative, SCRIPT by Richard Windsor, Smoking cessation during pregnancy: A clinician's guide to helping pregnant women quit smoking by the American College of Obstetricians and Gynecologist, and smoking cessation strategies for women before, during and after pregnancy by the Association of State and Territorial Health Officials (ASTHO). These best practices includes: providing training for providers on how to help women quit tobacco before, during, and after pregnancy, extending pregnancy specific and postpartum quit line services, and promoting awareness of cessations benefits. Best practices also develop customized programs for specific at risk populations, look for points in which to intervene with pregnant and postpartum women, designing and promoting barrier free cessation coverage benefits for both women on public and private health plans, and promoting cessation programs that improve birth outcomes (ASTHO, 2013). These are a few things a successful smoking cessation program would do to help women quit smoking during pregnancy. Two measurements that are also important to look at within best practices is quit and dropout percentages. These are key measurements to show how successful an intervention is through examining how they maintained and encouraged pregnant women to stop smoking during pregnancy throughout the whole program.

Smoking during pregnancy impacts 400,000 babies each year in the U.S. due to the chemicals released from cigarettes (Office of Smoking and Health, Center for Disease Control and Prevention, 2014). Smoking has been reported as a more common behavior than drinking alcohol during pregnancy (Wisconsin Department of Health Services, 2014b). Smoking cigarettes can decrease fertility and delay conception, as well as

increase complications from pregnancy and poor infant health outcomes, such as preterm (early) delivery, stillbirth, low birth weight, sudden infant death syndrome (SIDS), ectopic pregnancy and orofacial clefts in infants (CDC, 2015). Smoking also doubles the risk of abnormal bleeding during pregnancy and delivery. In the United States, three out of every 100 babies are born with major birth defects (Office of Smoking and Health, Center for Disease Control and Prevention, 2014).

To successfully address this public health concern, women need to be exposed to and enrolled in smoking cessation programs. These programs are developed to help provide resources, support and strategies on how to reduce tobacco consumption with the ultimate goal of helping pregnant women quit smoking all together. To show the significance of quitting smoking during pregnancy, a clinical review that was done and reported a 20% decrease in the number of babies having low weight and, and 17% reduction of preterm births due to smoking cessation programs (American College of Obstetricians and Gynecologist, 2011).

The likelihood of women enrolling in a smoking cessation program in Wisconsin was 13.1% of all women (n=25,479) who reported attending a smoking cessation program according to the PRAMS 2009-2011 study. White women held the highest attendee percentage (14.2%), compared to Black (10.1%) and Hispanic women (9.5%).

Smoking cessation programs can yield many benefits when trying to reduce the amount of cigarettes smoked during pregnancy, such as cost effectiveness, increasing smokeless behaviors, and the need for interventions. Smoking cessation programs are also known to reduce the number of women who have infants with low birth weight, decreases perinatal deaths, reduce the number of infants who require care in intensive

care units, and result in shorter hospital stays. A smoking analysis in 2006 reported, smoking cessation programs average $24 to $34 per patient, and could save up to $881 per woman who smokes during pregnancy in the United States (American College of Obstetricians and Gynecologist, 2011). This would save up to $8 million in neonatal cost, providing a 70% increase in quit rate.

This study focused on a Midwest perinatal smoking cessation intervention. The lead organization trains health professionals how to deliver the evidence based tobacco cessation counseling as a part of existing prenatal care at sites by focusing on patient centered counseling, support and health education. Once the pregnant woman discloses to their provider they are using tobacco, the provider will offer this smoking cessation program to her, and it is her decision enroll in it or not. The aim of the cessation program is to help women quit or reduce the number of cigarettes smoked throughout the prenatal period by disseminating the best practices in maternal smoking research, resources, tools and continuing education opportunities. The health professionals that implement the smoking cessation program for the Midwest organization are offered comprehensive tobacco related training and technical assistance when they first join as a smoking cessation site as well as refresher training for existing prenatal care sites that were already enrolled in the program. To help decrease health risks smoking cessation assistance is offered during prenatal visits to assist the women successfully quit smoking.

This descriptive study focuses on one Midwest smoking cessation program that has a total of 162 provider sites and 798 healthcare providers. Within the 162 provider sites, there are 15 provider site types. The purpose of this study was to use secondary data from the Midwest smoking cessation program to identify high and low performing

cessation program provider site types based off of quit and dropout percentages. For this study, a low performance, provider site type has low quit percentages and high dropout percentages as compared to other provider site types. For this study, a high performance, provider site types has high quit percentages and low dropout percentages as compared to other provider site types. In addition, the characteristics associated with the high and low performing provider site types were determined.

BACKGROUND/LITERATURE REVIEW

Smoking while pregnant and throughout the first year post-delivery has negative health consequences for babies. Some health impacts include, but not are limited to: increased risk of cleft lip and cleft palate, increased risk of placenta Previa, placental abruption, premature rupture of the membrane preterm delivery, restricted fetal growth, SIDS, and preterm related death (CDC, 2015; Tong, Dietz, Morrow, D'Angelo, Farr, Rockhill, & England, 2013). When looking at morbidity, babies of smoking mothers have higher risks of permanent growth restriction, brain alterations, severity of infections, as well as attention, behavior and mental health issues (Bailey, McCook, Hodge & McGrady, 2012).

Infants who are exposed to secondhand smoke have shown to have an increased risk of developing respiratory tract infections such as pneumonia and bronchitis, asthma, as well as ear infections and middle ear disease. According to the American Cancer Society, "Environmental tobacco smoke exposure in infants is estimated to cause 150,000 to 300,000 lower respiratory tract infections, along with 200,000 to 1,000,000 children that suffer from asthma attacks annually" (as cited in Americans for Nonsmokers' Rights Foundation, 2009, p.2). Furthermore, infants exposed to secondhand smoke are at an increased risk of childhood learning disorders, as well as developing cardiac and metabolic diseases later in life. Children who had mothers who smoked are also more likely become smokers later in life (Higgns, Washio, Heil, Solomon, Gaalema, Higgins & Bernstein, 2011).

Smoking Rates in Wisconsin

Within the Wisconsin Pregnancy Risk Assessment Monitoring System (PRAMs) data book between 2009-2011, researchers reported that 26% of women smoked cigarettes three months before becoming pregnant. Of the 26% of women who smoked three months before pregnancy only 13.1% of these women were able to quit smoking by the end of their pregnancy, 8.3% were able to reduce the number of cigarettes they were smoking, and 2.6% smoked the same (Wisconsin Department of Health Services, 2014c).

Palmersheim's research in 2008-2013 reveals that northern counties in Wisconsin and a group of centrally located counties smoke the most during pregnancy (Palmersheim, 2015). Wisconsin on average had a 14.1% smoking prevalence during pregnancy but 52 out of 72 counties had a higher smoking rate than the state. When comparing the smoking rates by counties to the fertility rates by counties, there are observable conclusions. Counties in the North such as: Bayfield, Ashland, Vilas, Forest, Marinette, Burnett, Washburn, and Sawyer had the highest fertility and smoking rates (Wisconsin Office of Health Informatics, Division of Public Health, Department of Health Service 2014a; Palmersheim, 2015). When trying to address smoking rates, fertility risks and other health concerns that occur due to smoking during pregnancy, researchers and providers should look to the best practices for smoking cessation programs to help address this public health concern.

Smoking Cessation Best Practices

When researching tobacco control at American Lung Association for the state of Wisconsin, the state earned an A for smoke free air and a B for tobacco taxes, but was ranked at an F for tobacco prevention and access to cessation services (American Lung Association, 2015). Wisconsin was ranked the 10th worst state out of 31 states in 2006

for women who smoke during pregnancy in 2006 (Annie E. Casey Foundation Kids Count Data Center, 2009). Since the state of Wisconsin has been identified as one of the worst states for smoking cessation services, health professionals should be looking for smoking cessation best practices.

According to the U.S. Preventive Services Task Force, health care professionals should be asking about tobacco use and providing materials that are tailored towards pregnant women routinely during prenatal care visits. The U.S. Public Health Service also recommends that clinicians offer effective smoking cessation programs to pregnant women during their first prenatal visit, as well as mentioning it throughout pregnancy. These recommendations are in place due to how addictive tobacco products are which lead women to become dependent and provide negative outcomes for mother and infant. Smoking addiction occurs with physiological and psychological effects which is why best practices includes counseling, cognitive and behavioral therapy, hypnosis, acupuncture, and pharmacologic therapy (American College of Obstetricians and Gynecologists, 2010). Smoking cessation programs for pregnant women have a primary goal to help pregnant women to quit smoking before 15 weeks of gestation to have the greatest benefits for the woman and her baby (England, Kendrick, Wilson, Merritt, Gargiullo, & Zahniser, 2001). Interestingly, 50-60% of women who quit smoking during pregnancy return to smoking within one year postpartum, which in turn puts their health and their babies health at risk (Colman & Joyce, 2003).

One of the best practices for developing a smoking cessation program for pregnant women was developed by the American College of Obstetricians and Gynecologists in 2011 entitled, "Smoking cessation during pregnancy: A clinician's guide

to helping pregnant women quit smoking" in 2011. This program serves as a guide and toolkit to help provide information for clinicians who are trying to integrate effective behavioral interventions with their patients who are trying to quit smoking. The program is based off five steps known as the 5 A's: ask, advise, assess, assist, and arrange. This approach was created by the National Cancer Institute. This intervention follows a specific protocol, algorithm, and uses scripted material that can be modified by clinicians. The first step focuses on *asking* about tobacco use during prenatal visits, recording vital signs, and noting smoking status at every visit. The next step is to *advise* women to stop using tobacco by providing a strong message about the health risks for the mother and her baby. The third A is *assessing* the patient's willingness to quit smoking. The fourth step is *assisting* the patient with a cessation plan by providing support, self-help materials, and problem solving techniques. Lastly, is a*rranging* a follow up visit to monitor smoking status and provides additional support. If a woman does not want to try to quit, clinicians should try a motivational interviewing (MI). Health professionals use (MI) as "a counselling technique for helping people to explore and resolve their uncertainties about changing their behavior" (Lai, Cahill, Qin, & Tang, 2010, p.2). This technique is helpful when addressing pregnant women who are trying to quit smoking through redirecting the individual to choose to change their behavior and encourage their self-belief.

Another evidence based cessation program for pregnant women is SCRIPT (Windsor, 2005). This intervention created by Dr. Richard Winsor, and frequently used by the Agency for Healthcare Research and Quality's Smoking Cessation Clinical Practice Guidelines. The intervention includes: *A Pregnancy Woman's Guide to Quit Smoking, Commit to Quit DVD,* comprehensive counseling using the five A's as well as

follow up counseling, and support to become smoke free at home. The intervention is designed to help pregnant women quit smoking over a ten day period by using a self-directed smoking cessation book after a 10-20 minute session with a counselor to explain how to use the book properly. This cessation program is considered a reimbursable service under the Patient Affordable Care ACT (Windsor, 2005).

Contact Level between Provider and Participant

Smoking cessation programs vary by how much time a health care professional spends with a participant; this is known as contact level. Contact level explores time spent with provider and quit percentages. When comparing quit percentages to contact level, the guidelines state that the standard quit percentage is 10% with no contact from health specialists (U.S. Department of Health and Human Services, 2008). If an individual receives minimal contact with health specialists for three minutes or less, the quit percentage is 13.4%, compared to when low intensity counseling is provided (three to ten minutes) the quit percentage is 16%. If an individual receives higher intensity counseling of ten minutes or more, the quit percentage increases to 22.1%. The level of contact compared to quit percentages as mentioned above from the Clinical Practice guidelines estimates the rate of success an individual will encounter when trying to quit smoking, and the number of sessions a person receives can also increases the quit percentages.

The Clinical Practice guidelines state that if an individual receives four or more cessation sessions, the percentage of quit percentages increases greatly. The guidelines show that if an individual receives one session or less the quit percentage is 12.4% (U.S. Department of Health and Human Services, 2008). For two or three sessions, the quit

percentage increases to 16.3%, whereas four to eight sessions increases to 20.9%. If an individual receives over eight sessions, the quit percentage increases again to 24.7%. This research show the impact of contact level between the health care professional and participant through increasing the time spend together during a smoking cessation program which could increase the chance of a woman being able to quit smoking during pregnancy.

Tobacco Quit and Dropout Percentages for Pregnant Women

Standardized smoking cessation programs for pregnant women have been reported by clinicians to improve smoking quit rates (American College of Obstetricians and Gynecologist, 2011). Through a meta-analysis conducted by the US Public Health Service in 2008, the most effective way for pregnant women to stop smoking is through person to person interventions. Quit rates are 80% higher for pregnant women who received counseling (American College of Obstetricians and Gynecologist, 2011). Another method shown to be effective is implementing handouts and materials designed specifically for pregnant women to provide self-help options compared to generic smoking material.

According to ASTHO (2013), half of female smokers quit when they found out they were pregnant or decided they wanted to become pregnant, but only 5-12 % of women actually quit by the last three months of pregnancy (ASTHO, 2013). One high-risk population that struggles to quit smoking cigarettes are women of low socioeconomic status. These women also have a higher chance of relapse after pregnancy (ASTHO, 2013). Women who are enrolled in Medicaid were 2.5 times more likely to smoke during the last three months of pregnancy compared to women who had their own private

insurance according to PRAMS in 2009-2011 (Wisconsin Department of Health Services, 2014b).

Borrelli, Hogan, Bock, Pinto, Roberts, & Marcus (2002) describe a lack of research on dropout rates due to the inconsistent or ill-defined uses of adherence. Borrelli, et al. (2002) stated, "Adherence in some studies refers to cessation whereas in others it refers to participation in cessation activities (rather than quitting smoking per se). Similarly, attrition in some studies refers to relapse, whereas in others it refers to dropout. To further complicate matters, smoking cessation researchers commonly classify individuals lost to follow up or who drop out of treatment as "smokers" for outcome analyses, producing a confounding of the predictors of relapse (or failure to quit) with predictors of program dropout" (Borrelli et al., 2002, p.23).

Even though there is a gap within the literature when it comes to standardize dropout percentages, the experts within the smoking cessation field use the U.S. Department of Health and Human Services' Clinical Practice 2008 guidelines to determine how successful their program is when it comes to quit and dropout percentages. The Clinical Practice guidelines report that there is an inverse relationship between smoking cessation interventions and quit percentages; that is, the more an individual receives smoking cessation interventions, the higher the quitting percentage is. This guideline also talks about contact level between the provider and participant which was mentioned earlier. Quit and dropout percentages are important measurements that need to be investigated further in the health field to provide standardized percentages health professionals can use when evaluating their smoking cessation program. Through the literature smoking rates during pregnancy were identified along with the health risk

women and their babies will encounter if smoking continues. Best practices were highlighted to show what a success smoking cessation program consist of, as well as addressing quit and dropout percentages. The components are essential when evaluating a smoking cessation program for pregnant women.

METHODS

Study Setting and Population/Participants

This Midwest smoking cessation program is a free program that helps pregnant women quit smoking through one-on-one counseling and personalized goal setting. There are a total of 162 sites represented in this study and 798 healthcare providers from a variety of professions including (but not limited to): health educators, physicians, registered nurses, social workers, psychologists, certified nurse midwives, community health workers, physician's assistants, lactation counselors, and respiratory therapists. The Midwest smoking cessation program was implemented through 15 different provider site types including: clinics, health departments, health maintenance organization [HMO], hospitals, prenatal care coordination [PNCC], PNCC health departments, PNCC combined with women, infant and children [WIC], PNCC social service, social service agency, tribal clinics, tribal home visits, WIC, WIC health departments, WIC standalone departments and unknown provider site type.

Between the years of 2005 and 2015, there were over 11,000 women who had data collected from at least one period of time (enrollment, prenatal visit, or postpartum). At the time of data analysis a sample of 10,464 women had completed the enrollment and 5,311 women completed enrollment and postpartum surveys. About 800 women were removed from the data set due to no data provided at their enrollment period. Women who did not have data points at both periods were not included when calculating quit percentages.

Quit percentages are important because it indicates that certain smoking cessation program were more effective when implementing the program at certain provider sites types in terms of women who completed the program and stopped smoking. Dropout percentages can identify what provider site types were associated with a higher likelihood of maintaining enrollment through the full program, which reasonably can be assumed to be positively correlated with smoking cessation. The aim of this descriptive study using secondary data is to identify high and low performing cessation program provider site types. In addition, the characteristics associated with the high and low performing provider site types are determined.

Instruments and Procedures

This descriptive study utilized secondary data collected by the Midwest organization within the 162 provider sites where the intervention was implemented. Data were collected between 2005 and 2015 at these sites. The Midwest organization collected data through three different surveys provided at three points in time during the women's pregnancy: enrollment, prenatal, and postpartum. Throughout the 10 year time period when data was collected, the surveys used to collect data were modified and adjusted three times. Surveys were administered through hard copy and electronically by a variety of health care providers at each healthcare provider site type. Quantitative data used for this study were based on the survey responses specifically from the enrollment and postpartum surveys.

Pregnant women were included in this analysis if they had answered both of the selected questions, one on the enrollment survey and one on the postpartum survey. The 2005 to 2012 enrollment survey asked, "How many cigarettes per day were you smoking

three month before you got pregnant?" The 2012 and current enrollment survey question similarly asked, "How many cigarettes per day were you smoking one month before you got pregnant?" To calculate the dropout percentage for each provider site type, the researcher used the number of women who had provided data on the enrollment survey, and divided the number of women who had no data provided for postpartum survey and multiplied that result by 100.

To determine if a woman quit smoking, the question on the postpartum survey asked, "How many cigarettes have you smoked per day over the past week?" As long as a woman indicated not smoking on this item, the woman was considered in the study. To calculate the quit percentage for each provider site type, the researcher divided the number of women who reported quitting on the postpartum survey with the total number of women who completed the postpartum survey (minus the women who dropped out) and multiplied that result by 100. The statistical analysis used percentages to allow the different provider site types to be compared to each other in a comparable way even though they vary in size, number of sites, and number of counties.

Research Questions

This descriptive research study is part of a larger research and evaluation project previously conducted for the Midwest organization.

1. What are the quit percentages for the different program provider site types?
2. What are the dropout percentages for the different program provider site types?
3. What is the association between dropout percentages and quit percentages?
4. What are the high and low performance provider site types?

5. What are the program participant's characteristics of high performance and low performance provider sites types who have quit?

Data Analysis

The data analyses consisted of descriptive statistics and a scatterplot analysis utilizing Statistical Package for the Social Sciences (SPSS) version 23. Descriptive statistics included only women who had quit smoking by the postpartum period. The researcher selected one survey question from the enrollment survey to provide a baseline for how much a woman was smoking before pregnancy, as well as one question from the postpartum survey to identify if the woman had quit smoking by the end of the program. The baseline question on the enrollment survey stated, "How many cigarettes per day were you smoking one/three months before you got pregnant?" As long as women complete this item, the woman was considered a current smoker within the last six months.

Once each provider site type had been assigned a quit and dropout percentage the researcher ranked the provider site types, for quit percentages the provider site types were ranked from the highest to lowest quit percentage. When ranking the dropout percentages, the provider site types were ranked from lowest to highest dropout percentages.

RESULTS

Quit Percentages

To calculate the quit percentage for each provider site type, the researcher divided the number of women who reported quitting on the postpartum survey with the total number of women who completed the postpartum survey (minus the women who dropped out) and multiplied that result by 100.

The quit percentage for all women who completed the program was 35% whereas the mean quit percentage by provider site type was 35.66%. The top 25% of provider site types based on quit percentage included PNCC health departments (41.03%), WIC Standalone (40.87%), Tribal Clinics (38.52%) and PNCC combined with WIC (35.92%) (Table 1). The bottom 25% of provider site types based on quit percentages included Social Service Agencies (12.5%), Tribal Home Visits (8.33%), WIC Health Departments (0%) and sites with unknown provider site type (0%).

Dropout Percentages

To calculate the dropout percentage for each provider site type, the researcher used the number of women who had provided data on the enrollment survey, and divided the number of women who had no data provided for postpartum survey and multiplied that result by 100.

The overall dropout percentage for women who enrolled in the program was 48.89% with a mean dropout percentage by provider site type of 53.54%. The 25% of provider site types with the lowest dropout percentages were: Tribal Home Visits (20%), PNCC Social Services Agencies (34.37%), PNCC Health Department (35.49%), and WIC Standalone (36.89%) (Table 2). The 25% of sites types with the highest dropout percentages were: HMOs (68.27%), Social Service Agencies (70.09%), Hospitals (80.18%) and WIC Health Departments (87.5%).

High and Low Performance Provider Site Types

To understand the performance of the various provider site types, the researcher used a scatterplot with quit and dropout percentages to identify the high and low performers. The scatterplot (See Figure 1) displays an inverted relationship where high performance sites can be found in the top left corner of the scatterplot in circle. Low performance sites, as defined by low quit percentages and high dropout percentages, place in the bottom right corner of the scatterplot in circle. The scatterplot had reaffirmed what the researcher had seen in the ranking comparisons when it came to provider site type performances.

The high performing provider site types identified were: WIC Standalones, PNCC Health Departments, and PNCC Social Service Agencies. A high performing provider site type had a quit percentage of over 25% and a dropout percentage of 37% or less. The low performing provider site types identified were: Social Service Agencies, HMO, Hospitals and the unknown sites. A low performing provider site type had a quit rate of 32% or less and a dropout percentage of 66% or higher.

Once the high and low performance provider sites types were identified, descriptive statistics were run on women who had quit smoking to show characteristics of the participants at the different provider site types, such as: number of women at each provider site type, education level, age, marital status, race, number of times an individual attempted to quit smoking, and how frequently women felt the need to smoke when they first wake up.

Characteristics of Participants from High Performance Provider Site Types

When looking at similar characteristics across the high performing provider site types, some common demographics were identified. The most often age reported was between the ages of 24 and 31, with the most frequent being 26 years old. For relationship status, being single was reported most frequently at 14%, followed by being in a relationship (11.5%). The most common education levels for women was completing high school or earning their GED (36.4%) and some college or completing a 2-year college degree (36.9%). Over half the women were unemployed (55.5%). Women were mostly White (79%) or Black/African American (14.9%). When looking at enrollment in programs associated with prenatal care, 88% of women were signed up for Medicaid, 71.8% were part of WIC, and 44.1% were registered for PNCC.

To address the smoking behavior of the high performing provider site type's participants, women reported most frequently starting to smoke between the ages of 12 to 17 years old. When the asked about how soon they needed to smoke a cigarette upon waking up, the most commonly reported answer was immediately within 5 minutes (29.5%). Women reported trying to quit smoking between one to five times, with one being the most frequent number of times trying to quit. When asked about how their

smoking behavior changed since learning they were pregnant, women reported smoked the same or about the same (27%), smoking more (15.6%), and cutting some a little (12%) most frequently.

When comparing women who reported smoking at enrollment to postpartum period; women reported smoking 11 to 20 cigarettes (1 pack) a day prior to finding out they were pregnant (34.4%) at the enrollment period. The second most frequently reported amount was 6 to 10 cigarettes per day (30.9%). By the end of the program, most women reported not smoking at all (24%), smoking 1 to 5 cigarettes (16.8%), or smoking 6 to 10 cigarettes (10.8%). There was a large amount of data missing from the postpartum survey due to the high dropout percentages therefore this makes this unknown category an outlier.

Women were asked about their confidence level at the enrollment to postpartum period in terms of quit smoking. Women reported at the enrollment period only 16.7% reported feeling confident that they would be smoke free one year from now. When the women were asked again about how confident they were they would be smoke free one year from now, 44% report feeling very confident.

Characteristics of Participants from Low Performance Provider Site Types

Before looking for similar characteristics for program participants across the low performing provider site types, descriptive statistics were conducted to identify the number of women per provider site type. When looking for similar program participant characteristics across the low performing provider site types, some common features were identified. The most frequently reported ages were between 25 and 32, with the

most common age being 27 years old. For relationship status, single (14%) and in a relationship (11.5%) was reported more frequently.

The most common education levels for women was completing high school or earning their GED (34.1%) and some college or completing a 2-year college degree (32.6%). Over half the women were unemployed (55.3%) and women were mostly White (50.6%) or Black/African American (44.2%). When looking at enrollment in programs associated with prenatal care, 84.1% of women were signed up for Medicaid, 50.8% were part of WIC, and 19.8% were registered for PNCC.

To address the smoking behavior of the low performing provider site's participants, women reported more frequently reported starting to smoke between the ages of 15-18 years old. Women most often reported trying to quit smoking once (41.9%). When women were asked about how soon they needed to smoke a cigarette after waking up, the most frequently reported answer was immediately within 5 minutes (32.4%). When asked about how their smoking behavior changed since learning they were pregnant, the most frequently reported answer was smoked the same or about the same (16.5%) or indicated that they had cut down a little (10.6%).

When comparing women who reported smoking at enrollment to postpartum, at enrollment the most frequently response when asked about how many cigarettes per day they were smoking before finding out they were pregnant was 11 to 20 cigarettes (one pack) a day (33.6%). The second most frequently reported amount was 6 to 10 cigarettes per day (29.7%). In term of quitting smoking or cutting down on the amount smoked, by the end of the program, 9.5% of women at the low performing provider site types reported not smoking at all, smoking 1 to 5 cigarettes (9.3%), or 6 to 10 cigarettes (6%).

There was a large amount of data missing from the postpartum survey due to the high dropout percentages therefore this makes this unknown category an outlier

Women were asked about their confidence level at the enrollment to postpartum period in terms of quit smoking. Women reported at the enrollment period reported only 25.2% reported feeling confident that they would be smoke free one year from now. When the women were asked at postpartum assessment about how confident they were they would be smoke free one year from now, 45.8% report feeling very confident.

DISCUSSION

This study evaluated a Midwest smoking cessation program and results contribute critical and strategic information related to smoking cessation best practices. When addressing the quit percentage of participants, the overall quit percentage was 35%. Within the literature there is not a clear cut standardized quit percentage, which made it difficult to know how successful a smoking cessation program is compared to other programs. The reason why quit percentages are important to investigate by provider site type is because of the high relapse percentages for pregnant women one year out from pregnancy.

For this Midwest smoking cessation program, the overall dropout percentage was 49%. From discussions with the Midwest organization that provided the data for this study, it seems many women move without communicating with the organization to let them know they will be leaving the program. The dropout percentages can be shown through the large amount of outliers listed when comparing participants from enrollment to postpartum period based on their smoking behavior.

With high performing provider site types including PNCC health departments, WIC Standalones, PNCC Health Departments, and PNCC Social Service Agencies, it is possible that those conducting the cessation program at these sites had more contact between providers and participants due to the nature of the site and based on prioritized professional responsibilities of providers. A majority of high performing provider site

types were either PNCC or WIC related. The program coordinator from the Midwest organization shared the model PNCC sites use coordinates well with the model the Midwest organization's uses when implementing the smoking cession program. This could be on reason why the high performing sites tended to have higher quit percentages and lower dropout percentages. With the low performing provider site types, which included Social Service Agencies, HMO, Hospitals, and unknown, the culture of organization may limit the amount of interaction a participant would receive. These findings are only observations and should be investigated further.

When comparing the low and high performing provider site types by participant's characteristics, there was not any considerable difference between the two groups when comparing demographics and smoking behavior. The age range was slightly different, the low performing provider site types age range was between 25-32 (most frequently reported age being 27) compared to the high performing provider site types age range which was 24-31 (most frequently reported age being 26). This shows the low performers a little older than high performers but not by much. The number of times women tried to quit smoking also varied a little. Low performing provider site types attempted to quit 1-2 times compared to the high performing provider site types which attempted to quit 1-5 times. This shows that the high performer participants had reported trying to quit smoking a few more times than the low performer participants. The age women started smoking was slightly different, the high performers started smoking a little younger (12-17 years) old compared to the low performers (15-18 years old).These finding may indicate that provider site type participant's characteristics do not have a large enough effect to show if the smoking cessation program would be successful or not.

Since the women throughout the state who are enrolled in this program are similar, future investigations should be done on the type of provider of the intervention and how the program is implemented at each provider site type when looking at substantial impacts on quit and dropout percentages.

CONCLUSION

Within reproductive health research and practice, a public health need is identified when looking at who smokes during pregnancy and how likely smokers are to have access to and complete effective cessation programming. Women who enroll in smoking cessation programs during pregnancy report having an 80% higher quit rate than women who do not (American College of Obstetricians and Gynecologist, 2011). Health interventions that are specifically designed to help with this behavior and lifestyle change are necessary to improve quality of life for pregnant women who smoke. Within the professional literature focused on smoking cessation, being of a certain race and age, dependence on Medicaid, and low education level were referenced as key characteristics of women who smoke during pregnancy (Wisconsin Office of Health Informatics, 2014; PRAMS 2009-2011). Since completion of interventions is essential to maximize the likelihood of quitting, studies also show that there is a need to address high dropout rates and the reasons for why women dropout of smoking cessation programs. Programs consistent with the best practices focus on tailoring the program to meet the needs of women who smoke during pregnancy. As an example of this, the Midwest organization's smoking cessation program described in this study implemented a texting resource to help provide information and social support for women.

Wisconsin has outlined a state plan on how to reduce the impact of tobacco on adults by elimination of secondhand smoke exposure, treating tobacco dependence,

prevention the initiation of tobacco use, and eliminating tobacco related health disparities (Wisconsin Tobacco Prevention and Control, 2014). In accordance with the goal of eliminating tobacco related health disparities, the Midwest organization that provided the data for this study has contributed by helping reduce smoking among women who are pregnant.

One recommendation for future research would be to investigate why such a large percentage of women drop out the program overall. Determining why there is such a high dropout percentage would be a good future step to ensure the organization knows what is going on within their program population. One way to address this barrier of program completion would be to think of an innovative system or survey to follow up with women who dropped out of the program. One way would be to expand the social interaction between the participants with the organization.

Currently this Midwest smoking cessation program has put effort into setting up text messages to help support and encourage women to quit smoking. Another suggestion would be to set up a longer follow up with women after postpartum. Currently, this Midwest smoking cessation program follows up with women within six months giving birth. The literature shows that pregnant women struggle to remain smoke free one year after giving birth, and relapse.

Future Implications for Application

This descriptive study helped identified the high and low performers by provider site type for this Midwest smoking cessation program. This information will benefit the health education coordinators from the organization. Through this study, health

educators will be able to model how a Midwest smoking cessation program was able to compare quit and dropout percentages within various provider site types.

An observation that would need further investigation would be to research how the type of provider impacts a pregnant woman's ability to quit smoking during pregnancy and stay quit. The provider type and how they implement the smoking cessation program seems to vary by provider site type, which could influence quit and dropout percentages. This study may lead program coordinators to investigate what barriers the providers are running into when implementing the program or gathering data. This study helped allow program coordinators the opportunity to go to the high and low performing provider site types to further explore what is working or not working within sites. The program coordinators expressed through their work that they knew certain types that were more successful when implementing the program, but didn't have any data or rationale to support their claims.

Currently, the way the data is recorded and collected at each site varies, and no standardized system is in place. The Midwest smoking cessation program was aware of this barrier, but as this study went on, it became more apparent as a problem that needed to be addressed in the future. The organization is working on a standardized process to collect the information electronically, which will increase consistency in the data collected. Through conversations with the statistician, the primary researcher was made aware of this barrier in implementing this Midwest smoking cessation program. Identifying a data collection and evaluation process will help the organization assess how the program being implemented and show the effectives of the program and its outcomes

As it comes to program suggestions, the next step would be to conduct interviews with providers to find out whether there are unique characteristics present for low versus high performing provider site types as it comes to implementation and data collection. Another suggestion would be to create a survey to be distributed to providers to explore how much time each provider is spending with each participant. Since there was no considerable difference in participant's characteristics, more investigate should be down to see how the different provider site types implement the program to identify what variables are in place to make one site have higher quit percentages and lower dropout percentages.

These recommended next steps may also benefit other state-wide smoking cessation programs and professionals because they contribute to a process evaluation that can more clearly identify barriers to smoking cessation program completion and quit percentages as a result of program participation. Other state leaders in the field including the Wisconsin Alliance for Women's Health, Providers and Teen Communication for Health (PATCH), March of Dimes, Health Care Education and Training (HCET) and Perinatal Foundation. These goals of these organizations are to promote health policies for women, provide evidence based studies and resources, along with providing accurate health education and reproductive health information. Together, these organizations make up the Wisconsin Healthiest Women Initiative that focuses on two areas 1.) Sexual health and pregnancy planning and 2.) Socioeconomic and environmental determinates of health (Wisconsin Healthiest Women Initiative, n.d.). These leaders and the partnerships between them are likely to continue to have a positive impact on the public health concern of smoking during pregnancy in the state of Wisconsin.

Table 1. Quit Percentages by Provider site type

Provider site type	Quit Percentage
PNCC Health Department	41.03
WIC Standalone	40.87
Tribal Clinic	38.52
PNCC and WIC	35.92
PNCC	34.35
Hospital	32.06
HMO	31.64
Health Department	30.88
Clinics	27.97
WIC	25.53
PNCC Social Service	25.39
Social Service Agency	12.5
Tribal Home visit	8.33
WIC Health Department	0
Unknown	0

Table 2. Dropout Percentages by Provider site type

Provider site type	Dropout Percentage
Tribal Home visit	20
PNCC Social Service	34.37
PNCC Health Department	35.49
WIC Standalone	36.89
WIC	41.25
PNCC and WIC	41.65
PNCC	45.83
Tribal Clinic	52.15
Health Department	60.46
Clinics	61.57
Unknown	66.66
HMO	68.27
Social Service Agency	70.9
Hospital	80.18
WIC Health Department	87.5

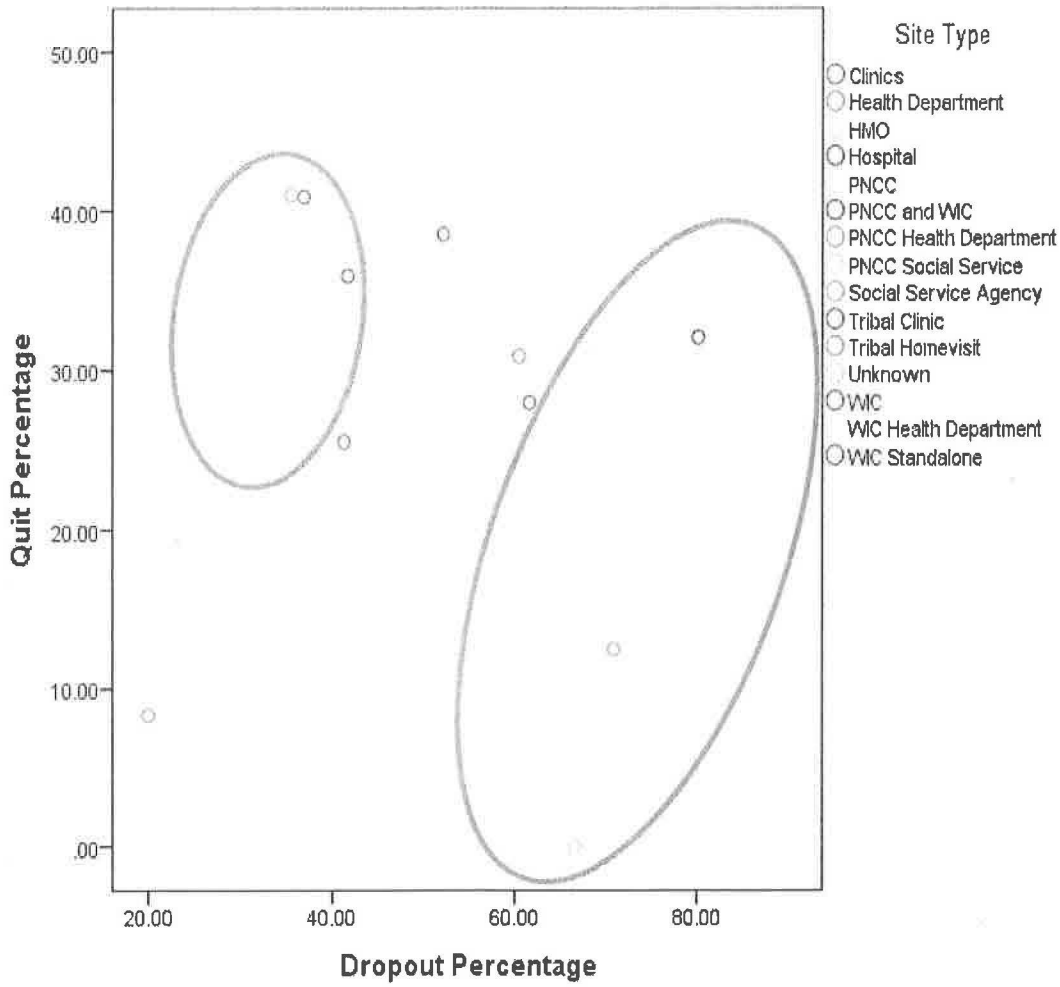

Figure 1. Scatterplot of Provider site type Performance Based on Quit and Dropout Percentages

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APPENDIX A

DEFINITION OF WORDS

DEFINITION OF WORDS

Current smoker. An adult over the age of 18 who has smoked over 100 cigarettes in their lifetime and reported smoking every day or on some days (Office of Disease Prevention and Health Promotion, 2016).

Enrollment period. When a woman enrolls in the smoking cessation program, but to be eligible they must be a WI resident and smoking tobacco currently or within the last six months.

Prenatal period. Prenatal care is the health care a woman gets while being pregnant, which includes checkups and prenatal testing. Prenatal care can help keep the mother and her baby healthy, by allowing the health care provider to spot health problems early, and provide early treatment and prevention when needed (U.S. Department of Health and Human Services, Office of Women's Health, 2016).

Postpartum. This time period includes the 6-8 weeks after the birth of an infant (Wisconsin Office of Health Informatics, 2014). For data collection the survey was to be administered during a woman's first postpartum visit.

Dropout percentage. To calculate the dropout percentage for each provider site type, the researcher took the number of women who completed the enrollment survey divided by the number of women who have no data provided at postpartum survey multiplied by 100.

Quit percentage. To calculate the quit percentage for each provider site type, the researcher took the number of women who completed the enrollment survey minus the number of women who dropped out to find the dominator. The numerator was the

number of women who reported quitting on the postpartum survey divided by the dominators x 100.

Low Performance provider site type. For this study, low performance provider site types have low quit percentages and high dropout percentages as compared to other provider site types.

High Performance provider site type. For this study, high performance provider site types have high quit percentages and low dropout percentages as compared to other provider site types.

Provider site types. Within this study, there are 15 provider site types that were assigned by the organization that provides the professional trainings for the smoking cessation program. They are: clinics, health departments, health maintenance organization [HMO], hospitals, prenatal care coordination [PNCC], PNCC health departments, PNCC combined with women, infant and children [WIC], PNCC social service, social service agency, tribal clinics, tribal home visits, WIC, WIC health departments, WIC standalone departments and an one unknown provider site type.

APPENDIX B

LITERATURE REVIEW

LITERATURE REVIEW

Healthy People 2020

One of the Healthy People 2020 goals was to "Reduce illness, disability and death related to tobacco use and secondhand smoke exposure" (Office of Disease Prevention and Health Promotion, 2016). To address this public health concern, Healthy People 2020 created three key areas: tobacco use prevalence, health system changes, and social environmental changes. These key areas will help develop policies, implement strategies to help increase access, affordability, increase treatment options, increase cost of tobacco products, and reduce sales to minors.

When focusing on cigarette smoking during pregnancy, there are three objectives with which to address this issue: "1) reduce the prevalence of smoking before pregnancy to 14% (objective MICH-16.3), 2) reduce the prevalence of cigarette smoking among pregnant women to 1.4% (objective MICH-11.3), and 3) increase the percentage of pregnant smokers who stop smoking during pregnancy to 30% (objective TU-6)" (Tong et al., 2013, p.2).

Healthy Wisconsin 2020: Everyone Living Better, Longer

Healthiest Wisconsin 2020 was developed to provide a Midwest community health improvement plan with the ultimate goals of: "improving health across the lifespan and eliminating health disparities to achieve health equity" (Wisconsin Department of Health Services, 2015). In 2010, an estimated 8,000 people in Wisconsin die from tobacco related illnesses each year, costing the state more than $2.2 billion annually in healthcare costs and $1.6 billion in lost productivity (Wisconsin Department of Health Service, 2010). There has been success in reducing adults and youth smoking throughout the

state; however, high-risk populations still continue to smoke. By 2020, Wisconsin's goal is to reduce tobacco use and exposure by 25% for adults.

Wisconsin was ranked the 10th worst state out of 31 states in 2006 for women who smoke during pregnancy in 2006 (Annie E. Casey Foundation Kids Count Data Center, 2009). The majority of maternal and infant health data about the state of Wisconsin were collected through the pregnancy risk assessment monitoring system also known as PRAMS. PRAMS is a surveillance project for the Centers for Disease and Control and Prevention and state health departments. PRAMS effectively targets what is currently going on statewide by asking women about their cigarette smoking behavior three months before becoming pregnant, the last three months of pregnancy, and 3 to 6 months after giving birth (Wisconsin Department of Health Services, 2014a).

Another valuable research study that focused on smoking during pregnancy was conducted in 2015 by Karen Palmersheim at the University of Wisconsin- Milwaukee. Palmersheim is an epidemiologist and researcher that partnered up with the Wisconsin Department of Health Services, Division of Public Health, Bureau of Community Health Promotion, Tobacco Prevention and Control Program. The report's intent was to discover trends of women who smoke during pregnancy between 1990 to 2013 in Wisconsin, and identified trends and patterns that occurred. The report also looked at different demographics within Wisconsin and compared those statistics with the national statistics targeting smoking during pregnancy. Below is a comparison of data collected between Palmersheim Report and the Wisconsin PRAMS report when it comes to the demographics of women smoking during pregnancy in Wisconsin. The data shows there were similarities as well as some slight differences when comparing the new reports.

Prevalence of smoking before pregnancy according to PRAMS data

PRAMS 2009 to 2011 data reported women between ages of 20-24 are more likely to smoke three months before pregnancy than other age groups. The most frequently reported education level for Wisconsin women was having a high school diploma or less. Women also reported not being married, and relying on Medicaid or were uninsured three months before pregnancy. Within this group, only 26% of women reported being smokers. Within the women who reported being smokers, 13.1% quit, 8.3% reduced the amount of cigarettes smoked, and 4.6% remained the same.

Prevalence of smoking during pregnancy according to Palmersheim's Research

Women in Wisconsin who are 18 to 24 years old are more likely to smoke during pregnancy. When it comes to education level by 2008-2010 the prevalence of smoking during pregnancy among women with less than a high school education, or high school graduates were 14 times more likely to smoke during their pregnancy compared to college graduate (Palmersheim, 2015). For marital status, women who were not married in 1990-1992 were 2.5 times more likely to smoke than married women that increased to 4 times more likely to smoke between 2011-2013 (Palmersheim, 2015). Another high risk for women is having more smokers in their social network than not (Massey & Compton, 2013).

In terms of the likelihood of women enrolling in a smoking cessation program, 13.1% of all women (n=25,479) reported attending a smoking cessation program according to the PRAMS 2009-2011 study. White women held the highest attendee percentage (14.2%), compared to Black (10.1%) and Hispanic women (9.5%).

Wisconsin Demographics

Fertility rates

In Wisconsin there were 67,119 live births in 2014, which was an increase of 553 babies from 2013 (Wisconsin Office of Health Informatics, 2014). The general fertility rate was 61.8 births per 1,000 Wisconsin females aged 15 to 44 compared to the national rate of 62.9.

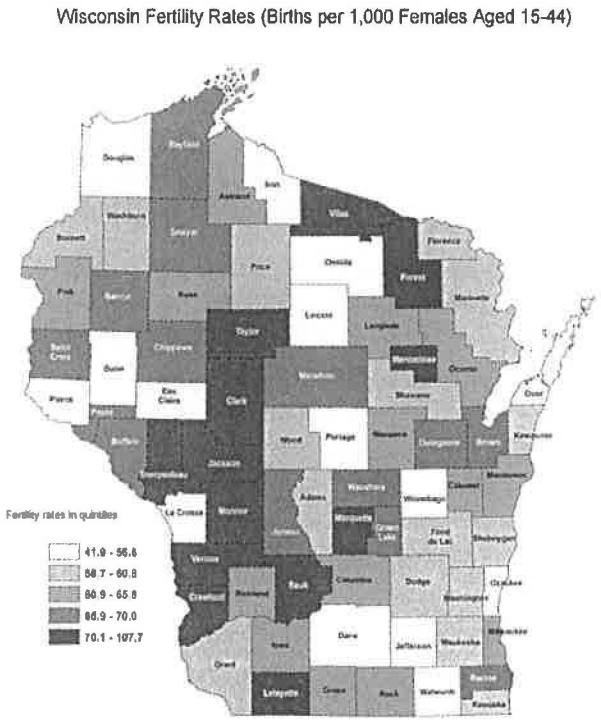


Figure 1. Wisconsin Fertility Rates (Births per 1,000 Females Aged 15-44)

This map shows the fertility rates by county for Wisconsin in 2014. This map displays that highest rates tend to be on the west side of the state.

In Wisconsin, 7.3% (n=4,925) of babies were born with low birth weight (2,500 grams or under 5.5 pounds) (Wisconsin Office of Health Informatics, 2014). When looking at babies born prematurely (less than 37 weeks), 9.1% (n=6,137) of Wisconsin

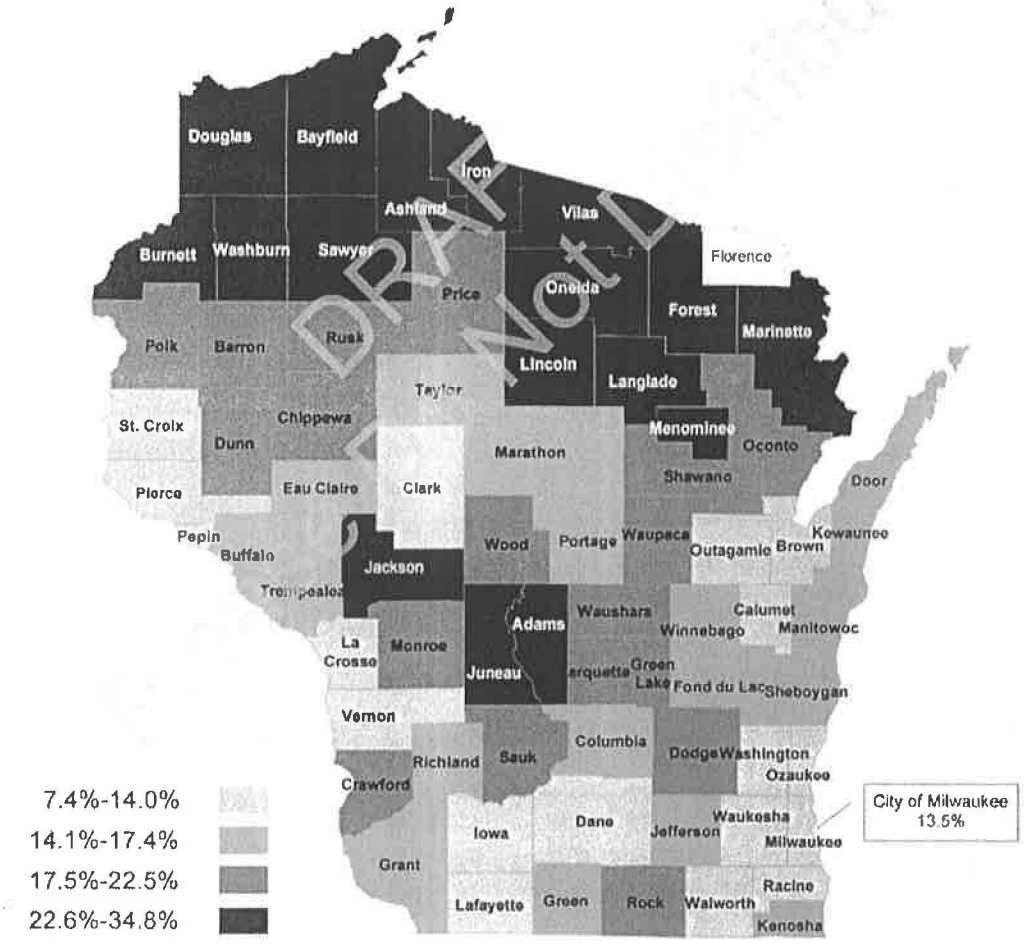
infants birth were reported, with 1.3% being born at very low birthweight (less than 1,500 gram or about 3.3 pounds) (n=891). This data aligns with what was collected by the Wisconsin PRAMS data that reported, 7% of births in Wisconsin were born with a birth weight less than 2,500 grams (Wisconsin Department of Health Services, 201b).

Race and tobacco use

As for infant mortality rates for Wisconsin, one of the more significant findings is the declining trend of smoking rates over the last 10 years for pregnant women; however there are racial disparities that need to be addressed. The Black infant mortality rate (13.8 deaths per 1,000) was three times greater than for Whites (4.8 deaths per 1,000) in 2010 (Wisconsin Office of Health Informatics, 2014). About 8.1% of Black women (two times more likely than Hispanic or White woman) had low birthweight in a previous birth (Wisconsin Department of Health Services, 2014b).

In Wisconsin, American Indians, Hispanic, non-Hispanic Black, and non-Hispanic White women who were pregnant reported smoking double compared to the national averages (Palmersheim, 2015). American Indian women had the highest prevalence of smoking during pregnancy. Data collected by Palmersheim (2015), showed that from 1990 to 2013, the greatest decrease in smoking during pregnancy was experienced by Hispanic women, with American Indian women reporting the smallest decrease. These statistics show there could be a potential need for smoking cessation programs to tailor programs to different races. There may be different barriers each culture encounters when trying to quit smoking during pregnancy.

Smoking Rates by WI Counties



* Data on smoking were not available for Florence County for 2011-2013 due to small sample size.

Figure 2. Prevalence of Smoking during Pregnancy by County, in Quartiles, Wisconsin, 2011-2013

Wisconsin counties from 2008-2013, shown in the figure above reveals that northern countries and group of centrally located counties smoking the most during pregnancy (Palmersheim, 2015). Wisconsin on average had a 14.1% smoking prevalence during pregnancy but 52 out of 72 counties had a higher rate that the state rate.

When you compare the smoking rates by county map to the fertility map by county, there are interesting conclusions. Counties in the North such as: Bayfield, Ashland,

Vilas, Forest, Marinette, Burnett, Washburn, and Sawyer had the high fertility and smoking rates (Wisconsin Office of Health Informatics, Division of Public Health, Department of Health Service 2014a; Palmersheim, 2015). When trying to address smoking rates, fertility risks and other health concerns that occur due to smoking during pregnancy, it is important to research what successful smoking cessation programs within the nation are being used as best practices to help address these this public health concern.

Smoking Cessation Best Practices

To successfully address this public health concern, women need to be exposed to smoking cessation programs. These programs are developed to help provide resources, support and strategies on how to reduce tobacco consumption with the ultimate goal of helping pregnant women quit smoking all together. To show the significance of quitting smoking during pregnancy, a clinical review that was done and reported a 20% decrease in the number of babies having low weight and, and 17% reduction of preterm births (American College of Obstetricians and Gynecologist, 2011). There are other benefits of using a smoking cessation program besides the health benefits for the baby. When a woman quits smoking, she reduces her risk of coronary heart disease for women less than 50 years of age. Other health risks decreased include cervical cancer, kidney disease, respiratory disease, hip fractures, menstrual disorders, early menopause, fertility problems and depression (US DHHS, 2001).

Smoking cessation programs can yield many benefits when trying to reduce the amount of cigarettes smoked during pregnancy, such as cost effectiveness, increasing smokeless behaviors, and the need for interventions. Smoking cessation programs are

also known to reduce the number of women who have infants with low birth weight, decreases perinatal deaths, reduce the number of infants who require care in intensive care units, and result in shorter hospital stays. A smoking analysis in 2006 reported, smoking cessation programs average $24 to $34 per patient, and could save up to $881 per woman who smokes during pregnancy in the United States (American College of Obstetricians and Gynecologist, 2011). This would save up to $8 million in neonatal cost, providing a 70% increase in quit rate.

Researchers found there is an increase in smokeless tobacco products, such as chewing tobacco, snuff, dissolvable tobacco strips and electronic cigarettes (American College of Obstetricians and Gynecologist, 2011). These products are addictive, as well as dangerous for pregnant women and their babies. This shift to smokeless tobacco products are not a safer option when a woman is trying to quit therefore smoking cessation programs are necessary to continue to help women quit using tobacco.

Smoking cessation interventions are ideal when encouraging women to quit smoking during pregnancy, as the physician will see their patients more frequently for appointments. Since tobacco is highly addictive and difficult to quit, it highlights the importance of providing assistance through programs and behavioral strategies to women who are at a high risks of continuing to smoke through pregnancy. According to the American College of Obstetricians and Gynecologist, "Women are more likely to quit smoking during pregnancy than at any other time in their lives" (2011). Women during pregnancy are motivated to become healthy to ensure their baby can be as healthy as possible. According to ASTHO (2013), best practices for smoking cessation programs include providing training for providers on how to help women quit tobacco before,

during, and after pregnancy, extending pregnancy specific and postpartum quit line services, promoting awareness of cessations benefits and the effectiveness of treatments through various channels, developing customized programs for specific at risk populations, looking for points which to intervene with pregnant and postpartum women, designing and promoting barrier free cessation coverage benefits for both women on public and private health plans, and promoting cessation programs that improve birth outcomes.

According to the Agency for Healthcare Research and Quality report in 2013, a review was conducted by the British Columbia Centre for Excellence in Women's Health in 2011 that identified 97 studies, with only 14 interventions showing positive effects that include counseling, self-help materials, and incentives. This report also identified 56 interventions as weak and 27 interventions showing promise. Agency for HealthCare Research and Quality report stated, "In 2009 Cochrane review of randomized and quasi randomized trials was conducted between 1975 to 2008 and concluded that smoking cessation interventions in pregnancy did reduce the proportion of women who continue to smoke in late pregnancy"(2013, p.2). This report shows that there is a need for using best practices when addressing smoking cessation programs for pregnant women.

One of the best practices for developing a smoking cessation program for pregnant women was developed by the American College of Obstetricians and Gynecologists in 2011 entitled, "Smoking cessation during pregnancy: a clinician's guide to helping pregnant women quit smoking" in 2011. This program serves as a guide and toolkit to help provide information for clinicians who are trying to integrate effective behavioral interventions with their patients who are trying to quit smoking. The program

is based off five steps known as the 5 A's: ask, advise, assess, assist, and arrange. This approach was created by the National Cancer Institute. This intervention follows a specific protocol, algorithm, and uses scripted material that can be modified by clinicians. The first step focuses on *asking* about tobacco use during prenatal visits, recording vital signs, and noting smoking status at every visit. The next step is to *advise* women to stop using tobacco by providing a strong message about the health risks for the mother and her baby. The third A is *assessing* the patient's willingness to quit smoking. The fourth step is *assisting* the patient with a cessation plan by providing support, self-help materials, and problem solving techniques. Lastly, is a*rranging* a follow up visit to monitor smoking status and provides additional support. If a woman does not want to try to quit, clinicians should try a motivational intervention.

Another evidence based cessation program for pregnant women is SCRIPT (Windsor, 2005). This intervention created by Dr. Richard Winsor, and frequently used by the Agency for Healthcare Research and Quality's Smoking Cessation Clinical Practice Guidelines. The intervention includes: *A Pregnancy Woman's Guide to Quit Smoking, Commit to Quit DVD,* comprehensive counseling using the five A's as well as follow up counseling, and support to become smoke free at home. The intervention is designed to help pregnant women quit smoking over a ten day period by using a self-directed smoking cessation book after a 10-20 minute session with a counselor to explain how to use the book properly. This cessation program is considered a reimbursable service under the Patient Affordable Care ACT (Windsor, 2005).

Lai, Cahill, Qin, & Tang, conducted a study to see if motivational interviewing would be successful when used in a smoking cessation program in 2010. Motivational

interviewing (MI) is "a counselling technique for helping people to explore and resolve their uncertainties about changing their behavior" (Lai et al. 2010, p.2). Lai et al. selected 14 published studies between 1997 to 2008 which consisting of over 10,000 smokers. They put the studies into four trials with each session lasting between 15 to 45 minutes long. The trials focused on primary care physicians, hospital clinicians, nurses and counsellors. The Lai et al. (2010) meta-analysis of MI compared to brief advice or usual care showed a significant increase of quit rates. The most effective sessions were when MI was conducted by a primary care physician or a counselor, in sessions longer than 20 minutes, with more than one session.

According to the U.S. Preventive Services Task Force, clinicians should be asking about tobacco use and providing materials that are tailored towards pregnant women as a routine during prenatal care visits. The U.S. Public Health Service also recommends that clinicians offer effective smoking cessation programs to pregnant women during their first prenatal visit, as well as mentioning it throughout the next prenatal visits. These recommendations are in place due to how addictive tobacco products are which lead women to become dependent. This behavior occurs due to physiological and psychological effects which is why smoking cessation techniques may include counseling, cognitive and behavioral therapy, hypnosis, acupuncture, and pharmacologic therapy (American College of Obstetricians and Gynecologists, 2010). Smoking cessation programs' primary target is help pregnant women to quit smoking before 15 weeks of gestation to have the greatest benefits for the woman and her baby (England, Kendrick, Wilson, Merritt, Gargiullo, & Zahniser, 2001). Interestingly, 50-60% of women who quit smoking during pregnancy return to smoking within one year

postpartum, which in turn puts their health and their babies health at risk (Colman & Joyce, 2003).

In 2013, the state of West Virginia (WV) created a smoking cessation program called Tobacco Free Pregnancy Initiative through the WV Bureau for Public Health's Division of Tobacco Prevention (Break Free Alliance, 2013). This program was developed due to WV Vital statistics data that reported 26.3% of women were smoking during pregnancy, which is double the national rate (13%). This smoking cessation program was funded through federal and state dollars and was labeled a best practice by the CDC. The focus of this program was to educate pregnant women about the harmful effects of smoking through in person counseling sessions. The program helped healthcare providers encourage cessation at every encounter, and offered strategies to improve birth outcomes with women.

The state of WV also produced education and a media campaign to express the impact of restricted fetal growth on the developing infant instead of using the phrase low birth weight. Through collaborations with the WV Office of Maternal Child and Family Health, an in-home visitation program was developed called Right from the Start. Fifty-five clinics were used to provide the tobacco cessation programs, as well as working with community agencies to help provide educational materials. One of the partnerships created with the Break Free Alliance, which was a Health Education Council. Other efforts were being made to increase tax on tobacco products, and allocate funds for tobacco prevention and cessations efforts for pregnant women. Another action that is needed is to provide easier access to nicotine replacement therapy (Break Free Alliance, 2013).

A study conducted by Gadomski, Adams, Tallman, Krupa and Jenkins (2011) focused on addressing a prenatal and postpartum smoking cessation program called *Baby and Me*. The program is facilitated through four face to face counseling sessions, carbon monoxide testing and random saliva cotinine testing with monthly postpartum interventions. Incentives in the form of diaper vouchers were given to women whose test results came back negative on the biochemically tests that were conducted every 3-4 weeks for year. The program was held though 22 WIC offices and prenatal clinics in upstate New York. There were 588 women enrolled in the postpartum study, divided into three groups: group 1 and 2 were assigned to multi-tasking counselors at fixed sites whereas group 3 was assigned to smoking cessation specialists. The goal of the program was to have a 60% quit rate. Group 3 showed higher quit rates compared to the other two groups. Predictors of abstinence at 6 months postpartum were: age, lower baseline monoxide level, and attending more prenatal sessions.

The Metropolitan Atlanta Congenital Defect Program (MACDP) is the oldest population based birth defect surveillance system in the US (MMWR, 2008). This statewide program in Atlanta, Georgia collects data through hospital-based reporting and active medical record abstracts. The MACDP "monitors all major structural or genetic defects at the time of delivery among live births, stillbirths, and pregnancies electively terminated after prenatal diagnosis of defects at >20 weeks gestation in the five central counties" (MMWR, 2008, p.1). The results are presented in three categories: (1) malformation, deformation or disruption in one or more parts of the body, chromosomal abnormality, clinical syndrome, (2) present at birth, and (3) serious or adverse effect on health, development or functional ability. The results showed there was no overall

common occurrence of major birth defects in Atlanta from 1978 to 2005. There was a greater prevalence of birth defects among infants with low birth weight and preterm gestation which could suggest a need for increased prenatal care visits and family planning services (MMWR, 2008).

Within the Tong et al., 2013 report, recommendations to help reach the national goals of reducing smoking among pregnant women include tobacco-control policies, awareness campaigns, and price increases on tobacco products. In one study, a $1 increase on cigarettes taxes and prices increased quitting rates among pregnant women from 44.1% to 48.9% and decreased the percentage of women who relapsed in the early postpartum period. Higher cigarette prices also increased the probability of full term birth with the largest improvement among low-income women (Tong et al., 2013).

According to Page, Slejko, and Libby study in 2012, a citywide smoking ban can help reduce maternal smoking and risks for preterm babies. The study compared two similar cities in Colorado based off population, size and geography. These sites had a pre-ban and post-ban retrospective observation period. The results showed that the city with a citywide ban on smoking had lower maternal smoking (38%) and preterm babies (23%) but no significant effect on low birth weight. This study was the first evidence reported in the United States on a successful population based intervention to reduce maternal smoking behavior and improve birth outcomes (Page, et al., 2012).

Midwest Smoking Cessation Program

This specific Midwest smoking cessation program helps women to quit or reduce smoking through evidence-based tobacco cessation counseling as part of existing prenatal care. The program's mission is to improve maternal and child health in Wisconsin

through perinatal tobacco cessation programming. In 2014, there were 161 smoking cessation sites, and a total of 971 trained providers. Providers come from a multitude of professional backgrounds, including registered nurses, midwives, physicians, physician assistants, social workers, nutritionist, outreach specialists, community health workers, and psychologists. Over 11,000 women have participated in this smoking cessation program since 2005. For women to enroll, they must be a Wisconsin resident and be a current smoker or report smoking in the last six months. Incentives to participate in this program are: individualized smoking cessation counseling from a trained provider, educational and self-help material, gift at delivery, quit line information and optional support programming (text messaging, and tips through Facebook page).

Funding is provided from the State of Wisconsin Tobacco Prevention and Control Program ($300,000 for 2014). Through partnerships with the University of Wisconsin Center for Tobacco Research and Intervention, and the Wisconsin Department of Health and Human Services, this program received a grant from the Centers for Medicare and Medicaid Services to conduct Striving to Quit research study. Funds from *Striving to Quit* were used to support this program expansion and evaluation.

To collect data, women enrolled in the program were asked to fill out three surveys: one at enrollment, one during a prenatal visit, and one postpartum. In 2014, 1,465 women were enrolled in the program with the average age being 26, and participants were mostly white, had a high school education or lower, were unemployed, and enrolled in Medicaid. From the 2014 executive summary report, this Midwest smoking cessation program had 240 women (33.52%) quit smoking and 334 (46.65%) had cut down smoking at program sites by the third trimester. For birth outcomes, 78% reported full

term pregnancies, 13% reported premature birth, 1% reported child/delivery abnormalities, 1% reported stillbirth, and 7% were unknown.

Tobacco Quit and Dropout Percentages for Pregnant Women

Standardized smoking cessation programs for pregnant women have been reported by clinicians to improve quit rate (American College of Obstetricians and Gynecologist, 2011). Although smokers have a higher quit rate, these smoking cessation programs or interventions are not combined with regular prenatal visits. Through a meta-analysis conducted by the US Public Health Service in 2008, the most effective way for pregnant women to stop smoking is through person to person interventions. Quit rates are 80% higher for pregnant women who received counseling (American College of Obstetricians and Gynecologist, 2011). Another method shown to be effective is handouts and material designed specifically for pregnancy women to provide self-help options compared to generic smoking material.

According to a research study, half of female smokers quit when they found out they were pregnant or decided they wanted to become pregnant, but only 5-12 % of women actually quit by the last three months of pregnancy (ASTHO, 2013). A high-risk population that struggles to quit smoking cigarettes is women of low socioeconomic status, and has a higher chance of relapse after pregnancy (ASTHO, 2013). Women who are enrolled in Medicaid were 2.5 times more likely to smoke during the last three months of pregnancy compared to women who had their own private insurance according to PRAMS in 2009-2011.

When looking at measuring quit rates through using a quit line, the North American Quit line Consortium (NAQC) decided to look at this specific measure through

the use of telephone counseling. To evaluate this evidence-based treatment that has reported increasing the chances of abstinence from tobacco by 60%, they used the RE-AIM framework developed by Russell Glasgow (An, Betzner, Luxenberg, Rainey, Capesius, & Subialka ,2009). The RE-AIM program includes these components: *reach, efficacy, adoption, implementation, and maintenance*. The *Reach* aspect focuses on the percentage and characteristics for individuals who are affected by policy or programs (An et al., 2009, p.1). The concept of *Efficacy* relates to the measurement of the programs outcomes and assessment of behavioral outcome. The *Adoption* component refers to the comparativeness of location such as states, provinces, countries, or regions that adopted a given policy or program. *Implementation* includes how the program was delivered as intended, such as following specific protocols. Lastly, *Maintenance* measures how the program was sustained over a period of time. This program is effective because it encourages programs to have an ongoing evaluation process built into program's foundation from the start.

Using this RE-AIM framework to measure tobacco quit line outcomes is important to include a standardized measure to evaluate the programs outcomes are meeting the expectations set the planners (An et al., 2009). It will also help inform individuals who are interested in this program learn about different choices that are available through different providers. This framework also allows the standard outcome measures to inform program stakeholders about the success of the program to help continue funding for program. Since stakeholders usually want to see how effective the program is that they are helping fund, a standardized process can reduce any confusion as to what kind of work is being done and could potentially show how it relates to

competitive programs. The NAQC research referred to calculating a standardized quit rate by taking the number of individuals who received services and stopped using tobacco and dividing that by the number of individuals who received services.

O'Hara and Portster's study in 1994 compared 26 women who completed a smoking cessation program to 19 women who dropped out of the program and discovered dropouts tended "to be younger, smoking fewer cigarettes per year that program completers" (as cited in Borrelli, Hogan, Bock, Pinto, Roberts & Marcus, 2002, p.23).. According to Borrelli et al. (2002), literature review research, the common demographic predictors of quitting usually involved participants who are of an older age, have a higher education level, were employed, and were White. When it came to psychosocial predictors of quitting, the literature focused on participants who had "high levels of self-efficacy, low levels of negative effects and low levels of weight concern" (Borrelli et al., 2002, p.22). The researchers noted that smoking history played a role in a woman's ability to quit if she had low levels of nicotine dependence, and a low number of previous quit attempts are associated with an increased likelihood of quitting. This study focused on variables that predict quitting, which differ from those that predict dropout in a twelve week smoking cessation program. The researchers hypothesized that low levels of negative mood and weight concern will predict quitting and high levels of nicotine dependence and low levels of self-efficacy will predict dropout.

Women were put into two groups: cognitive behavioral smoking cessation plus supervised vigorous exercise (exercise condition), and cognitive behavioral smoking cessation plus equal staff contact time (contact condition). The researchers compared data by quit, still smoking and dropout. The results showed that women with greater

BMIs as well as women who had more previous quit attempts were more likely to quit than to continue smoking or dropout. Level of self-efficacy for quitting was the only variable associated with dropping out compared to quitting, higher level of self-efficacy predicted a lower likelihood of dropout. The researchers did state that level of self-efficacy however was not associated with smoking or quitting at the end of treatment.

Participants who were in the exercise condition reported "smoking their first cigarettes within 30 minutes of waking up were 3.62 times more likely either to smoke or dropout versus quit" (Borrelli et al., 2002, p.24). Results also showed the education level didn't not have a significant effect when it came to participants who were more likely to smoke, dropout or quit. The researchers stated that within the exercise group had more women quit at week 5 and 12 than the contact group. Women in the exercise group were more likely to dropout towards the end of 12 weeks, followed by smoking and then quitting compared to the contact group where the women stayed in the same category in which they enrolled, meaning they were a smoker they still were by the end of the program.

Within the Borrelli et al. study the researchers mention there is a lack of research on dropout rates due to the inconsistent or ill-defined uses of adherence. The Borrelli et al. (2002) stated, "Adherence in some studies refers to cessation whereas in others it refers to participant in cessation activities (rather than quitting smoking per se). Similarly, attrition in some studies refers to relapse, whereas in others it refers to dropout. To further complicate matters, smoking cessation researchers commonly classify individuals lost to follow up or who drop out of treatment as "smokers" for outcome

analyses, producing a confounding of the predictors of relapse (or failure to quit) with predictors of program dropout" (Borrelli et al., 2002, p.23).

Even though there is a gap within the literature when it comes to standardize dropout percentages, the experts within the smoking cessation field use the U.S. Department of Health and Human Services' Clinical Practice 2008 guidelines to see how successful their program is when it comes to quit and dropout percentages. The Clinical Practice guidelines report that there is an inverse relationship between smoking cessation interventions and quit percentages; that is, the more an individual receives smoking cessation interventions, the more the quitting percentage goes up. If a smoker doesn't speak with a health specialist at all, the quit percentage is 11%. When meeting with health specialist for one to three minutes the quit percentage increases to 14.4%, compared to four to thirty minutes when the quit percentage is 18.8% (U.S. Department of Health and Human Services, 2008). If a smoker speaks with a health specialist for thirty to ninety minutes, the quit percentage is 26.5%.

When comparing quit percentages to contact level, the guidelines state that the standard quit percentage is 10% with no contact from health specialists (U.S. Department of Health and Human Services, 2008). If an individual receives minimal contact with health specialists for three minutes or less, the quit percentage is 13.4%, compared to when low intensity counseling is provided (three to ten minutes) the quit percentage is 16%. If an individual receives higher intensity counseling of ten minutes or more, the quit percentage increases to 22.1%. The level of contact compared to quit percentages as mentioned above from the Clinical Practice guidelines estimates the rate of success an

individual will encounter to quit smoking, and the number of sessions a person receives also increases the quit percentages.

The Clinical Practice guidelines state that if an individual receives four or more sessions, the percentage of quit percentages increases greatly. The guidelines show that if an individual receives one session or less the quit percentage is 12.4% (U.S. Department of Health and Human Services, 2008). For two or three sessions, the quit percentage increases to 16.3%, whereas four to eight sessions increases to 20.9%. If an individual receives over eight sessions, the quit percentage increases again to 24.7%.

Provider Types for Smoking Cessation Programs

In 2001, a survey was conducted that identified that clinicians were good at always asking about smoking in appointments as well as advising them to quit (American College of Obstetricians and Gynecologist, 2011). Some issues with clinicians that become apparent with smoking cessation programs are lack of offering assistance to patients who are trying to quit and the lack of follow up after pregnancy.

According to Astho, "Medicaid is one the largest providers for prenatal care, covering about half of the nation's births" (2013, p.2). A 2007 a research study identified that if all Medicaid enrollees were to quit smoking, Medicaid would be able to lower cost by 5.6% to save $10 billion. Medicaid enrollees and physicians seemed to be unaware of the tobacco dependence treatment options available to them based on a 2004 study, with only 39% of Medicaid enrolled smokers and 60% of physicians reported knowing that their state Medicaid program offered any coverage for tobacco dependence treatments (ASTHO, 2009).

Women and Infant Care (WIC) programs can play an important role when addressing smoking cessation programs. According to ASTHO, "WIC is a federally funded supplemental food and nutrition program for pregnant women and children administered by the U.S. Department of Agriculture, state health departments, and American Indian tribal organizations and run through city and county health departments, community health clinics, and nonprofit partners organizations" (2013, p.7). This is important to note because about half of all births in the US are to women who are enrolled in WIC services. According to the Pregnancy Nutrition Surveillance system, smoking prevalence is greater in WIC participants than the national average.

The California Smokers' Helpline is one example of how WIC has helped reduce the number of women who smoke during pregnancy. This helpline partnered with the Public Health Foundation Enterprises' WIC program and conducted face-to-face screenings with WIC participants. Through these screenings, WIC counselors helped identify pregnancy smokers and offered the referral options, such as transferring women to a toll free number, providing a fax referral or providing a card that had the California Smokers' Helpline hours, website, and motivational messages (ASTHO, 2013).

Cessation Program Sites: High Performance and Low Performance Sites

When considering hospital smoking cessation programs, Williams, Morton, Jay, Koss, Schroeder & Loeb's study in 2005 looked at 113 acute hospitals that were selected as high or low performers based on counseling performance measure data submitted by inpatients that had acute myocardial infarctions, heart failure or pneumonia between 2002 to 2004. William et al., study used a two-part survey to measure and evaluate the smoking cessation programs. The first survey was completed by the hospital's chief

executive officer and asked three questions about perceptions of smoking cessation programs. The second survey was completed by hospital staff, and addressed "documentation practices, counseling methods, training programs, evaluation practices and perceived barriers" (Williams et al., 2005, p. 345). To analyze the results, Fisher's exact tests were used to compare survey results identified as high or low performers based on their smoking cessation counseling performance measure rates.

The results showed significant differences on counseling practices, perceived organizational barriers, and perceptions of hospital leadership between the different hospitals. When looking at the results of this study, highly ranked hospitals compared to lowly ranked hospitals showed a difference in smoking cessation counseling rates when it came to acute myocardial infarction (91% versus 50%), heart failure (86% versus 19%) and pneumonia (82% versus 16%) populations (Williams et al., 2005). Highly ranked hospitals reported consistent identification and documentation of patient's smoking history and counseling attempts. The staff from highly ranked hospitals reported using more counseling methods, such as connecting patients to support groups, and providing prescriptions more frequently compared to lowly ranked hospital staff. Highly ranked hospitals also provided more resources for staff to use when providing smoking cessation efforts and referred back to American Cancer Society and American Heart Association for information when needed. Hospitals that provided consistent counseling took smoking cessation counseling more serious than low performers.

CEOs from highly ranked organizations reported a more positive value on return on investments in smoking cessation than CEO from lowly ranked organizations. Results showed that CEOs with high perception were "more likely to evaluate the effectiveness

of counseling and hold staff in services on smoking cessation counseling than low perception groups" (Williams et al., 2005, p.349). These high perceptions CEO's were also less likely to view lack of training or lack of resources as barrier to the provision of counseling, "High ranked hospitals were more likely to have CEOs who believe that the resources they spend on smoking cessation counseling had been well invested. This finding may indicate a need to educate health care executives on the variety of ways to approach smoking cessation counseling programs, as research has demonstrated that programs are generally considered to be cost-effective" (Williams et al., 2009, p. 350).

APPENDIX C

DELIMITATIONS, LIMITATIONS, AND ASSUMPTIONS

Delimitations

- The delimitations of this study include that pregnant women who were enrolled in this smoking cessation program had to complete both the enrollment survey and postpartum survey to be included in quit and drop out analyses.
- Also, the study will be looking at the 15 different types of provider site types instead of each individual site.

Limitations

- Limitations of this study include literacy rates of the participant as well as the professional administering the survey. There has been no standardized process to conduct the surveys, meaning participant could complete the survey by themselves or the survey could be given verbally by a professional at each site.
    - Rationale: The surveys were collected previously so as primary researcher, I wasn't able to address this limitation. The primary researcher was able to address this concern with the Midwest organization to encourage implementing a standardized process for collected and returning the data.
- Other limitations are how accurately a person entered data compared to questions previous coding in data sets.
    - Rationale: The data was coded by multiple statisticians throughout the ten year period. The current statistician and the primary

researcher was using existing key code sheets to be able to make codes consistent across the time period, as well as creating new key code sheets for existing data.

- Another limitation is relying on the sites to send their results to the organization providing the cessation training to health care professionals.
    - Rationale: Currently organizations are volunteering to implement this smoking cessation program, but the program coordinators do their best to provide training and encourage the providers to follow the collect process provided.
- The provider site types are not clear cut, and need to be redefined by the primary organization. The program coordinators have mentioned within this study that provider site types don't always align on the ground level, meaning certain sites get clumped into a category that make not be 100% accurate.
    - Rationale: The provider site types were already pre-assigned in the data set by the Midwest organization.

Assumptions

- An assumption of this study is that women answered questions on program surveys accurately and honestly.
- A different limitation was that the surveys used through 2005 to 2015 changed wording three times within the time period.

APPENDIX D

SURVEYS USED IN STUDY:

ENROLLMENT AND POSTPARTUM SURVEYS

WISCONSIN WOMEN'S HEALTH FOUNDATION

ENROLLMENT

First Breath

Client ID:	Client DOB:
Today's date:	Weeks gestation:

1. How would you rate your current stress level? (Please circle) Low Medium High Very high

2. During the past week, have you felt sad, unhappy, or hopeless?
   - ☐ Yes, most of the time
   - ☐ Yes, quite often
   - ☐ Yes, but not very often
   - ☐ No, not at all

3. How many people can you count on when you need help? (Please circle) 0 1-2 3-5 6+

4. How old were you when you started smoking? _____

5. How many cigarettes **per day** were you smoking **one month** before you were pregnant? (20 cigarettes are in 1 pack)
   - ☐ I was not smoking, not even an occasional puff
   - ☐ A few some days, but not every day
   - ☐ 1 to 5 cigarettes
   - ☐ 6 to 10 cigarettes
   - ☐ 11 to 20 cigarettes (up to 1 pack)
   - ☐ 21 to 30 cigarettes
   - ☐ 31 to 40 cigarettes (up to 2 packs)
   - ☐ More than 40 cigarettes(greater than 2 packs)

6. Before you were pregnant, how soon after you woke up did you have your first cigarette?
   - ☐ Immediately—within 5 minutes
   - ☐ 6 to 30 minutes
   - ☐ 31 minutes to 1 hour
   - ☐ Over 1 hour
   - ☐ Don't know

7. How many times have you previously tried to quit smoking? _____ *(this must be a number)*

8. How many cigarettes have you smoked **per day** over the **past week**? (20 cigarettes are in 1 pack)
   - ☐ I have not smoked, not even an occasional puff
   - ☐ A few some days, but not every day
   - ☐ 1 to 5
   - ☐ 6 to 10
   - ☐ 11 to 20 (up to 1 pack)
   - ☐ 21 to 30
   - ☐ 31 to 40 (up to 2 packs)
   - ☐ Greater than 40 (greater than 2 packs)

9. How do you feel about quitting smoking and/or staying quit?
   - ☐ I want to quit and stay quit for good
   - ☐ I want to quit only until the baby is born
   - ☐ I want to cut down
   - ☐ I don't want to quit
   - ☐ I don't know what I want

10. How important is quitting smoking to you?
    ___Not at all important ___Not very important ___Somewhat important ___Very important

11. How important is staying quit to you?
    ___Not at all important ___Not very important ___Somewhat important ___Very important

12. How confident are you that you will be tobacco free one year from now?
    ___Not at all confident ___Not very confident ___Somewhat confident ___Very confident

FOR PROVIDER USE ONLY

1. Who completed this form? ___Provider ___Client ___Both
2. Where was this form completed? ___Clinic/office ___Client home ___Other:_____
3. When was this form completed? ___During visit ___After visit ___Some during visit, some after

WISCONSIN WOMEN'S HEALTH FOUNDATION

POSTPARTUM

First Breath

Client ID:	Client DOB:
Today's date:	Delivery date:

1. Are you currently breastfeeding this baby?
   - ☐ Yes
   - ☐ No
2. Have you ever breastfed this baby?
   - ☐ Yes
   - ☐ No
3. How would you rate your current stress level? (Please circle) Low Medium High Very high
4. During the past week, have you felt sad, unhappy, or hopeless?
   - ☐ Yes, most of the time
   - ☐ Yes, quite often
   - ☐ Yes, but not very often
   - ☐ No, not at all
5. How many people can you count on when you need help? (Please circle) 0 1-2 3-5 6+
6. How many cigarettes have you smoked **per day** over the **past week**? (20 cigarettes are in 1 pack)
   - ☐ I have not smoked, not even an occasional puff
   - ☐ A few cigarettes on some days, but not every day
   - ☐ 1 to 5 cigarettes
   - ☐ 6 to 10 cigarettes
   - ☐ 11 to 20 cigarettes (up to 1 pack)
   - ☐ 21 to 30 cigarettes
   - ☐ 31 to 40 cigarettes (up to 2 packs)
   - ☐ More than 40 cigarettes (greater than 2 packs)
7. How did your smoking change during your pregnancy and how has it changed since giving birth? Please check the box for the number of cigarettes you smoked during each trimester (weeks 1-13 = 1st trimester; 14-26 = 2nd trimester; 27-birth = 3rd trimester).

# of cigarettes smoked per day	Weeks 1-13	Weeks 14-26	Weeks 27-birth	Postpartum
None (not even a puff)				
Few cigarettes, not every day				
1 to 5				
6 to 10				
11 to 20 (up to 1 pack)				
21 to 30				
31 to 40 (up to 2 packs)				
Greater than 40				

8. How important is quitting smoking to you now that your baby is born?
   ___Not at all important ___Not very important ___Somewhat important ___Very important
9. How important is staying quit to you now that your baby is born?
   ___Not at all important ___Not very important ___Somewhat important ___Very important
10. How confident are you that you will be tobacco free 1 year from now?
    ___Not at all confident ___Not very confident ___Somewhat confident ___Very confident

PROVIDER SECTION →

Mail or **fax** to: Wisconsin Women's Health Foundation | 2503 Todd Drive Madison, WI 53713 | Fax: 608-251-4136

FOR PROVIDER USE ONLY

1. Pregnancy outcome:
   - ☐ Full-term birth
   - ☐ Premature birth (37 weeks or earlier)
   - ☐ Stillbirth or infant death
   - ☐ Infant with special circumstances (please describe): _____

2. Baby A
   - ☐ Male
   - ☐ Female
   - Birthweight (lb/oz): _____ OR
   - Birthweight (grams): _____
   - Birth length (inches): _____

   Baby B
   - ☐ Male
   - ☐ Female
   - Birthweight (lb/oz): _____ OR
   - Birthweight (grams): _____
   - Birth length (inches): _____

3. Who completed this form? ___Provider ___Client ___Both

4. Where was this form completed? ___Clinic/office ___Client home ___Other:_____

5. When was this form completed? ___During visit ___After visit ___Some during visit, some after

APPENDIX E

ADDITONAL SURVEY USED IN MIDWEST SMOKING CESSATION PROGRAM

WISCONSIN WOMEN'S HEALTH FOUNDATION

CLIENT INFORMATION

First Breath

Client ID: _____ **Date Enrolled:** _____

Client DOB:		**Expected Delivery Date:**
Street Address:		
City:	State:	Zip code:
Email:	Cell phone:	Home phone:

Do you want to receive text messages from First Breath? ☐ Yes ☐ No
If yes, please text FIRSTBREATH to 97779.

Program Site Name:	**Program Provider Name:**
Phone:	Email:

1. **How many years of school did you complete?**
   - ☐ Less than high school
   - ☐ Some high school
   - ☐ High school or GED
   - ☐ Some college or 2-year degree
   - ☐ College
   - ☐ Post-college education

2. **What is your main language?**
   - ☐ English
   - ☐ Spanish
   - ☐ Hmong
   - ☐ Other (please specify):

3. **What is your ethnicity?** (please check only one)
   - ☐ Non-Hispanic or Non-Latino
   - ☐ Hispanic or Latino

4. **Are you employed?**
   - ☐ Yes ☐ No

5. **What is your race?** (check all that apply)
   - ☐ American Indian or Alaskan Native
   - ☐ Asian
   - ☐ Black or African American
   - ☐ Native Hawaiian or other Pacific Islander
   - ☐ White
   - ☐ Don't know
   - ☐ Other (please specify): _____ _____

6. **Are you enrolled in any of the following?**
   - ☐ Medicaid/BadgerCarePlus/SSI Managed Care
   - ☐ Prenatal Care Coordination (PNCC)
   - ☐ WIC (Women, Infants and Children)

7. **What is your relationship status?** (please check only one)
   - ☐ Single
   - ☐ In a relationship
   - ☐ Living with a partner
   - ☐ Married
   - ☐ Widowed
   - ☐ Divorced
   - ☐ Other: _____

Who is your primary care provider (family doctor, obstetrician, or midwife)? ☐ I don't have one.			
Name:	Clinic:		
Street Address:	City:	State:	Zip Code:

Mail or **fax** to:
Wisconsin Women's Health Foundation
2503 Todd Drive Madison, WI 53713
Fax: 608-251-4136

WISCONSIN WOMEN'S HEALTH FOUNDATION

PRENATAL FOLLOW-UP

First Breath

Client ID:	Client DOB:
Today's date:	Weeks gestation:

1. How would you rate your current stress level? (Please circle) Low Medium High Very high

2. During the past week, have you felt sad, unhappy, or hopeless?
   - ☐ Yes, most of the time
   - ☐ Yes, quite often
   - ☐ Yes, but not very often
   - ☐ No, not at all

3. How many people can you count on when you need help? (Please circle) 0 1-2 3-5 6+

4. How many cigarettes have you smoked **per day** over the **past week**? (20 cigarettes are in 1 pack)
   - ☐ I have not smoked, not even an occasional puff
   - ☐ A few some days, but not every day
   - ☐ 1 to 5 cigarettes
   - ☐ 6 to 10 cigarettes
   - ☐ 11 to 20 cigarettes (up to 1 pack)
   - ☐ 21 to 30 cigarettes
   - ☐ 31 to 40 cigarettes (up to 2 packs)
   - ☐ More than 40 cigarettes (greater than 2 packs)

5. How do you feel about smoking now?
   - ☐ I want to quit for good
   - ☐ I want to quit only until the baby is born
   - ☐ I want to cut down
   - ☐ I don't want to quit
   - ☐ I don't know what I want

6. How important is quitting smoking to you?
   ___Not at all important ___Not very important ___Somewhat important ___Very important

7. How important is staying quit to you?
   ___Not at all important ___Not very important ___Somewhat important ___Very important

8. How confident are you that you will be tobacco free one year from now?
   ___Not at all confident ___Not very confident ___Somewhat confident ___Very confident

FOR PROVIDER USE ONLY

1. Who completed this form? ___Provider ___Client ___Both
2. Where was this form completed? ___Clinic/office ___Client home ___Other:_____
3. When was this form completed? ___During visit ___After visit ___Some during visit, some after

APPENDIX F

ADDITIONAL TABLE AND FIGURES

Characteristics of Participants from High Performance Sites Types

Table 3 shows the breakdown of women enrolled at each different provider site type for high performers. When looking at similar characteristics across the high performing provider site types, some common demographics were identified (Table 4). The most often age reported was between the ages of 24 and 31, with the most frequent being 26 years old. For relationship status, being single was reported most frequently at 14%, followed by being in a relationship (11.5%). The most common education levels for women was completing high school or earning their GED (36.4%) and some college or completing a 2-year college degree (36.9%). Over half the women were unemployed (55.5%). Women were mostly White (79%) or Black/African American (14.9%). When looking at enrollment in programs associated with prenatal care, 88% of women were signed up for Medicaid, 71.8% were part of WIC, and 44.1% were registered for PNCC.

Table 1. Number of Women per Provider site type for High Performers

	Frequency	Percent
PNCC Health Depts.	564	12.2
PNCC Social Service	110	2.4
PNCC/WIC	2,030	43.9
WIC Standalone	1924	41.6
Total	4628	100.0

Table 2. Similar Characteristics from High Performer Participants

Demographics	Most frequently reported answer
Age Range	Between the age of 24-31 with the most frequently reported age being 26
Marital status	Single
Completed Education Level	High School/GED
Employment status	Unemployed
Race/Ethnicity	White
Assistance Program	Medicaid
Age started smoking at	12-17 years old
Number of times attempted to quit smoking	1-5 times
How soon they needed to smoke a cigarette upon waking up	5 minutes (29.5%)

To address the smoking behavior of the high performing provider site type's participants, women reported more frequently reported starting to smoke between the ages of 12 to17 years old. When the asked about how soon they needed to smoke a cigarette upon waking up, the most frequently reported answer was immediately within 5 minutes (29.5%). Women reported trying to quit smoking between one to five times, with one being the most frequent number of times trying to quit. When asked about how their smoking behavior changed since learning they were pregnant, women reported smoked the same or about the same (27%), smoking more (15.6%), and cutting some a little (12%) most frequently.

To compare where women reported smoking at enrollment to postpartum period see Figure 1 and Figure 2. Women reported smoking 11 to 20 cigarettes (1 pack) a day prior to finding out they were pregnant (34.4%) at the enrollment period (Figure 2). The second most frequently reported amount was 6 to 10 cigarettes per day (30.9%). By the end of the program, most women reported not smoking at all (24%), smoking 1 to 5 cigarettes (16.8%), or smoking 6 to 10 cigarettes (10.8%).

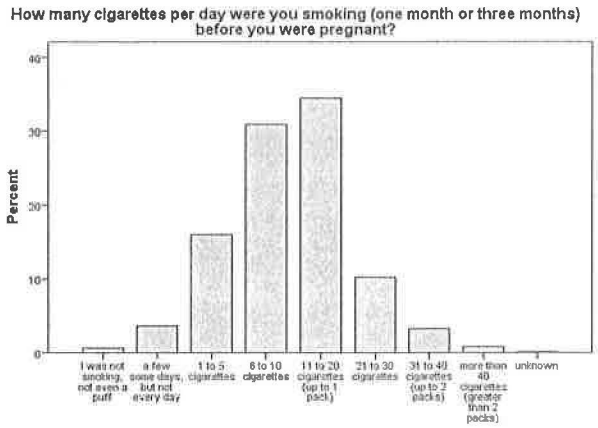


Figure 1. Enrollment Smoking Behavior for High Performers

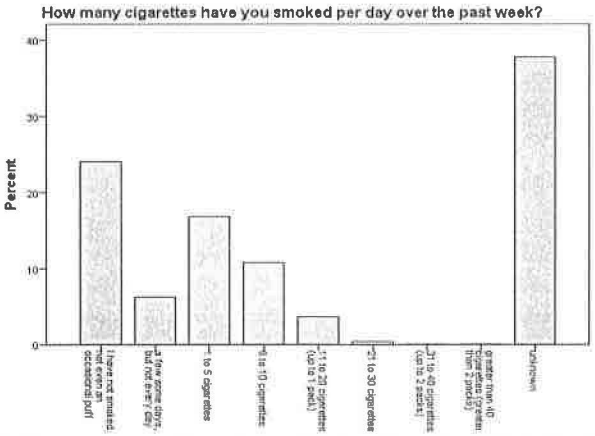


Figure 2. Postpartum Smoking Behavior for High Performers

When comparing the women's confidence level at enrollment to postpartum please see Figure 3 and Figure 4. At the enrollment period women started the smoking cessation program only 16.7% reported feeling confident that they would be smoke free one year from now. When the women were asked again about how confident they were they would be smoke free one year from now, 44% report feeling very confident.

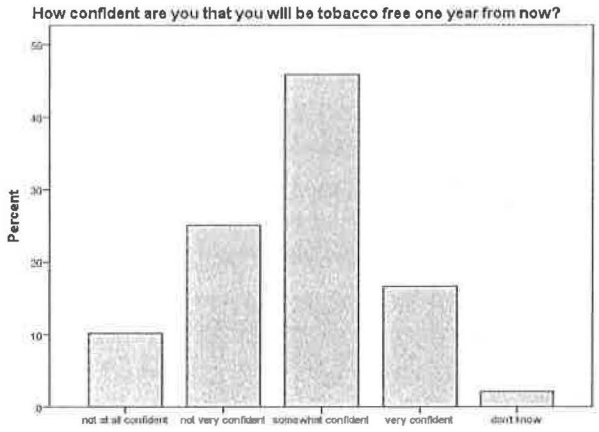


Figure 3. Enrollment Confidence Level or High Performers

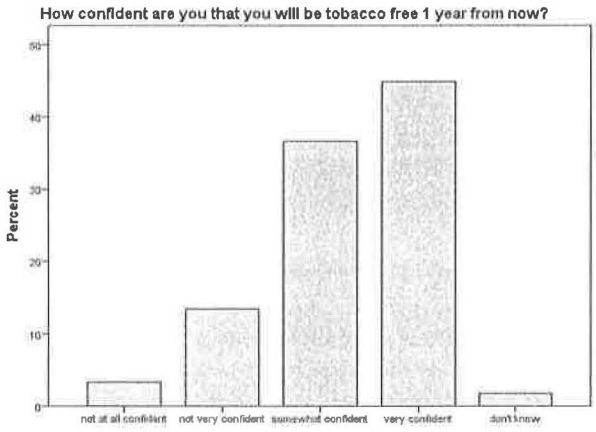


Figure 4. Postpartum Confidence Level for High Performers

Characteristics of Participants from Low Performance Sites Types

Before looking for similar characteristics for program participants across the low performing provider site types, descriptive statistics were conducted to identify the number of women per provider site type (Table 3). When looking for similar program participant characteristics across the low performing provider site types, some common features were identified (Table 4). The most frequently reported ages were between 25 and 32, with the most common age being 27 years old. For relationship status, single (14%) and in a relationship (11.5%) was reported more frequently.

Table 3. Number of Women per Provider site type for Low Performers

	Frequency	Percent
Social Service Agency	110	7.9
HMO	254	18.3
Hospital	679	48.8
Unknown	348	25.0
Total	1391	100.0

Table 4. Similar Characteristics from Low Performers Participants

Demographic	Most Frequently Reported Answer
Age range	Between the age of 25-32 years with the most frequently reported age being 27
Marital status	Single
Completed education level	High School/GED
Employment status	Unemployed
Race/Ethnicity	White
Assistance program	Medicaid
Age started smoking	15-18 years old
Number of times attempted to quit smoking	1-2 times
How soon they needed to smoke a cigarette upon waking up	Within five minutes of waking up

The most common education levels for women was completing high school or earning their GED (34.1%) and some college or completing a 2-year college degree (32.6%). Over half the women were unemployed (55.3%) and women were mostly White (50.6%) or Black/African American (44.2%). When looking at enrollment in

programs associated with prenatal care, 84.1% of women were signed up for Medicaid, 50.8% were part of WIC, and 19.8% were registered for PNCC When looking at Medicaid, 84.1% of the women were enrolled, followed up by WIC (50.8%), and PNCC (19.8%).

To address the smoking behavior of the low performing site's participants, women reported more frequently reported starting to smoke between the ages of 15-18 years old. Women most often reported trying to quit smoking once (41.9%). When women were asked about how soon they needed to smoke a cigarette after waking up, the most frequently reported answer was immediately within 5 minutes (32.4%). When asked about how their smoking behavior changed since learning they were pregnant, the most frequently reported answer was smoked the same or about the same (16.5%) or indicated that they had cut down a little (10.6%).

To compare where women reported smoking at enrollment to postpartum period see Figure 5 and Figure 6. At enrollment, the most frequently response when asked about how many cigarettes per day they were smoking before finding out they were pregnant was 11 to 20 cigarettes (one pack) a day (33.6%). The second most frequently reported amount was 6 to 10 cigarettes per day (29.7%). In term of quitting smoking or cutting down on the amount smoked, by the end of the program, 9.5% of women at the low performing provider site types reported not smoking at all, smoking 1 to 5 cigarettes (9.3%), or 6 to 10 cigarettes (6%). There was a large amount of data missing from the postpartum survey due to the high dropout percentage.

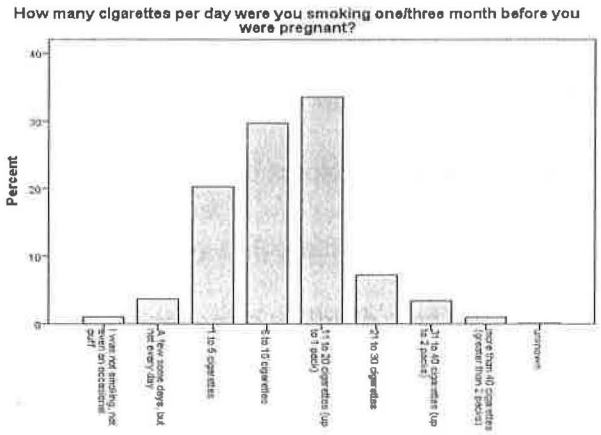


Figure 5. Enrollment Smoking Behavior for Low Performers

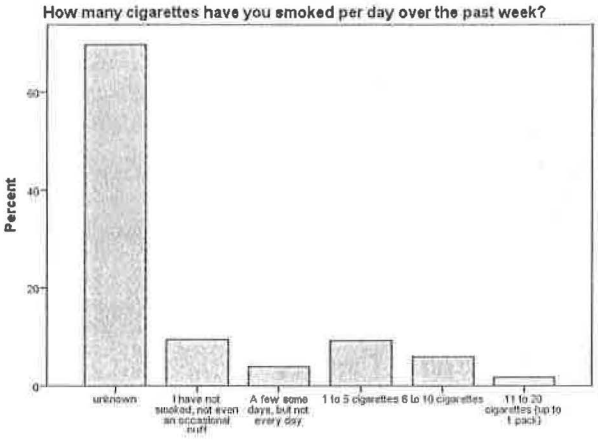


Figure 6.Postpartum Smoking Behavior for Low Performers

When comparing the women's confidence level at enrollment to postpartum see Figure 7 and Figure 8. When the women started the smoking cessation program, only 25.2% reported feeling confident that they would be smoke free one year from now.

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APPENDIX H

HEALTH PROMOTION AND PRACTICE JOURNAL GUIDELINES

health promotion practice

2014

Guidelines for Prospective Authors

Health Promotion Practice

An Official Journal of the Society for Public Health Education

Editor-in-Chief: Jesus Ramirez-Valles, PhD, University of Illinois-Chicago

Updated
7/21/2014

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About the Journal

Health Promotion Practice (HPP) publishes authoritative, peer-reviewed articles on a bimonthly basis that are devoted to the practical application of health promotion and education. Launched in 2000 under the guidance of previous editor Randy Schwartz, MSPH, Senior Vice President, American Cancer Society, New England Division, the journal is unique in its focus on critical and strategic information for professionals engaged in the practice of developing, implementing, and evaluating health promotion and disease prevention programs.

HPP serves as a forum to explore the applications of health promotion/public health education interventions, programs, and best practice strategies in various settings, including but not limited to: community, health care, worksite, educational and international settings. It also examines practice-related issues, including program descriptions, teaching methods, needs assessment tools and methodologies, intervention strategies, health promotion, problem-solving issues, and evaluation presentations. *HPP* also publishes both focus issues on a particular topic as well as journal supplements. Individuals desiring more information about producing a journal supplement should visit: http://www.sophe.org/Sophe/PDF/HPP_Instructions_Submitting_Request_(Proposal)_for_Special_Journal_Issues.pdf

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- Innovative linkages between academics/researchers and practitioners
- Community and/or clinical applications of new or state-of-the-art intervention strategies
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> The journal publishes authoritative articles devoted to the practical application of health promotion and education. It publishes information of strategic importance to a broad base of professionals engaged in the practice of developing, implementing, and evaluating health promotion and disease prevention programs. The journal's editorial board has made a commitment to focus on the applications of health promotion and public health education interventions, programs and best practice strategies in various settings, including but not limited to: community, health care, worksite, educational and international settings.
>
> Additionally, the journal focuses on the development and application of public policy conducive to the promotion of health and prevention of disease. The journal includes issues related to the professional preparation and development of health educators. The journal recognizes the critical need to (1) promote linkages between researchers in the academic and private sectors with health promotion and education practitioners; and (2) address the health issues of ethnic and racial minority populations. These partnerships and collaborations are reflected in the editorial philosophy and the broad scope of published articles and contributed sections. The journal adheres to the ethical principles of the profession as reflected in SOPHE's code of ethics.

Authors are asked **not** to use the following terms:

- Subjects when referring to participants;
- Target populations when referring to Priority populations

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Please follow the guidelines below based on the type of manuscript you are submitting.

- Manuscripts should be submitted in English
- Manuscripts must be typed, double-spaced, page numbered, and written in Times New Roman, 12-point font
- **Manuscript text (includes main body of manuscript and in-text citations)**: no more than 3500 words (Approximately 14 pages double spaced). NOTE: You may only exceed this word count if reviewers request revisions that require additional information and if the Editor agrees. In that case, a **revised** manuscript can exceed 3500 words, as long as any additions are made explicitly to address reviewers' recommendations.
- No more than 35 references
- No more than 4 figures
- 1"margins on all sides
- Number each page in the bottom right hand corner
- Number every line of the manuscript in the left margin
    - Please include a cover letter addressed to the Editor-in-Chief. *In this letter, indicate:*
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- The entire manuscript, including **references and citations,** must be written according to the *Publication Manual of the American Psychological Association, 6th edition.*

Citations in the text should use the author-date method inserted at the appropriate point and are listed alphabetically in the reference section in APA style. For example, in text citations:

> *It is widely recognized that tobacco prevention and control programs should use policy advocacy interventions (Jones & Brown, 1998; Samson, Robb, and Dunn, 1996).*

Please do not submit a manuscript with more than 35 references.

All manuscripts not submitted in the correct referencing/citation style will be returned to the author. There are NO exceptions to the 3500 word limit for original submissions.

Tables, Charts, Figures and Graphs

Tables, charts, figures and graphs must be in black and white and printed at 1200 dpi or better. Power Point, Excel and Word are encouraged. Tables, etc. should be placed at the end of the paper—placement notations can be made throughout the text (e.g., "Insert Figure 1 here"). Please submit images exactly as you wish to see them when published.

Please note that no more than a total of **4** figures/tables/images per article can be published in a print issue of the journal. However, authors may submit additional supplementary files/appendices to be posted with the online version of the article.

Photos and Grayscale Images

Photos and grayscale images should be scanned in the size they will appear in the journal, or larger. Photos are best sent as originals or scanned in at the correct size and resolution (300 dpi).

Special Guidelines
Applications/Interventions Manuscripts (Peer-Review Article)

Each applications/intervention manuscript must include:

1. Cover letter.

2. Title page including title, name and affiliations of authors, address, phone number, fax number and e-mail of corresponding author.

3. Abstract of 200 words or less.

4. Keywords

5. Maximum length of **3500 words** type written, double-spaced pages, 35 references, and 4 tables/figures. Times New Roman 12-point font, 1"margins all the way around. Word count applies to manuscript text only. Number every line of the manuscript in the left margin

6. The following sections should be included:
   (Note: It is strongly suggested that you include these titles in your manuscript)
   - Introduction
   - Background/Literature Review
   - Methods/Strategies/Intervention Applications
   - Discussion
   - Conclusions - must include recommendations and implications for applications.
   - References- (Note: All references must be written according to the Publication Manual of the American Psychological Association, 6th edition (i.e. (author, year) inserted in the text.) A maximum of 35 references should be included.

Other types of manuscripts such as extensive literature reviews, policy case studies, or commentaries will be accepted (see below).

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5. Maximum length of ***3500 words*** type written, double-spaced pages (no more than 35 references, and 4 tables/figures). Word count applies to manuscript text only. Times New Roman 12-point font, 1"margins. Number every line of the manuscript in the left margin.

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   - Introduction including rationale/timeliness of topic being reviewed
   - Extensive literature review
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3. Abstract of 200 words or less.

4. Keywords

5. Maximum length of **3500 words** typewritten, double-spaced pages (no more than 35 references and four tables/figures). Times New Roman 12-point font, 1"margins all the way around. Number every line of the manuscript in the left margin

6. The following sections must be included:
   - Introduction
   - Background/Literature Review
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   - Discussion
   - Conclusions - implications for applied practice or policy
   - References- (Note: All references must be written according to the Publication Manual of the American Psychological Association, 6th edition (i.e. (author, year) inserted in the text.)

Commentaries

Commentaries on current, timely topics of interest to health promotion and education practice, policy and professional development are encouraged. Commentaries must include the following:

1. Cover letter

2. Title page including title, name and affiliations of authors, address, phone number, fax number and e-mail of corresponding author.

3. Keywords

4. Maximum length 1500 typewritten words, double-spaced pages (no more than 10 references and no tables). Times New Roman 12 point font, 1" margins all the way around. Number every line of the manuscript in the left margin.

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- ✓ Have you noted where any tables or figures should be inserted within the text? i.e. "—insert Table 1 here—" (page 8)
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APPENDIX I

JOURNAL TITLE PAGE

ASSESSMENT OF A MIDWEST SMOKING CESSATION PROGRAM FOR PREGNANT WOMEN TO INVESTIGATE QUIT AND DROPOUT PERCENTAGES FOR TYPE OF PROVIDER SITE

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APPENDIX J

JOURNAL COVER LETTER

Catherine Gangi

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Dear Editor-in-Chief,

I am submitting for a Standard Peer Review Article. This manuscript has not been previously submitted to any other journals. The research study used secondary data from the Midwest Organization, who received permission from the funders to use the data for this study. The participants were assigned ID number before I received the data set, no IRB approval was necessary. This research was submitted as an abstract for the American Public Health Association (APHA) 2016 annual meeting.

Thank you for your consideration,

Catherine Gangi