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Interventions to Increase Vaccination Rates in Homeless Adults Aged 50 Years and Older in a Shelter-Based Clinic

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INTERVENTIONS TO INCREASE VACCINATION RATES IN HOMELESS ADULTS
AGED 50 YEARS AND OLDER IN A SHELTER-BASED CLINIC

BY

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APPROVED BY CAPSTONE COMMITTEE

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Table of Contents

Abstract.....7

Statement of the Problem.....9

Assessment.....11

 Microsystem Assessment.....11

 Need for Intervention.....13

 Needs Assessment.....13

 SWOT (Strength, Weakness, Opportunity, & Threats) Analysis.....14

 Organization’s Readiness for Change and Stakeholder Engagement.....15

Project Identification.....16

 Purpose.....16

Strength of the Evidence.....17

 Increasing Vaccination Rates Using Evidence-Based Solutions.....17

Methods.....19

 Setting/Population.....20

 Interventions.....20

 Measures.....21

 Analysis.....22

 Organizational Barriers and Facilitators.....22

 Ethical Considerations.....23

Results.....23

Discussion.....24

 Limitations.....27

Recommendations.....	28
Implications for Practice.....	28
References.....	30
Appendices.....	34
Appendix A Strength, Weakness, Opportunity & Threat Analysis.....	35
Appendix B Vaccination Reminder Card.....	36
Appendix C Adult Immunization Record.....	37
Appendix D Vaccination Reminder Survey.....	38
Appendix E Participant Demographics (Race/Ethnicity).....	39
Appendix F Participant Demographics (Age).....	40
Appendix G Top Diagnoses of the Participants.....	41
Appendix H Top Three Mental Illnesses.....	42

List of Tables

1. Microsystem Assessment Vaccination Rates.....	12
2. Vaccination Reminder Survey	26

List of Figures

1. Pre and Post Intervention Vaccination Rates.....27

Abstract

Pronounced disparities in adult immunizations exist across the country. In homeless adults over 50 years of age with chronic diseases, coverage rates for influenza and pneumococcal vaccinations falls at 30% as compared to the 60% coverage rate found in the general public.

Hepatitis B immunization rates are also significantly lower in the elderly homeless population.

Increased prevalence of chronic diseases in the elderly homeless shelter residents' increase their risk for severe complications following influenza, hepatitis B and meningococcal infections. To prevent disease epidemics and further disability in the homeless population, the need for appropriate and timely vaccinations is critical. Attitudes and beliefs towards vaccinations, distrust of healthcare providers and limited access to healthcare are significant factors for low immunization rates in the homeless population. Alcohol and substance use, mental illness and multiple chronic diseases exacerbated by congregated living conditions are risk factors for communicable diseases, which are preventable when adequate surveillance and immunization strategies are implemented. The purpose of this quality improvement project is to increase vaccination rates among high-risk elderly homeless patients in a primary care clinic.

Interventions included are the implementation of immunization standing orders and client reminder/recall cards. Improvement was evaluated by comparing pre- and post- intervention immunization rates in patient population. The effectiveness of reminder cards was measured by increase in patient appointments. It is recommended that healthcare providers treating homeless patients utilize clinical practice guidelines for planning and evaluating immunization protocols and most importantly, immunize these patients at every opportunity.

Keywords: Homeless shelter, homelessness, vaccination, standing orders, reminder/recall process.

Homelessness is defined as those individuals who are without permanent housing, and who live on streets, abandoned buildings, vehicles and temporary shelters (National Alliance to End Homelessness, 2015). Homelessness continues to be an increasingly perplexing public health issue in the United States. The estimated number of homeless people in the United States on a single night is approximately 578,424 and 5% of those live in the State of Texas (National Alliance to End Homelessness, 2015). Poor health is closely associated with homelessness, exposing those who reside in crowded living shelters to communicable diseases, complicating the management of long-term chronic illnesses as well. For those individuals who are homeless, the daily struggles of life on the streets and the competing priorities for food and a warm bed obscures their healthcare needs, leaving mild illnesses to progress. A vast array of obstacles such as limited health care, lack of medical coverage, and characteristics of the homeless culture prevents access to primary care or preventative care services.

Healthcare for the homeless is also a matter of social justice, where people are not discriminated against because of their race, beliefs, disabilities, and socioeconomic circumstances. This doctor of nursing practice (DNP) project's mission was to ensure that a subset of the homeless who live in a shelter receive high quality preventative healthcare services, thus promoting a just society and valuing diversity. Vaccinations are critical to the prevention of disease outbreaks and epidemics in the homeless population because of their congregated living conditions. This DNP project aims to increase immunization coverage for homeless patients 50 years and older attending the shelter-based clinic, thus improving health outcomes in this particular vulnerable population.

Statement of the Problem

Homelessness is an increasingly serious issue impacting our nation's communities and the world. Physical and mental disabilities, substance and alcohol use, poverty and unemployment can trigger a trajectory leading to homelessness. Perceptions such as mistrust of healthcare provider, fear of needles, and the belief that illness may result from immunizations may deter homeless individuals from seeking preventative health care (Metcalf & Sexton, 2014). Without preventative healthcare, chronic diseases will continue to be a significant burden borne by the homeless population. This becomes apparent when examining the prevalence rate of chronic disease among the homeless, which is 37% compared to only 15.3% in the general population (Maness & Khan, 2014).

Intravenous substance use and needle sharing increase the risk for hepatitis B infection which is a vaccine-preventable disease, known to be very common in people experiencing homelessness. (Stein, Anderson & Gelberg, 2012). Respiratory infections, tobacco and illicit substance use rates are greater among homeless are higher (Thiberville et al., 2014). Homeless people sheltering in confined conditions are at risk for contracting vaccine-preventable diseases to include influenza, pneumonia and meningitis.

Maximizing the immunization rate among the homeless population is critical. Malnutrition, trauma and exposure to elements increase the vulnerability to common illnesses. Many do not seek medical attention due to cost, autonomy concerns, discrimination and other reasons stated elsewhere. The crowded and unsanitary living conditions found in homeless shelters contribute to the spread of the disease. To prevent outbreaks in the shelter and for the greater good of the community at large, vaccines remain a cornerstone in preventing spread of infectious diseases and in the prevention of future diseases in the homeless population.

Homeless populations are underrepresented in population surveys due to transient nature of residency, which prevents accurate identification of immunization rates and tracking of health status following immunizations. These attributes have contributed to sparse data collection on immunization rates. Despite the improvements in vaccination programs as a public health initiative, the adult immunization rates continue to be low overall in the general community. According to the National Health Immunization Survey (2014) only 48% of the adults between 50 to 64 years of age were vaccinated with influenza vaccine in the year 2013-2014 and 20.3% of adults over the age of 50 received pneumococcal vaccines in the general population that same year (CDC, 2014). Mental illness in the homeless contributes to a lack of immunization coverage. Researchers found that out of 75 homeless participants with mental illness, only 7% had been vaccinated for influenza (Young, Dosani, Whistler, & Hwang, 2015). Non-coverage for influenza immunizations among the homeless from three New York shelters was determined to be as high as 75% (Bucher, Brickner, & Vincent, 2006). Homeless population experiences difficulties in adhering to hepatitis B vaccination schedules (Stein and Nyamathi, 2010).

Physicians focus on treating acute and chronic illnesses overshadowing the need to prevent any future diseases. The majority of the homeless patients reside in the congregated living shelter, where there is limited access to soap, water, clean laundry and insufficient staff with infection control expertise. The unstable living conditions along with poor health increases the probability of transmission of potentially pathogenic organisms leading to associated complications and even death. Due to limited access to healthcare, and lack of medical coverage, majority of homeless adults have no protection from vaccine preventable diseases.

Assessment

Microsystem Assessment

Currently, there are approximately 3,000 individuals in San Antonio who are homeless with 1,300 living on the streets, underneath bridges and in empty buildings, mostly concentrated in the city's downtown area (Haven for Hope, 2016). In the year 2006, in order to end homelessness, and transform lives of San Antonio's homeless population, comprised from members of the business and civic leaders, community coalition was convened. Following a four year period during which a needs survey was conducted and funding was obtained, a non-profit organization known as Haven for Hope opened its doors for individuals who were without housing or were living on the streets of San Antonio (Haven for Hope, 2016). Haven for Hope partners with local agencies to provide transitional housing and other ancillary services to the individuals who are homeless. The Haven for Hope's mission is to offer a place of hope, where the lives of homeless individuals and families are changed through efficient and coordinated care (Haven for Hope, 2016). Haven for Hope offers a large, open and closed sleeping area where on an average night approximately 700 people reside. A small state-funded primary care clinic is co-located with the facility, serving the residents of Haven for Hope who seek treatment for their medical conditions.

A microsystem assessment was conducted at the clinic in order to understand how the primary care clinic functions and to gain an insight into the organization of the system. The primary care clinic staff includes a board certified family practice physician who is assisted by a licensed vocational nurse. The primary care clinic serves approximately 177 patients annually with more than six to seven recurring daily clinical patient encounters. The clinic is open

Monday to Friday from 8a.m to 5p.m. The clinic is not open on weekends nor does it have evening appointments.

A total of 41 charts were electronically audited to determine whether the patients were current with recommended immunizations. Half of the patients aged 50 and above were identified as being immunized for influenza and pneumococcal diseases. According to the Centers for Disease Control and Prevention (CDC) (2015), approximately 60% of the general population has been immunized for these diseases. Immunization rates for tetanus, diphtheria and acellular pertussis (Tdap) and shingles vaccination rates for the clinic patients ranged from 20% to 30% exceeding the CDC (2015) estimate of 17% to 23% in the general population. Table 1 provides a summary of vaccination rates for the clinic and the general population as well immunization rate goals established by Health People 2020 (CDC, 2015).

Table 1

Microsystem Assessment Vaccination Rates

Vaccinations	Vaccination Rates (%)	General Population rates* (%)	Healthy People 2020 (%)
Influenza	50	59.3	90
Pneumonia PPV13/PPSV23	50	60.2	90
Tdap	20	14.2	Not Addressed
Shingles	30	24.2	30

*CDC, 2015.

Need for Intervention

The CDC Advisory Committee for Immunization Practice (ACIP) publishes recommendations for routine vaccinations for all age groups. Of special importance are vaccinations for people over the age of 50 with multiple chronic conditions. Low immunization rates combined with risk factors and barriers to accessing health care leave the homeless vulnerable to acquiring diseases, which are vaccine preventable. Optimizing immunization rates for the patients of this clinic is crucial to prevent diseases and health outcomes.

Needs Assessment

A microsystem assessment of the organization was completed in order to identify the needs of the clinic and to provide a framework for the project development. An organizational needs assessment identifies the strengths and weaknesses, resources and assets, stakeholder's level of support, community characteristics, and is critical to the development and implementation of effective strategies in improving healthcare (Pennel, McLeroy, Burdine, & Matarrita-Cascante, 2015).

The Haven for Hope organization has partnered with the primary care clinic offering supportive services to the patients such as free vaccines and free medications, referrals for free ancillary services, and transportation to referral appointments free of charge. The collaborative services are important for medically underserved and poor homeless population. The physician and the clinic nurse are important stakeholders in collaborating with other healthcare professionals and offering support to implement evidence-based strategies to improve healthcare of the impoverished patients. Immunization status is Healthcare Effectiveness Data and Information Set (HEDIS) performance measure established by the National Committee for Quality Assurance (NCQA) and is a Center for Medicaid and Medicare Services requirement.

The medical staff recognized a system based change was also needed to improve preventive healthcare.

The shortage of staff and time-constraints on the nurse were the main causes that prevented patients from receiving the recommended routine vaccinations. The DNP student discussed the issue of the low immunization rate in the clinic with the clinic nurse. This meeting revealed that the nurse wanted to regularly assess vaccination status of the patients, but lacked the time to do so. Although vaccine assistance programs (VAPs) offered needed vaccinations for the homeless patients free of charge, the program qualification requirements were lengthy and tedious. The nurse strived to keep up with the paperwork and phone calls, necessary to complete the vaccination process but was always behind. The physician and the clinic nurse agreed that a less cumbersome VAP was needed.

The usefulness of the electronic health system (EHR) documentation, with its impact on quality of care and patient safety, is well documented. Although, it was noted that the important functions and features in the EHR, such as running monthly reports, tracking immunizations, provider alerts were not activated.

The homeless population, as a community, has its own customs and beliefs, which oftentimes create barriers in accessing the healthcare system. The mental illness, substance use, and the transient culture of homelessness lead to inconsistency in receiving healthcare as evidenced by missing clinic appointments.

SWOT (Strength, Weakness, Opportunities & Threat) Analysis

The SWOT analysis is a technique for understanding the strengths and weaknesses of the project and then identifying both the opportunities and the threats facing the project (Zaccagnini & White, 2014). The tool acts as a framework to guide the project leader to understand and find

solutions to weaknesses in the project and also provides direction to uncover opportunities and eliminate threats (See Appendix A).

The primary care clinic was established on the Patient-Centered Medical Home Model (PCMH), which is a care delivery model where patient care is coordinated by the primary care physician to ensure all the necessary care is provided when and where care is needed in a culturally and linguistic manner (American College of Physicians, 2016). The primary care clinic serves as a centralized setting for the homeless patients facilitating the care by registries and other means to ensure that all patients receive indicated care in an appropriate manner. The strong relationship built over time between the clinic staff and the patients is an important source of strength of the project. The transiency and the culture of the homelessness were important factors, weakening the project by patients missing vaccination appointments. The shortage of staff led to time-constraints contributing to untimely completion of cumbersome VAPs requirements, thus delaying vaccinations. The health clinic could lose the state and federal funding and remained a constant threat to the project.

Organization's Readiness for Change and Stakeholder Engagement

Assessment of organization's readiness for change is an important factor to assess when implementing new strategies for improving quality of a clinical practice in healthcare. The clinician understood the importance of implementing evidence-based interventions to improve care processes, patient outcomes, and efficiencies in the practice. The physician and the clinic nurse gave their commitment and support for the project. To demonstrate a commitment to the project, the physician allocated funds for the clinic nurse to attend the immunization workshop about standing orders and its benefits. Participating in the Immunization for Action Coalition (IAC) workshop helped the nurse to further commit to the project.

Project Identification

Purpose

The purpose of the quality improvement project was to increase vaccination rates for the homeless patients 50 years and older. The goal was to develop a project that increases adherence to the immunization guidelines for adults set by the United States Advisory Committee for the Immunization Practice (ACIP) (CDC, 2016). The project had two objectives:

- 1) By the end of the project (September, 2016) there will be an increase in percentage of patients who return for immunizations through the implementation of three combined evidence-based interventions that focus on clinic appointment reminders. Interventions include:
 - a. Distribution of vaccination reminder cards.
 - b. Distribution of personal immunization record.
 - c. Administration of vaccination reminder survey to determine other strategies that may be helpful in remembering clinic appointments.
- 2) By the end of the project (September 2016) there will be a 20% increase in the rate of vaccinations recommended for patients aged 50 years and older through the implementation of standing orders.

The anticipated long-term outcomes include the improved delivery of quality of care, decrease in hospitalizations, reduce morbidity/mortality from vaccine preventive diseases, and diminished healthcare costs. Appropriate and timely vaccinations incur herd immunity for the shelter residents and will offer protection for the community at-large as well.

Strength of the Evidence

Increasing Vaccination Rates Using Evidence-Based Solutions

The Community Preventive Services Task Force (Task Force) is a non-federal, independent panel of experts who provide evidence-based findings on preventive health. The Task Force recommendations for increasing vaccinations rate are based on systematic reviews of scientific evidence. The systematic reviews include a comprehensive analysis of cost of vaccinations, how the evidence is applied, the barriers to vaccinations and evidence of effectiveness of vaccines (The Community Guide, 2016). The Task Force supports a three -way approach to improve adult vaccinations rate: 1) Enhance access to vaccination services; 2) Increase community demand for vaccines; 3) Implementation of system-based interventions (The Community Guide, 2016).

The Task Force recommends standing orders to increase vaccinations rates in adults and children as one way to increase access to vaccinations services (The Community Guide, 2016). Standing orders gives authorization to all non-physician medical staff to assess vaccinations status and administer vaccinations without the physician's direct order, where allowed by state laws (The Community Guide, 2016).

Humiston et al. (2013) investigated the effectiveness of standing orders and other interventions recommended by the Task Force for increasing vaccination rates in adolescents in primary care practices. Findings suggested that the vaccine-only visits with standing orders were the most common interventions used by primary care practices to increase seasonal and non-seasonal vaccines coverage. Patient reminders and the recall system were not successful secondary to barriers of cost and difficulties in reaching patients.

Nemeth et al. (2012) evaluated the implementation of electronic standing orders for increasing vaccination rates and for monitoring chronic disease indicators in large primary care practices in the United States. The study found slight increases in adult immunizations, however discovered the existence of many barriers among the staff to standing orders implementation. Fear of liability, self-perceptions about their ability to do the job correctly and time management issues in the face of increased responsibility were the barriers discovered in the study. Cost for immunizations and reimbursement issues were experienced by practices as well (Nemeth et al., 2012).

Nowalk et al. (2014) tested the “4 Pillars Toolkit,” which is an expanded version of the set of recommendations based upon the Community Preventive Task Force. In Pillar #1, clinic hours for influenza vaccines were extended to offer convenient access for patients. Pillar #2 was to notify patients through reminders such as fliers and posters. Pillar #3 focused on improving the office systems through assessing the patient’s immunization status, implementing standing orders to vaccinate and building physician / nurse prompts into the electronic medical record. Finally, Pillar #4 selected a motivating immunization champion for the practice. The expansion of the 4 Pillars toolkit increased overall pneumonia and influenza vaccination rates from 20% to 40% and 22% to 33% for high –risk adults respectively. The study suggested that two or more interventions in combination maybe used to experience higher rates of vaccinations.

In a cluster randomized trial using the “4 Pillars Toolkit” and the Task Force Guidelines, Zimmerman et al. (2014) experienced high influenza vaccination rates in clinical practices serving a disadvantaged pediatric population. The study found that practices who offered after-hours vaccine clinics and walk-in appointments (Pillar 1) placement of vaccination posters in the exam rooms (Pillar 2), and sent patient reminders as notification to parents/patients (Pillar 2)

along with standing orders had high effectiveness score translating into an increase in children receiving vaccinations. The immunization champions in these practices were also very effective as motivators for the staff (Pillar 4). The use of multiple strategies tailored to the target population for increasing vaccination coverage is evident in the study.

Hambidge, Phibbs, Chandramouli, Fairclough & Steiner, (2009) conducted a randomized control trial to increase vaccination rates in a socioeconomically disadvantaged Hispanic population of infants using an extensive patient reminders/recall system along with personal tracking of patients using a culturally competent approach. Text messaging, phone calls, post cards followed by home visits were used to emphasize the importance of vaccinations. The case management staff assisted the families with applying for health insurance, billing issues and in transporting patients to appointments. The wrap-around community services aided in increasing well-child visits from 15 % to 65% thus raising immunization rates in the clinic. Similar results were seen in a randomized control trial study by Loo et al. (2011), however the study was conducted in a geriatric population using personal reminders in the form of phone calls.

Quantitative research regarding effectiveness of standing orders in the homeless clinics is not presently available. This may be due to myriad of psychosocial issues and transiency in the homeless population preventing quantitative studies.

Methods

A quality improvement project collecting evaluation data using descriptive statistical methods to determine the project outcomes was conducted. This project was designed to increase influenza, pneumococcal, Tdap, shingles, hepatitis B and meningitis vaccination rates by comparing pre and post-intervention data in homeless patients 50 years and older. Of the 170 patients seen at the clinic in the years 2015-2016, 75 patients were 50 years and older. A

retrospective chart review was performed using October 2015 data as a baseline and compared to the same 75 patients in a post intervention review. A successful project goal was set at 20% increase in all vaccinations administered. The project was implemented from June, 2016-August 2016 with a goal of increasing all vaccination rates by 20% from baseline.

Initially it was planned to select patients who are 65 years and older, however, after discussion with the clinical mentor, it was decided to lower the age of participants to 50 years and older, thus maximizing vaccine protection for this specific age group. The research literature supports this change since the homeless adults develop multiple chronic diseases much earlier than the general population (Brown, Goodman, Guzman, Tieu, Ponath, & Kushel, 2016).

Setting/Population

The quality improvement project was conducted in a primary care clinic located in a local homeless shelter in San Antonio, Texas. The clinic serves a total of 170 homeless patients who are registered residents of the shelter. The vast majority of the patients lived in the open sleeping area of the shelter, whereas the rest resided in dormitories located on the organization's campus.

Interventions

This project included three strategies for quality improvement.

1. Distribution of vaccine reminder cards (See Appendix B)
2. Distribution of personal immunization record (See Appendix C)
3. Implementation of standing orders at the clinic.

Standing immunization orders authorizes non-physician medical staff, where allowed by state law to assess a patient's immunization status and administer vaccinations according to the protocol approved by the authorized practitioner (IAC, 2016). Physician signed the protocol for standing orders to be initiated at the clinic for influenza,

pneumococcal vaccines (PPSV23 and PPV 13), shingles, Tdap, hepatitis B series and meningitis vaccinations.

The staff nurse assessed each patient for possible vaccination according to the ACIP guidelines (CDC, 2016). After reviewing the immunization history in the electronic medical system (EMR) and in the electronic San Antonio Immunization Registry (eSAIRS), patients were given the appropriate vaccines. Afterwards the nurse documented the administered vaccinations in the EMR and in the e SAIR system.

Measures

Data collected was the total number of each vaccine administered as documented in the EMR. Counts and percentages of each vaccination were obtained. The percentage increase was calculated for each vaccination.

A total of 41 vaccination reminder cards were given to patients with due dates of future vaccinations. A total of 41 immunization records with documented vaccinations were handed along with the vaccination reminders providing the history of all vaccines received. Each patient was explained the purpose and importance of the reminder cards and the immunization document. The explanation to the patients included the benefits of a having vaccination reminder card and a personal immunization record. Additional instructions to the patients were to bring both documents on the next vaccination visit. Data collected was the number of patients' the reminder cards were given, number of return patients with reminder cards and number of return patients with immunization record.

The DNP student developed a 4-item vaccine reminder survey to determine effectiveness of reminder cards and to identify possible causes of vaccine refusals in patients attending the clinic. The aim was to communicate with the patients in order to better understand and address

their concerns relating to vaccines and possibly take steps to resolve their issues. Patients were requested to fill out the survey after their clinic appointments. Assistance in survey completion was offered if needed (See Appendix D).

Each item from the survey was tabulated as counts and percentages. The results were analyzed qualitatively for effectiveness of the reminder cards. The last item of the survey was analyzed qualitatively for the concerns towards vaccines by the homeless patients.

Analysis

This quality improvement project was a small-scale project. To determine the success of the project, the percentage increase of vaccination rates was calculated. Key patient demographic characteristics obtained were age, gender and race/ethnicity of the participants. The vaccination reminder survey results were analyzed qualitatively in a form of narrative.

Organizational Barriers and Facilitators

The inherent conditions of homelessness such as transience and instability prevented from receiving appropriate vaccinations. The attitudes and beliefs towards vaccinations such as fear of needles, afraid of getting sick after getting vaccinated were some issues encountered during project implementation. Living in the shelter was stressful and traumatic for the residents, who experienced competing priorities such food insecurities that overshadowed the need to fulfill clinic appointments. The homeless patient population received vaccinations free of charge from a number of vaccine manufacturers who provides vaccines primarily to uninsured adults. These vaccine assistance programs (VAPs) required completion of lengthy paperwork, faxing and obtaining vaccine approvals through countless phone calls. The approval procedure oftentimes took more than a week, thereby delaying vaccine administration. The VAPs were a huge barrier for successfully implementing the project. The shortage of staff was a barrier

because the clinic nurse often times felt overwhelmed and pressured, thus there were many missed opportunities for vaccinations. Hence time constraints posed a notable delay in completing VAPs requirements. The EHR system did not function to its full capabilities and the concomitant use of paper charts made it difficult for the streamlining of the project.

The facilitators of the project were the physician and the clinic nurse. They offered their expert guidance and support during the DNP project.

Ethical Considerations

An exemption approval was requested and granted from the University of the Incarnate Word's Institutional Review Board (IRB). To protect confidentiality, the DNP student collected no identifying information about the project participants. After receiving the vaccination, the participants completed a vaccination reminder survey designed to determine the effectiveness of the reminder cards. The willingness to complete the survey was considered consent.

Results

The purpose of this quality improvement project was to increase vaccination rates in the homeless adults who were 50 years and older living in the shelter. Appendix E provides the demographic characteristics of the patient population. Within the sample of 75 participants, 53 (71%) were men, 23% African American, 33% Hispanic, 43% White, and one participant was of American Indian descent. Average age of the participants was 59.7 years. The age breakdown of the participants is shown in Appendix F.

The chart review of 75 homeless participants showed high prevalence of chronic diseases and risk factors (See Appendix G): Obesity 33%, hypertension (59%), diabetes (41%), osteoarthritis (47%) and hyperlipidemia 29%. The rate of tobacco use was 71% amongst the participants with 45% suffering from chronic obstructive pulmonary disease (COPD). The high

prevalence of mental illness in the participants should not be overlooked in correlation with chronic disease. Most prevalent diagnoses in the patient population was; 1) Major Depression 38%; 2) Anxiety 31%; 3) Schizophrenia 20%; 4) Bipolar 40% and 5) PTSD 12% (see Appendix H).

The first objective was not met. Out of 41 distributed reminder cards, only 5 (12%) of patients returned with reminder cards. No patients returned with their immunization record. Obtaining data for increase in patients return rates was proved difficult than realize. The nurse only visits were coded with the physician visits making it very hard to distinguish the visits, hence was not able to calculate the data accurately.

The 4-item vaccination reminder survey was developed to determine the effectiveness of the reminder cards. Forty-one patients filled out the vaccination reminder surveys. Results of the survey were tabulated and counted for each question contained in the survey (see table 2).

The second objective of the project was to improve 20% increase in all vaccinations in homeless participants by implementing standing orders. The pre and post intervention vaccination rates are provided in figure 1. The project succeeded in exceeding the 20% target for all vaccinations.

Discussion

The project findings support The Community Preventative Services Task Force recommendations for standing orders coupled with multiple strategies to increase the vaccination rates of the adult and children population (The Community Guide, 2016). Standing orders have been shown to be effective in increasing influenza and pneumococcal vaccine coverage (Nemeth et al., 2012). A quality improvement project using standing orders to increase influenza vaccination rates in the elderly showed similar results (Gruber, 2105). In addition to enhancing

Table 2

Vaccination Reminder Card Survey

Item Questions	Yes/No
1. Did you bring the reminder card with you?	5/36
2. Did the reminder card help you to remember today's appointment? If not, what helped to remember today's appointment?	5/36 Most of the patients said, "if the nurse did not come and reminded me, I would not have come for my shot".
3. What other ways do you think may help you to remember your future clinic appointment?	Personal phone calls and the nurse walking to the shelter and personally reminding the patients for their shots.
4. What are some ways you may have refused vaccination today?	
a. You feel you do not want/need the shot	No refusals
b. You are afraid of needles.	
c. You will fall ill after the shot.	
Other	

immunization rates, the use of standing orders has facilitated care processes and independence in staff decision making regarding administration of vaccines to patients (Nemeth et al., 2012, Zimmerman et al., 2014). The implementation of standing orders in this clinic appeared to empower the clinic nurse to assess and vaccinate patients independently by providing vaccination only visits during the project. The nurse-only vaccination visits improved the efficiency in immunization delivery, thus increasing overall immunization coverage rates for the patients.

Five patients (12%) returned with reminder cards, although it is hypothesized that most of the patient return visits can be attributed to the phone calls and countless personal visits made by

the nurse to remind patients of their due vaccinations as evidenced by vaccination reminder survey. No patients brought immunization records on clinic visits.

The competing priorities for food and safety, stress of day to day living, high rates of mental illnesses and drug addictions overshadows the need for healthcare in homeless individuals. Therefore, encouraging and reminding patients personally have proven to be helpful in majority of the clients. The personal reminding strategy possibly fosters social support and may minimize the negative effects of marginalization that the homeless population face. The nurse acted as a motivator and immunization champion showing compassion and care critical in the care delivery for this particular population.

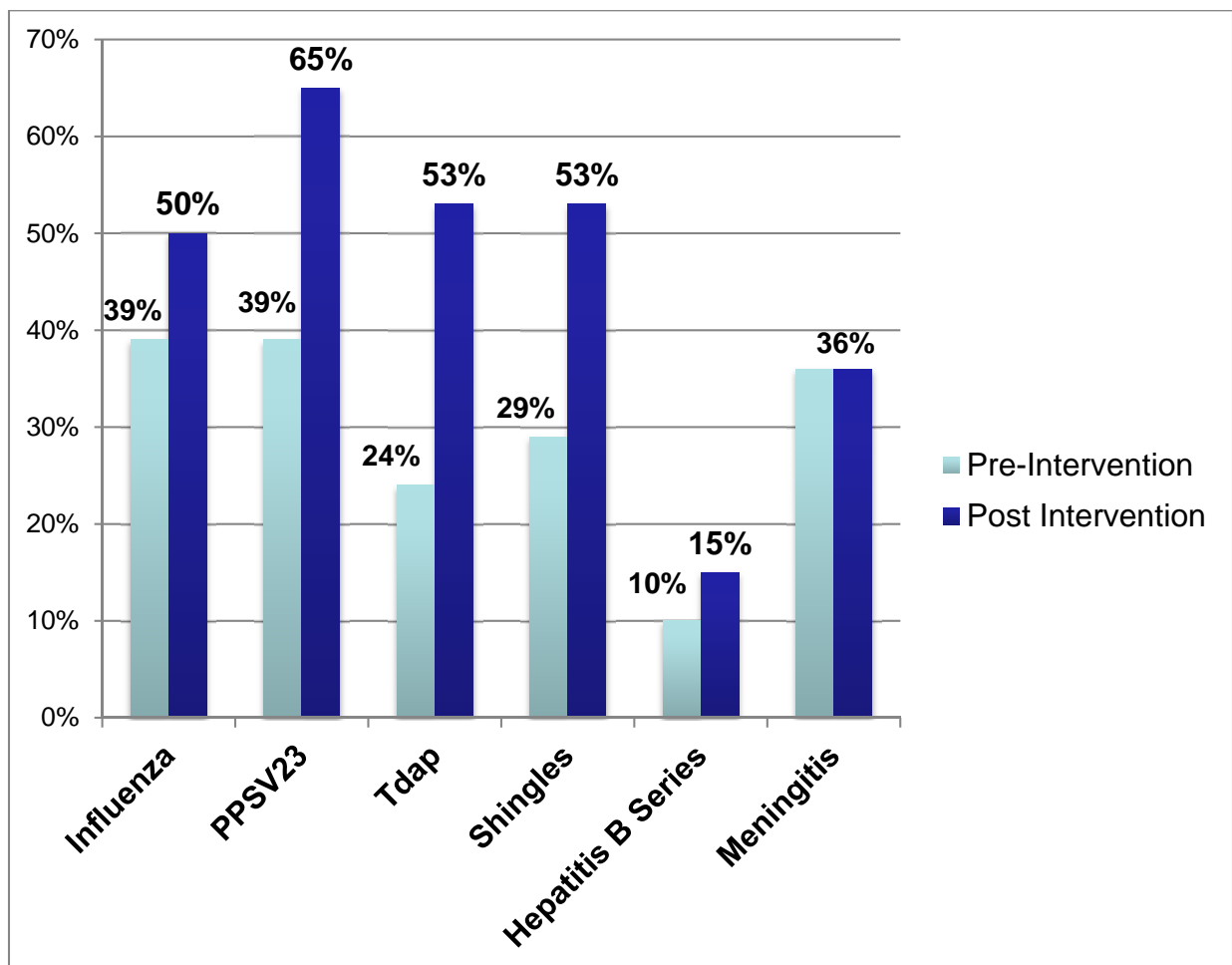


Figure 1. Pre and post intervention vaccination rates.

Limitations

The inability of the EHR to code the physician and nurse visit separately prevented the DNP student to calculate the increase in patients' visits accurately, presenting a huge limitation to the study. The project was conducted in the clinic with insufficient staff to perform all the tasks making it difficult to complete vaccination approval requirements for the homeless patients. The low educational literacy levels of homeless patients impacted their ability to complete the vaccination survey.

Recommendations

Individuals experiencing homelessness were poor, have extremely limited resources and frequently lack health insurance. VAPs offer needed vaccines free of charge to eligible adults, particularly uninsured. Although most assistance programs have proven to be beneficial, they have been found to have cumbersome requirements during the project. The Adult Safety Net Program (Texas Department of State Health Services, 2016) provides vaccines at no cost to qualified enrolled providers thereby allowing for instantaneous access.

Evidence in the literature supports collaboration with local nursing, medical schools, and pharmaceutical retailers to increase the vaccination rates in the homeless population through immunization drives and outreach projects (American Pharmacist Association, 2015, Metcalfe & Sexton, 2014, Rizal et al., 2015). Haven for Hope currently hosts vaccination drives. Maintaining and increasing the practice is recommended.

Shortage of staff was an identified barrier to successfully completing the project in time. Having an additional staff member to assist the nurse in daily workflow tasks is recommended for the continued sustainability of the project.

Implications for Practice

Standing order programs have proven to be effective in increasing pneumonia and influenza vaccination rates in diverse clinical settings. The success of the evidence-based project in substantially increasing vaccination rates in a shelter-based clinic is attributed to many factors. A combination of strong organizational support, trust in the health care provider and implementation of evidence-based strategies have the potential to reduce barriers to preventive care when tailored to target population. The combined interventions could prove beneficial in other clinics based in homeless shelters.

The DNP prepared nurse focuses on evaluating scientific evidence to implement best practices to influence patient health outcomes, improve care processes and efficiency of a workplace. A thorough investigation of the clinic system is critical to identify issues that may pose as barriers to the daily workflow as well as determining whether the national practice guidelines are being followed (American Association of Colleges of Nursing, 2006). The DNP prepared nurse takes the leadership role in improving the organizational systems. The DNP prepared nurse has a huge role in preventive healthcare of diverse populations. By virtue of their ability to synthesize various theoretical concepts and model, they understand the impact of psychosocial and cultural factors on the promotion of health and disease prevention. The DNP prepared nurse is able to combine the health policy affecting the access to health care with the socioeconomic and cultural factors and critically analyze in depth for planning strategies to implement for a given population (Zaccagnini & White, 2014).

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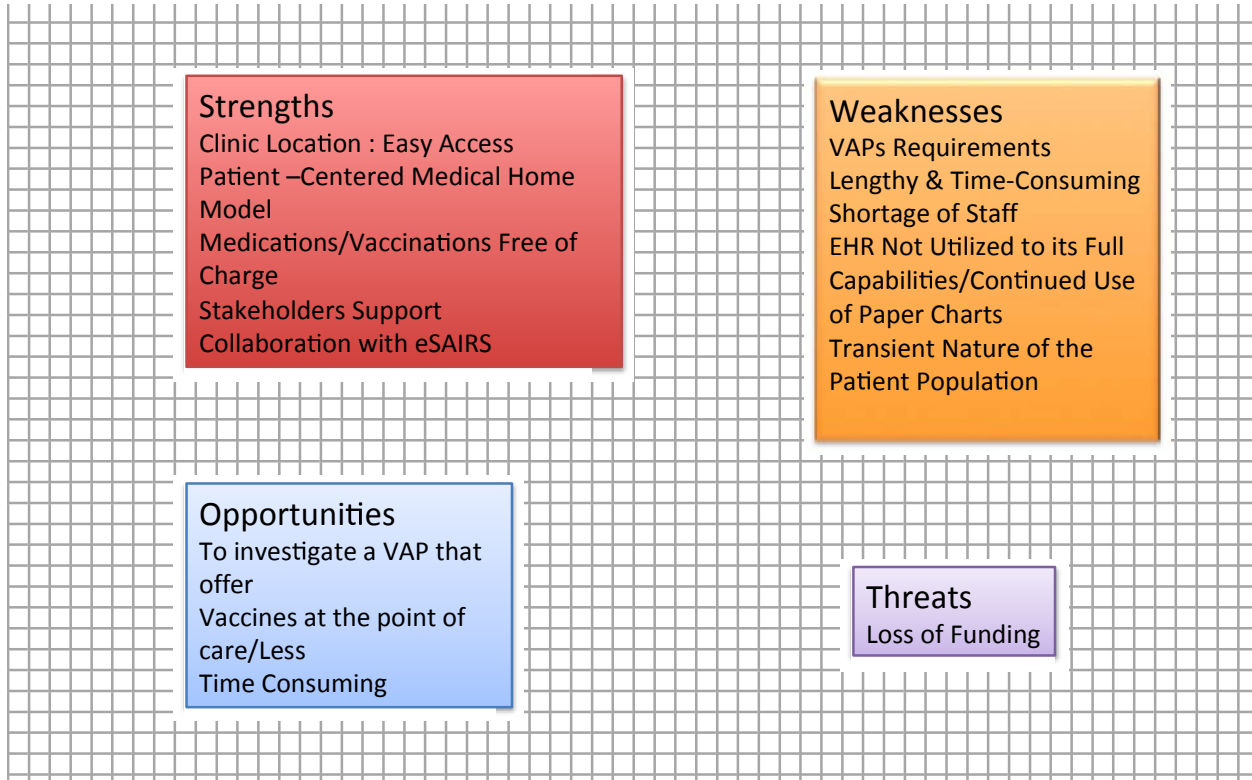
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Appendix A

The Strength Weakness Opportunity and Threat Analysis



Appendix B

Vaccination Reminder Card

Name _____ AZ # _____

	Dose #1	Dose #2	Dose #3
Hepatitis B			
Pneumonia PPSV13 PPSV23			
Meningitis			
T-Dap			
Zostavax			
Gardasil			

Appendix C

Adult Immunization Record

ADULT IMMUNIZATION RECORD

Always carry this record with you and have your health care professional or clinic keep it up to date.

Vaccine	Type of vaccine	Date given mo/day/yr	Health care professional or clinic name	Date next dose due
Hepatitis B (HepB, HepA-HepB)				
Hepatitis A (HepA, HepA-HepB)				
If combo				
Measles, Mumps, Rubella (MMR)				
Varicella (chickenpox) (Var)				
Zoster (shingles)				
Tetanus, Diphtheria, Pertussis (whooping cough) (Tdap,Td)				

Last name M.I.

Birthdate: (mo.) - (day) - (yr.) First name

Patient Number:

Immunization Action Coalition • Saint Paul, Minn. • www.immunize.org
 To order additional record cards, visit www.immunize.org/shop Item #R2005 (9/15)

Vaccine	Type of vaccine	Date given mo/day/yr	Health care professional or clinic name	Date next dose due
Pneumococcal (PCV13, PPSV23)				
Influenza (IV, LAIV)				
Human Papillomavirus (HPV2, HPV4, HPV9)				
Meningococcal (MCV4, MenB, MPSV4)				
Other				

Last name First name M.I.

Medical notes (e.g., allergies, vaccine reactions):

Health care provider: List the mo/day/yr for each vaccination given. Record the generic abbreviation (e.g., PPSV23) or the trade name. For combination vaccines (i.e., HepA-HepB), fill in a row for each separate antigen in the combination.

To learn more about vaccines, visit www.vaccineinformation.org

Appendix D

Vaccination Reminder Survey

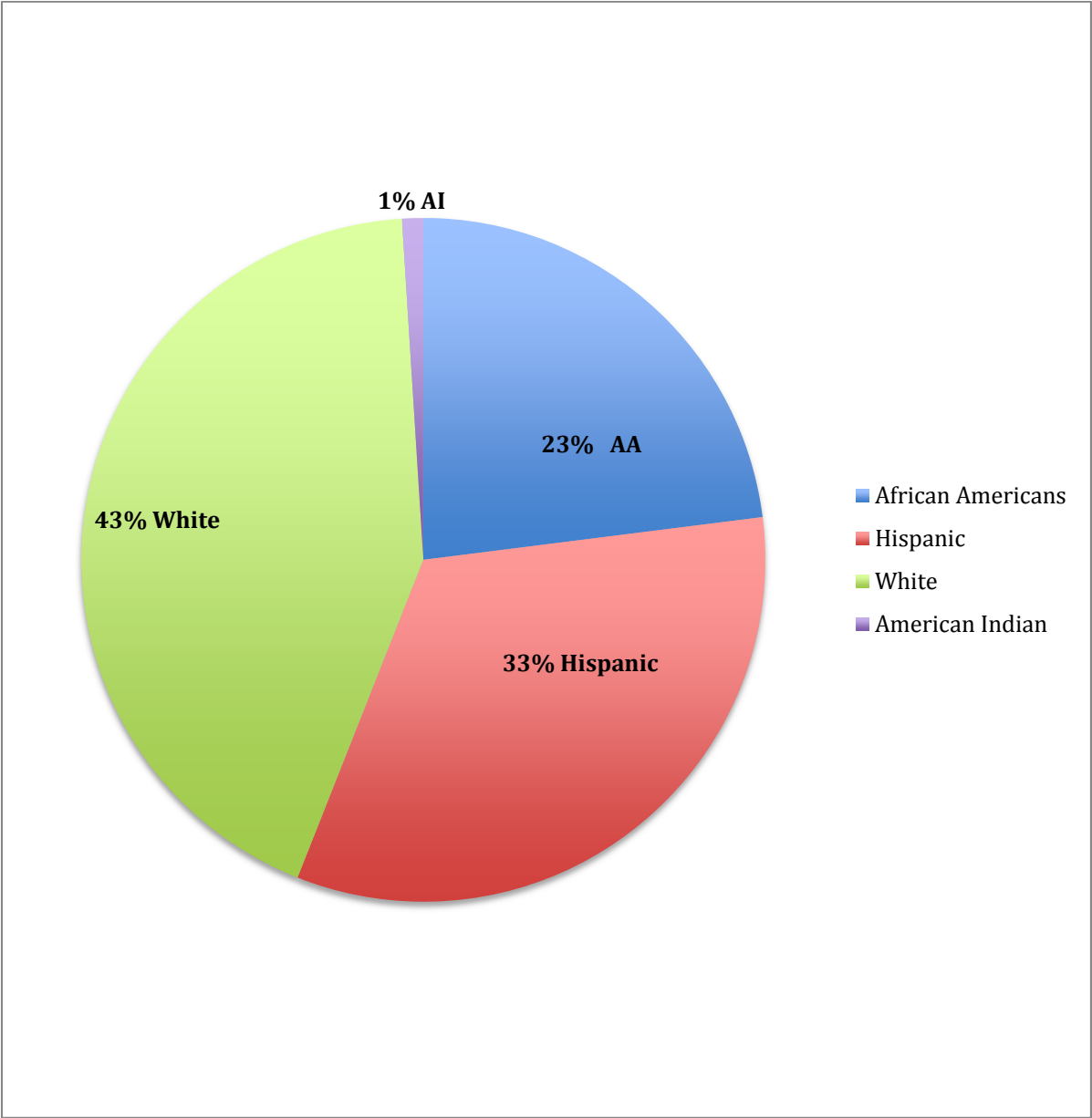
1. Did you bring the vaccination reminder card with you today Yes No

2. Did the vaccination reminder card help you to remember today's appointment?
Yes No
If not what helped to remember today's appointment?
3. What other ways do you think may help you to remember your future clinic appointment?

4. What are some possible reasons you may have refused vaccinations today?
 1. You feel you do not need the shot.
 2. You are afraid of needles.
 3. You feel you will get sick after the shot.
 4. You do not like the shot.
 5. You feel the shot is not safe.Other

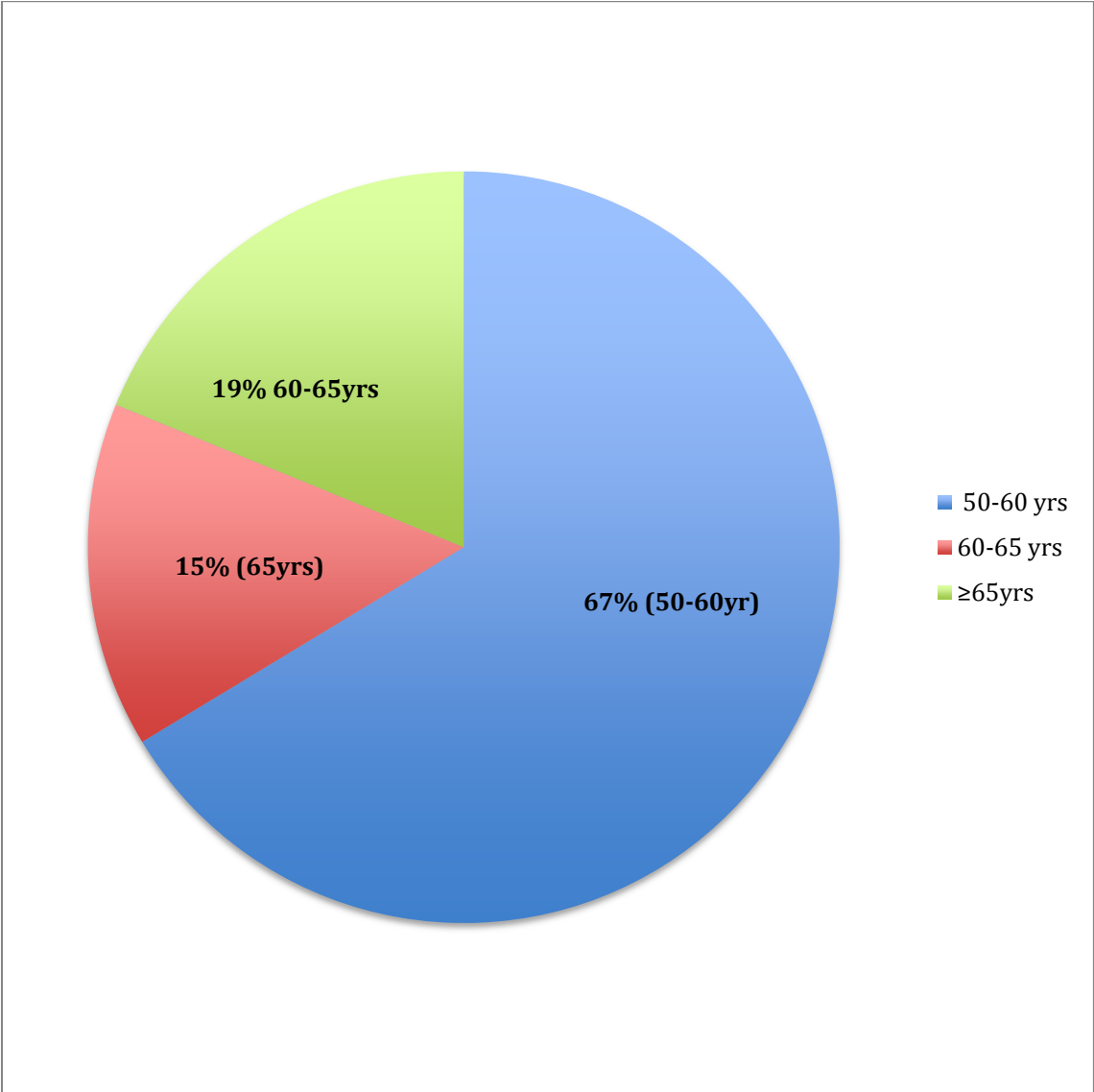
Appendix E

Participant Demographics (Race/Ethnicity)



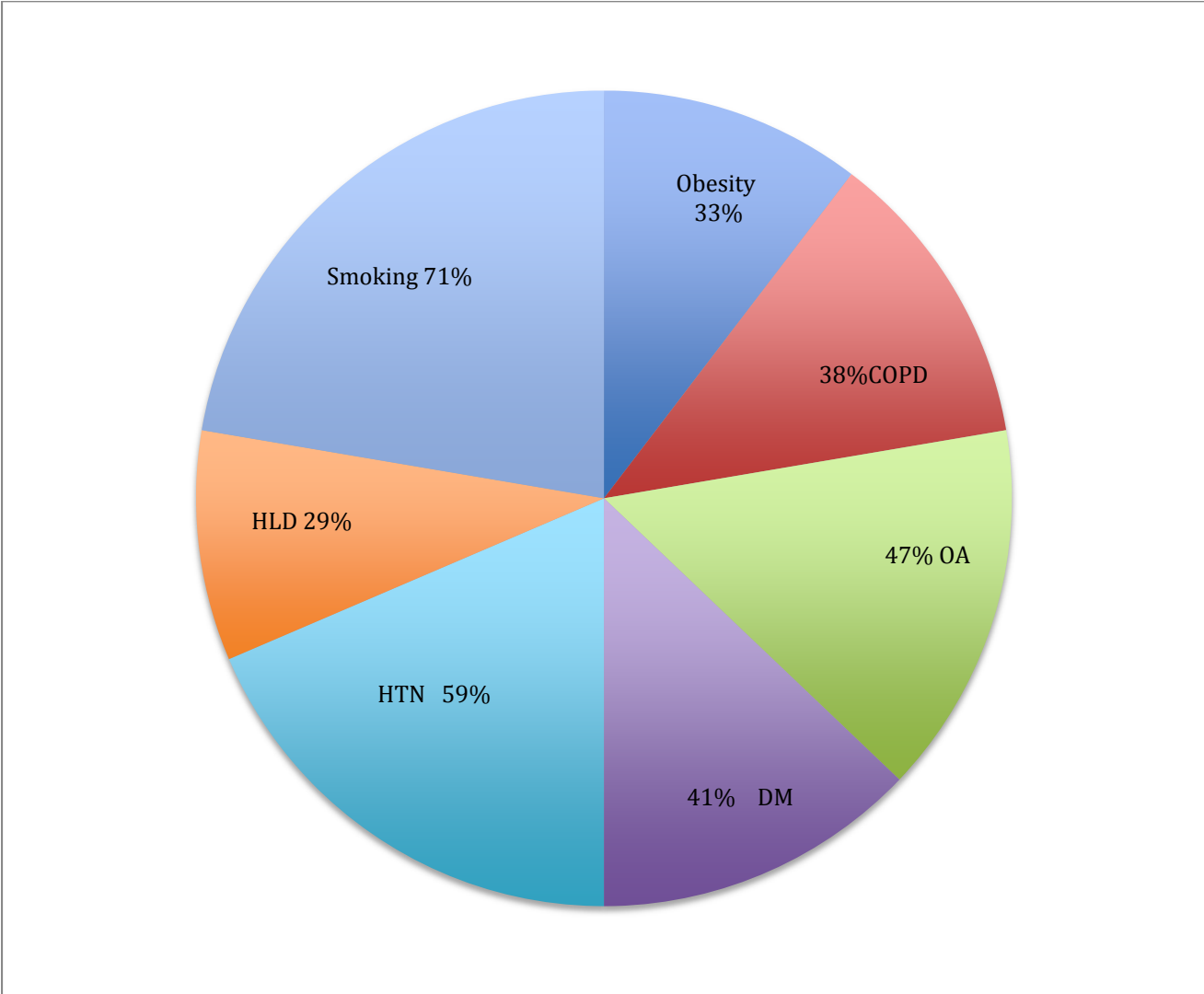
Appendix F

Participant Demographics (Age)



Appendix G

Top Diagnoses of the Participants



HTN: Hypertension; DM: Diabetes Mellitus; OA Osteoarthritis; COPD: Chronic Obstructive Diseases

Appendix H

Top Three Mental Illnesses

