

6-26-2015

Impact and reach of a peer-led health education intervention utilizing harm reduction strategies in an incarcerated population

Miranda Leah Sedillo

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Impact and reach of a peer-led health education intervention utilizing harm
reduction strategies in an incarcerated population

By

Miranda Sedillo

BACHELORS DEGREE OF SCIENCE IN EDUCATION

THESIS

Submitted in Partial Fulfillment of the
Requirements for the Degree of

Master of Science

Health Education

Concentration of Community Health

The University of New Mexico

Albuquerque, New Mexico

May 27, 2015

Dedication

Every challenging work requires an individual's dedication, but most important the passion and support to complete it. I would like to dedicate this thesis to:

- My daughters, Della, Angel and Aaliyah, who have always been my drive so I can become someone they can be proud of; to teach them to overcome life's obstacles and come out on the other end wiser and more kind;
- The people I work with in New Mexico's prison system. It is their work, dedication and stories that have grown me to be the Health Educator I am today and teach me to be passionate about my work;
- To my mentors at Project ECHO®: Karla Thornton and John Brown, who believed that I could take on and manage such an innovative, important project for our communities;
- To my parents, stepparents, grandparents and sister who never gave up on me; who raised me to have extraordinary values to help serve the populations I work for;
- And, to my husband; who loves me, unconditionally, no matter how many hours I dedicate to work and school away from our family; and who is and always will be my greatest cheerleader.

Acknowledgements

I begin by acknowledging Dr. Christina Perry, my advisor and thesis chair, for her dedication to teaching me the most efficient strategies in program planning and development. I thank her for her delivery of teaching which helped guide me towards achieving my Master's Degree, something I never fathomed.

I also thank my committee members, Dr. Eli Duryea for his creative ideas and expert suggestions. I thank him for his challenging technical vocabulary, which drove me to expand my resources outside of the classroom and text to better familiarize myself with evaluation and statistics. Dr. Karla Thornton, who has instilled her trust in me to manage this amazing project and grow with promotion and professionalism. Dr. Summers Kalishman, who wholeheartedly volunteered to help guide and support me in this process, who was available to help encourage me and support me when challenges arose.

I would also like to acknowledge Dr. Magdalena Avila, who instructed many of my graduate level courses and interwove culture and diversity throughout to expand my perception of how health is defined.

Thank you all, for your continued dedication to support me in being successful in my studies, profession and future.

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By

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B. S., Education, University of New Mexico, December 2012

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Abstract

Prisons are high-risk environments for communicable disease transmission. The majority of incarcerated individuals return to their communities, many with untreated disease, creating a need for disease control, prevention and treatment within the prison population. Prisoner Health is Community Health: The New Mexico Peer Education Project (NMPEP) was developed by Project ECHO® (Extension for Community Healthcare Outcomes) to address the epidemic of Hepatitis C transmission in the New Mexico state prison system. NMPEP is a low-cost, peer-led health education intervention aimed to increase knowledge and harm reduction techniques among incarcerated individuals prior to returning to their communities. The model is innovative by incorporating a variety of teaching modalities, including face-to-face education, group discussions and the Project ECHO® teleconferencing model to enable peer educators in geographically dispersed areas to access experts, receive timely updates and share best practices as a group. The objective of this study is to evaluate the impact of the NMPEP on peer educators and the students they teach.

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Chapter One

Introduction

Problem Statement

Prison populations are overrepresented by individuals living with infectious diseases, chronic diseases and poor health conditions. Prison facilities are high-risk environments for communicable disease transmission partly due to social and cultural acceptability of engagement in risky health behaviors that contribute to adverse health conditions such as transmission of blood borne pathogens. Diseases such as hepatitis C, human immunodeficiency virus (HIV), diabetes, tuberculosis, staph infections and addiction are astronomically high among incarcerated individuals in comparison to the general population. The majority of incarcerated individuals return to their communities with untreated disease, creating a need for disease control, prevention and treatment within the prison populations to aide in reduction of public health demands. Prisons facilities are ideal settings to provide low-cost, peer-led health education interventions to increase knowledge and harm reduction techniques among incarcerated individuals prior to release back into New Mexico communities.

Background Information

Incarceration in the United States

In the United States, the rate of incarcerated individuals has remained at a steady incline since the 1980s. The U.S. Department of Justice reports at year-end 2009, over 1.6 million adults incarcerated under correctional setting jurisdiction. In addition to those incarcerated, more than 7.2 million adults were under some form or supervision,

including parole, probation, jail or prison settings; representing 3.2% of adult U.S. citizens (U.S. Department of Justice: Office of Justice Programs, 2009). The United States, although a leader in many innovations and social progress, also leads in the number of people incarcerated. In comparison to other comparable nations, the United States incarcerates at a rate of up to seven times as many people (Hartney, 2006)

Incarcerated Population, Demographics

Ethnic and gender disparities are evident in United States' prison facilities. A cross-sectional analysis of inmates held in custody in state or federal prisons or in local jails reported that Black (non-Hispanic or Latino origin) men are incarcerated at 6.4 times greater rate than non-Hispanic or Latino Whites men (Glaze, 2011). Men also are overrepresented in custody with a 13.4 greater rate of incarceration compared to woman in custody. Age is also disproportionate throughout the population, with over 55% of the population aged 20-39 years old. The demographic distribution from the cross sectional analysis is reported in Table 1.

Table 1- Ethnicity and Gender, State, Federal and Local Jails, 2010

Race	Total Males per 100,000	Total Females per 100,000
Total ^a	1,352	126
White ^b	678	91
Black ^b	4,347	260
Hispanic/Latino	1,775 – 8152	133

^aIncludes American Indians, Alaska Natives, Asians, Native Hawaiians, other Pacific Islanders, and persons identifying two or more races.

^bExcludes persons of Hispanic or Latino origin

Cost of Incarceration

A fiscal study conducted by Vera Institute of Justice compiled financial data from 40 states. The total budget for these forty prisons accumulated to \$39 billion in one year (Henrichson & Delaney, 2012). In addition to the high cost of incarceration is the medical expense costs for incarcerated people.

Researchers from The Pew Charitable Trusts analyzed cost data from the 44 states that were included in a study conducted by the Federal Bureau of Justice Statistics, or BJS. Pew found that \$6.5 billion, or 18% of the total correctional expenditures in 2008 were spent on health care. Also reported was a steady year-to-year increase in health care expenditures. Pew contributed the increasingly high costs related to “aging inmate populations, prevalence of infectious and chronic disease, mental illness, and substance abuse among inmates and challenges inherent in delivering health care in prisons, such as distance from hospitals and other providers” (The Pew Charitable Trusts, 2014).

Incarceration in New Mexico

The New Mexico Corrections Department currently houses 7,032 incarcerated individuals among eleven prison facilities (New Mexico Corrections Department, 2014).

The New Mexico Department of Corrections, similar to the national trend, has an increasing rate of incarceration. Also like the national data, New Mexico’s prison population is comprised of ethnic and gender disparity. New Mexico’s prison population is 6% Black (non-Hispanic or Latino), 11% American Indian and/or Alaska Native, 31% Non-Hispanic White and 52% Hispanic. When compared with the general population in New Mexico, black, American Indian and Alaska Native and/or Hispanic people are overrepresented in the prison population and Non-Hispanic White people are

underrepresented. The black population leads in disparity in prison population compared with general population, accounting for 2% of New Mexico's population, but 6% of New Mexico's prison population (Prison Policy Initiative, 2014). Gender distribution in 2010 was 9% female offenders and 91% male offenders (Carson & Sabol, 2012).

The New Mexico Corrections Department utilizes a point system that classifies incarcerated individuals into six security levels. Classification levels are ranked from Level I, minimum security, to Level VI, maximum security. Each level has varying degrees or security restrictions to include access to other inmates for programming, work and recreation time and confinement policy. Classification is based on criminal history, length of sentence, security risk or threat to others, gang affiliation and behavior (New Mexico Corrections Department, 2013). Table 2 - NMCD List of Facilities describe the name, location and security level for each of New Mexico's prison systems.

Table 2 - NMCD List of Facilities

Facility	City	Facility Classification Levels
Central New Mexico Correctional Facility	Los Lunas, NM	Levels I, II, III, V, VI
Guadalupe County Correctional Facility	Santa Rosa, NM	Level III
Lea County Correctional Center	Hobbs, NM	Level III
New Mexico Women's Correctional Facility	Grants, NM	Levels I, II, III, IV, V, VI
Northeast New Mexico Detention Center	Clayton, NM	Level III
Otero County Prison Facility	Chaparral, NM	Levels II and III
Penitentiary of New Mexico	Santa Fe, NM	Levels II, IV, V, VI
Roswell Correctional Center	Hagerman, NM	Level II
Southern New Mexico Correctional Facility	Las Cruces, NM	Levels II, III, IV
Springer Correctional Facility	Spring, NM	Levels I and II
Western New Mexico Correctional Facility	Grants, NM	Levels II and III

Prison Environment and Disease

Most people acknowledge that the best way to stay healthy is to engage in behaviors that promote health such as eating nutritious foods, engaging in regular exercise and getting vaccinations. In addition, most people who strive for a healthy lifestyle abstain from behaviors, which decrease a health status, such as smoking, using illicit drugs, etc. Most would define health as an absence of disease. For the past few decades more and more research is conducted on determinants outside of behavior such as our environments, resources and socioeconomic status as a major contributor to our health status.

The World Health Organizations defines social determinants of health as “the conditions in which people are born, grow, live, work and age” and continues to explain, “these circumstances are shaped by the distribution of money, power and resources at global, national and local levels” (World Health Organization, 2014). Focusing on the incarcerated populations, Awofeso 2010 describes that prisons are doubly impacted by social determinants. Prison populations are overrepresented by populations who are coming into correctional facilities with lower health status due to high proportions of people incarcerated who engage in unhealthy behaviors (illicit drug use and alcoholism). In addition, a great portion of the population living outside of prison in lower socioeconomic classes experience higher levels of poverty, lower levels of education and lower levels of social support. Second, people entering prison with lower health status are entering an environment that contributes to poor health status (Awofeso, 2010). It is suggested that prisons create an environment of “*malnutrition, infectious disease, overcrowding, austere custodial physical infrastructure, limited access to basic health care services, and inhumane attitudes and practices of custodial officers towards*

inmates.” Combining poorer health status upon entry to the prison system with acceptability of high-risk health behaviors and poor environments overworks individuals incarcerated and leads to deteriorating health status (Awofeso, 2010).

In addition to social determinants of health that influence prisons populations, the prison environment is unique in that many adverse health conditions tend to become normalized by the social conditions of prisons. Examples of this include regular tobacco use, illicit drug injection use and violent behaviors; all of which contribute to disease.

Prisoners have high rates of communicable diseases and substance use. According to a Rand Corporation research brief, prisoners have a nine to tenfold greater prevalence of Hepatitis C, a fivefold greater prevalence of HIV, and a fourfold greater prevalence of active tuberculosis than the general population (RAND Research Brief, 2003). A 2010 report from the National Center on Addiction and Substance reported that 65% of U.S. prison inmates meet the DSM-IV medical criteria for alcohol or other drug abuse and addiction. Another 20 %, who do not meet the diagnostic criteria, were under the influence of alcohol or illicit drugs at the time of their offense (The National Center on Addiction and Substance Abuse at Columbia University, 2010). In addition, prisons are extremely high-risk environments for the transmission of bloodborne viruses such as Hepatitis C, Hepatitis B, and HIV. Transmission of bloodborne viruses is linked to the sharing of injecting equipment, tattooing equipment, personal care items such as razors and toothbrushes, and to unprotected sexual encounters.

Incarceration as a Public Health Concern

Most prisoners are incarcerated for relatively short periods. In 2008, 56% of sentenced offenders released from state prison had served 1 year or less and 76% had served 2 years

or less (US Department of Justice: Office of Justice Programs, Bureau of Justice Statistics, 2010). Ninety-five percent of people in the criminal justice system will be released back into their communities (Beck & Mumola, 1999). Prisoners are being released back into the community in large numbers with untreated communicable diseases and ongoing addiction. Providing health education and disease prevention to inmates before they are released from prison offers an opportunity to establish disease control in the outside community. In addition, prisons provide a unique opportunity to reach a disenfranchised, at-risk, underserved population and improve public health.

Purpose

The purpose of this study is to report the outcomes of an evaluation of a peer-led disease prevention and harm reduction education program implemented in seven New Mexico prison facilities from 2012-2014.

Research Questions

1. How do peer educators' pre-training harm reduction (HR) knowledge, attitudes, self-efficacy and behavior intention scores compare at post-training?
2. To what extent are there differences across socio-demographic categories in peer educators' HR knowledge, attitudes, self-efficacy and behavior intention scores at pre-training and post-training?
3. To what extent do knowledge scores of the general population students differ at baseline and post training?
4. What is the diffusion rate of inmates exposed to HR education by peer educators?

Chapter Two

Literature Review

This chapter will explore the current literature surrounding peer education. It will define peer education and the implementation of peer education in the prison setting. It will describe the innovation, successes, limitations and recommendations that existed at the time of this evaluation. Finally, any identified gaps in current literature will be discussed to help guide the need for this evaluation.

Define Peer Education

Peer education is an approach of teaching or sharing information to promote health, changes in behavior or attitudes by people who share similar life experiences. An example of this is peer educators who are incarcerated teaching others incarcerated.

Peer Education Projects

A literature review was conducted using the databases *Web of Science*, *PubMed*, *CINAHL Complete*, *National Criminal Justice References*, *PAIS International* and *Education Research Complete*. Key words for the literature review search included: “peer education”, “peer health promotion”, “prisoners”, “inmates”, “incarcerated populations”, “prisons” and “jails.”

The data to determine the extent of peer education within a prison setting is limited. One study that involved distributing surveys, by mail, to all state departments of corrections and the Federal Bureau of Prisons during the year 2005. Each site was asked to report whether or not they have (or had have) a peer education project within their facility, their associated topics of interests and any services provided through this model. The survey

had 100% participation, collecting data from all 50 states and the Federal Bureau of Prisons. The survey reported that 18 states had some form of HIV prison-based peer program. Illinois and Texas were communicated with post survey and spoke highly of their projects awarding the work as efficient and effective in wide-scale education. Another component of the survey included assessment of who trained peer educators. It was indicated that 39% of the peer educators were trained by outside entities; however only one prison had conducted training in more than one prison and was still limited to only serving two prisons. Another important finding in this study was the barriers to implementing a peer education model within a prison that did not currently employ peer educators. Some identified barriers included funding, low HIV prevalence that did not justify the program and maintaining confidentiality of medical information between incarcerated people (Collica, 2007).

The majority of peer-led interventions within the prison community focused on communicable disease prevention, with bloodborne pathogens such as HIV as the primary focus of these interventions. In one systematic review, it was noted that the research team was *unable to identify any studies evaluating the effectiveness of peer-led interventions for general physical problems* including diet, nutrition, smoking or exercise. (Wright, et al., 2011). Wright, et al.'s systematic review began with over 3,000 published articles and ended up with only 10-peer reviewed, reliable articles published between 1948 and 2010. Many of these projects are highlighted below (Wright, et al., 2011).

A published formative evaluation in Massachusetts County Jail was conducted by Zucker. Zucker had a small sample of 25 peer educators who received weekly, one-hour

session for six weeks. The topic covered was hepatitis C prevention. The training was conducted by addiction specialists within the correctional facility. The inmates who received the training (N=25) were asked to conduct a pre and posttest survey and results indicated increases in knowledge and changes in behavior intent. Analysis of peer-to-peer education was not conducted on this study, although participants of the training were encouraged to share the information with their peers (Zucker, 2008).

Another intervention included within the literature was conducted by Martin et al. who utilized a DVD-style intervention where peer educators were highlighted within the video and then played to groups of inmates who were getting ready to be released from prison. This research utilized a comparison between the DVD, a DVD delivered without peer educators and a standard curriculum for release. The outcomes suggested that no difference existed whether or not peer educators were in the film, however, both films had decreased the percent of people who would engage in unprotected sex (32% DVD intervention, 45% traditional intervention, $p < 0.038$) upon release. Martin et al. recommended intervention be brief and concise (Martin, O'Connell, Inciardi, Surratt, & Maiden, 2008).

Another study conducted in the Texas Correctional Facility had significant sample size of 590 peer educators and over 2500 general population students. The model was inclusive of HIV education using a peer model. The survey was collected pre and post training and assessed eight knowledge questions. Peer educators were also assessed on self-reported ability to teach. The model included a 40-hour initial training for peer educators and was unclear on how the intervention was conducted for students. One limitation to this study was a thorough follow-up plan to ensure accuracy of information. The study also focused

only on HIV and no other diseases at risk for this population. The program outcomes suggested increased knowledge, changes in beliefs and increased HIV testing (Ross, Harzke, Scott, McCann, & Kelley, 2006).

Some program interventions existed using incarcerated individuals as a way to combat the health issue of suicide prevention by providing direct, 24-hour observation for those expressing suicide ideation or who attempted suicide. Outcomes showed decreased isolation and shorter durations of observation required. Additionally, multiple studies were conducted with positive correlation to increased knowledge in Australian Correctional Facilities.

Gaps in Research

Peer education has been acknowledged in the literature as a technique to engage vulnerable populations; however, there has been limited evaluation of the efficacy of these types of projects. Very few studies have been conducted on the effectiveness of peer education within the United States. The research that currently exists in the literature primarily includes smaller sample sizes with correlating diminished power. One gap in the research is working with data in a larger sample size. Theorist and research Jacob Bernoulli first introduced the phenomenon that indicates a correlation of increased sample size to an increased power and reliability of the outcomes.

In addition to the need for larger sample size, a limitation of the literature exists on analyses of disparities of knowledge in varying groups. Specifically, analysis of ethnic/racial, age and gender disparities should be analyzed to help guide future research. Thorough understanding of a sample's differences at baseline knowledge can aide in

focusing on populations with lower health literacy and greater influence of knowledge increase through peer education.

Another gap in the literature exists with analysis of quantitative data on the impact of knowledge, behavior intention and attitude changes for the students who peer educators teach. A thorough understanding of the peer educator's reach and ability to access and provide the general population with information is another topic to address. Most interventions focused on one specific health condition and did not incorporate education multiple diseases influencing incarcerated populations or general health literacy.

Finally, a large gap in the literature exists on the prospective effect peer-led interventions have on disease prevalence and incidence. Significant resources would need to be established in order conduct research on the influence of peer-led interventions on disease prevention to cover the cost of recurring tests to determine disease status. This is a tremendous gap in research that should be considered in the future.

Chapter Three

Methods

Design

Evaluation Design

Questionnaires were collected from peer educators across seven prison sites in New Mexico prior to participation in a 40-hour intensive peer education training and immediately following the training. Students of the peer educators also completed a condensed version of this questionnaire prior to participating in a 10-hour peer-led training and immediately following.

Human Research Protection

The New Mexico Peer Education Project (NMPEP) received Internal Review Board from the University of New Mexico Health Sciences Center Human Research Protections Office in February of 2012. Participants who wished to be trained as peer educators were consented prior to data being collected. Data collected February 2012 through December 2014 will be included.

Sampling

Peer Educator Sampling

The NMPEP currently has seven facilities involved in the intervention. Throughout these seven facilities, eight groups of peer educators were established. The groups were selected based on level of security, focusing on levels I, II and III. These security levels were selected based on the inmates' ability to interact with one another without intense security limitations.

All participants selected for the 40-hour training volunteered to be trained. Prior to each 40-hour training, New Mexico Peer Education Project liaisons from each facility were provided with criteria to select individuals. Inclusion criteria were:

- an eighth grade literacy level;
- at least one year left of their prison sentence;
- final cohort diversity of age and ethnicity/race; and,
- demonstration of positive leadership and role modeling.

Each facility created sign-up sheets that were placed in public areas, such as dorm and education/programming bulletin boards. Inmates then placed their names on the sign-up sheet and were screened to meet the above criteria. Each cohort was comprised of approximately 12-15 individuals who had not yet received the 40-hour training.

General Population Student Sampling

General population students who attended the 10-hour peer led health workshops were recruited without criteria. Peer educators were responsible for recruitment and utilized sign-up sheets and word of mouth to recruit participants. Each group was asked to conduct a minimum of one training per month to no more than 20 participants in each cohort. Peer educators only have access to recruit participants from their facility and security level. All general population students volunteered to take the peer-led workshop.

Measures

Peer Educator Questionnaire (PEQ)

The peer educator questionnaire included 46 total items. Table 3 describes the content collected on these questionnaires.

Table 3 Peer Educator Questionnaire Content

Measure Category	Number of Items	Description
Demographics	6	Combination of multiple choice/free text questions to collect: <ul style="list-style-type: none"> • Location of training • Age • Ethnicity • Race • Level of education • Participation in 10-hour workshop
Testing	4	Multiple choice questions to collect: <ul style="list-style-type: none"> • Collects whether or not participant was tested for HIV and HCV • Collects whether or not participant received results for HIV and HCV testing
Knowledge Questions	20	Multiple choice questions to assess: <ul style="list-style-type: none"> • 11 hepatitis questions • 4 sexually transmitted disease questions • 2 HIV questions • 1 addiction question • 1 MRSA/Staph question • 1 diabetes question
Attitude Questions	5	5-point Likert scale (1= strongly disagree to 5= strongly agree) to assess: <ul style="list-style-type: none"> • Attitudes about substance use and hepatitis C
Behavior Intent	5	5-point Likert scale (1= strongly disagree to 5= strongly agree) to assess future: <ul style="list-style-type: none"> • likelihood of accessing a primary care provider • use of condoms • tattoo behaviors • communication about STDs • hand-washing
Self-Efficacy	5	7-point Likert scale (1=Not Confident at all to 7= Extremely Confident) to assess: <ul style="list-style-type: none"> • confidence and ability to be a peer educator

Peer educators' pre and posttests will be matched using a code created by combining the first initial, last initial and year of birth. For example, John Doe was born on August 26, 1802 therefore his code would be JD1802.

Student Questionnaire

The student questionnaire included 25 total items. Table 4 describes the content collected on these questionnaires.

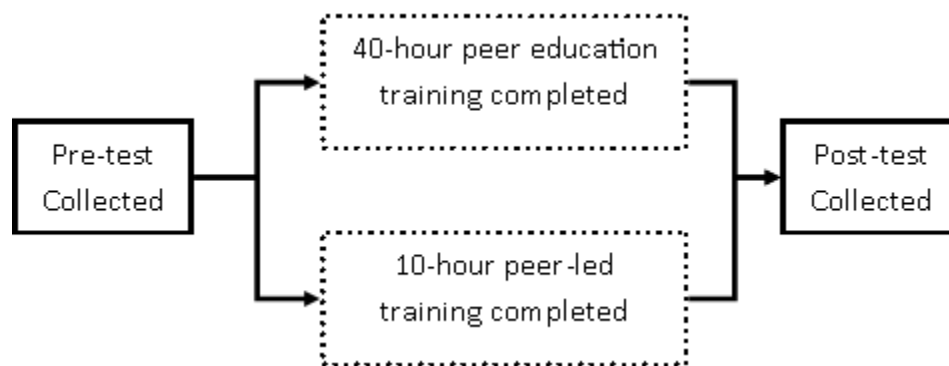
Table 4 Student Questionnaire Content

Measure Category	Number of Items	Description
Demographics	6	Combination of multiple choice/free text questions to collect: <ul style="list-style-type: none"> • Location of training • Age, ethnicity, race • Level of education • Participation in RDC 2-hour training
Testing	4	Multiple choice questions to collect: <ul style="list-style-type: none"> • Collects whether or not participant was tested for HIV and HCV • Collects whether or not participant received results for HIV and HCV testing
Knowledge Questions	10	Multiple choice questions to assess: <ul style="list-style-type: none"> • 5 hepatitis questions • 1 sexually transmitted disease questions • 1 HIV questions • 1 addiction question • 1 MRSA/Staph question • 1 diabetes question
Behavior Intent	5	5-point Likert scale (1= strongly disagree to 5= strongly agree) to assess future: <ul style="list-style-type: none"> • likelihood of accessing a primary care provider • use of condoms • tattoo behaviors • communication about STDs • hand-washing

The student data collected through the questionnaire was de-identified and could not be matched for analysis.

Peer educators and their students took a pre-training questionnaire to establish baseline data for knowledge, attitudes, behavior intention and self-efficacy. After the training, they took an identical post-training questionnaire to identify any changes. During the pilot training in 2009, participants took no more than 20 minutes to complete the survey eliminating bias due to length of survey increasing participant burden. This process can be depicted in the figure below:

Figure 1 Data Collection Process



Validity of Measures

Project ECHO® has a highly qualified, experienced evaluation team. The measurement tools were created in collaboration with NMPEP staff and the Project ECHO® evaluation team. These experts assessed validity of the tool to ensure accurate assessment would occur. This included assessing potential participant burden and ensured the information delivered aligned with the measurement tool and its questions. A formative evaluation was conducted with a pilot cohort in July 2009 at the Central New Mexico Correctional Facility. Nine peer educators completed the training. Training techniques and curriculum

were employed as well as measurement tools. It was determined that each survey required 20 minutes of time or less, verifying no participant burden to complete survey.

Data Analysis

Questionnaires

Quantitative evaluation tools were created to assess knowledge, behavior intention, attitudes and self-efficacy among individuals trained to be peer educators. Peer educator data was matched for analysis from pre to post-training. Student data was not matched, due to IRB restriction, however, a data pool of pre and posttests was inputted to identify change from pre to post survey. A data dictionary was created to assist in data entry. All data was double entry data and compared for differences using Microsoft Excel's Inquire function for spreadsheet comparison. Once errors are identified, data will be verified and corrected to ensure data integrity. The peer educator questionnaire assess knowledge, attitudes, behavior intention and self-efficacy. Student questionnaires will assess knowledge and behavior intention.

Knowledge Questions

The PEQ contains 20-knowledge questions on hepatitis C, HIV and other sexually transmitted infections, staph/MRSA, tuberculosis, diabetes and addiction. Questions are multiple choice. Knowledge questions will be inputted into a database using dichotomous scoring systems. Questions correctly answered will be inputted as a "1" and questions incorrectly answered will receive a "0" for 20 maximum points.

Attitudes

Five questions were created to assess changes in attitudes surrounding substance use and hepatitis C. These attitudes are assessed utilizing a 5-point Likert scale with 1 meaning “strongly disagree” to 5 meaning “strongly agree”. Each question can receive up to five points for a maximum, preferred score of 25 points for the attitudes assessment.

Behavior Intention

Behavior intention related to general health management, such as accessing healthcare services through primary care practitioners, were incorporated into the behavior intention assessment of the questionnaire. Regular condom use, safe tattoo practices and healthy communication with sexual partners regarding sexually transmitted disease are also assessed. This section included five questions along a 5-point Likert scale. For this section, 1 means “very unlikely” to engage in a certain behavior to 5 meaning “very likely” to engage in a certain behavior. Each questions can receive up to five points for a maximum, preferred score of 25 points.

Self-efficacy

Five questions were developed to assess peer educator’s efficacy and ability to perform duties as a peer educator. This section was designed using a 7-point Likert scale and includes questions regarding their own rating of their ability to perform in the capacity of a peer educator. Questions look at their level of knowledge, their ability to speak about sensitive topics and their ability to put their own values aside to support the needs of someone else. This scale begins with 1 defined as “Not confident at all” to a 7 defined as “Extremely confident”.

Peer Educator Data Analysis

Data analysis will be analyzed using IBM SPSS Statistics 22 (SPSS). Paired t-tests will be conducted to analyze means, difference of means, standard deviation and Cohen's D effect size. In addition, tabulations of frequencies and percentages as descriptive statistics will be created. Analysis of variance of race, age, gender and level of education will be analyzed to assess for disparity of baseline health literacy.

This analysis will help to answer the first and second research questions:

- 1) How do peer educators' pre-training harm reduction (HR) knowledge, attitudes, behavior intention and self-efficacy scores compare at post-training?
- 2) To what extent are there differences across socio-demographic categories in peer educator's (HR) knowledge, attitudes, behavior intention and self-efficacy scores compare at post-training?

Student Data Analysis

Data analysis was facilitated using IBM SPSS Statistics 22 (SPSS). Independent t-tests were conducted to analyze means, difference of means, standard deviation and Cohen's D effect size. In addition, tabulations of frequencies and percentages as descriptive statistics will be created.

This analysis will help to answer the third research question:

- 3) To what extent do knowledge and behavior intention scores of the general population students differ at baseline and post training?

Reach

The following describes the process of analysis for reach peer education has. The reach of peer educators will be calculated to express the capacity peer education brings to a facility. The following calculation will be conducted:

$$\text{Reach} = \sum_{\text{students}} / \sum_{\text{peer educators}}$$

This analysis will help to answer the final research question:

- 4) What is the diffusion rate of inmates exposed to HR education by peer educators?

Intervention

Training Peer Educators

The first component of this intervention included a 40-hour, face-to-face training which was designed using adult learning theory and popular education to engage participants in their learning experience. The primary goal of this training was to train incarcerated individuals to become peer health educators to deliver a 10-hour health workshop to their peers. The health topics included within the training included hepatitis C, HIV and other sexually transmitted infections, staph/MRSA, tuberculosis, diabetes and addiction. In addition to these primary health topics, participants learned basic health literacy that include information about spreading germs, distinctions between different kinds of germs and the basics of the immune system and body systems relevant to these diseases. Other topics included behavior change theory, values and health attitudes.

Trainers of the peer educators were carefully selected and included a minimum of three trainers. Each of the three trainers' provided a unique twist and experience to the training. Each trainer was open and honest about their past experiences, which was well received

by peer educators as a means to open up during the training, relate to similar experiences and afford credibility to the trainers. Table 5 - Trainers of peer educators' roles discuss the various roles for each trainer.

Table 5 - Trainers of peer educators' roles

Trainer	Background	Roles
Physician	<ul style="list-style-type: none"> • MD and Master's in Public Health • Board certified infectious disease specialist 	<ul style="list-style-type: none"> • Founding member of the program • Identified health topics to create curriculum • Guides Lead Trainer
Health Educator	<ul style="list-style-type: none"> • Bachelor's Degree in Health Education • Previous addiction history 	<ul style="list-style-type: none"> • Manages all project components • Facilitates 40-hour training, site visits and teleconferences • Develops curriculum • Disease content expert • Provides presentation feedback to peer educators
Contract Trainer	<ul style="list-style-type: none"> • Previously incarcerated • Trained as Peer Educator 	<ul style="list-style-type: none"> • Develops curriculum • Public speaking expert • Provides presentation feedback to peer educators • Presents own success story to motivate peers

Effective teaching skills were taught and practiced utilizing a thorough feedback process that allowed participants to develop presentation skills and learn how to engage audiences. Different strategies were employed to help limit some of the concerns which arose from the literature review to help minimize myths and misperceptions and to maintain confidentiality.

The first strategy was teaching the tool of the parking lot. Peer educators were trained to utilize a "parking lot" process where they wrote down questions they could not factually

answer onto a sheet of newsprint. This tool was taught to allow them to maintain their class and continue with the content. The second tool was the creation of class agreements. This tool allowed participants to develop a standard of how the classroom was going to run, as a group. It was emphasized that this tool was something to be created with each group in the future to allow the class to determine what will work best for their class. Some examples of what ended up on the list are things like: “no cross-talking”, “participate”, etc. It was further explained that this tool is a way to incorporate the need to maintain confidentiality and was taught to incorporate the idea of “what is said in here stays in here” to their classes when establishing class agreements.

The conclusion of the training included participants creating an abbreviated presentation to the staff, wardens and security at the correctional facility. This component aided in creating collaboration and support with the key stakeholders of the prison facility.

Harm reduction is an essential component of the intervention. Peer educators were taught useful skills in preventing the transmission of disease utilizing harm reduction theory.

Harm reduction is defined as “*practical strategies and ideas aimed at reducing negative consequences associated with drug use*”. Harm reduction strategies were taught in tandem with abstinence education. Incorporating both approaches and skills allowed participants to identify their readiness and ability to begin working towards healthier behaviors.

Trainer(s) of the 40-hour peer educator training employ a variety of teaching techniques and skills. Content delivery was conducted incorporating techniques to engage visual, auditory, and kinesthetic learners. Activities were designed to get participants out of their chairs and active in their learning. In addition, many opportunities were provided to the

participants to share their own ideas and experiences and ask questions. All content was created at or below an 8th grade literacy level using the Simple Measure of Gobbledygook (SMOG) assessment by G. Harry McLaughlin. SMOG grade is a measure of readability that predicts the level of education necessary to comprehend writing. This is the preferred readability score for health content.

General Population 10-hour Training

Peer educators who completed the training worked with NMPEP staff to create an agenda and deliver their first workshop. Training occurred, at the minimum, of one time per month. Peer educators, NM PEP staff and the appointed facility liaison identified a consistent day and time during the week to deliver the content to the general population. Each facility determined their schedule and training hours, dependent on the needs of the facility, security restrictions and space requirements. Peer-led health workshops were delivered over five consecutive, 2-hour sessions (Monday – Friday) or three consecutive, 3-hour sessions (Monday – Wednesday or Wednesday – Friday). Participants were limited to 15 or less to better control group dynamics.

Training topics for the 10-hour peer-led workshop were condensed from the 40-hour training to only the health topics. Peer educators did not train their students to deliver workshops, but, instead, provided health education to prevent the transmission of disease. Health topics included hepatitis C, HIV and other sexually transmitted diseases, staph/MRSA, tuberculosis, addiction, and diabetes. Training was conducted similar to the 40-hour training, incorporating the three learning styles and adult learning theory. Peer educators engaged their participants in role-plays, interactive games such as *Jeopardy*-style games, showed videos and presented diseases utilizing five questions. Peer

educators are taught to use the following five questions to ensure they communicate relevant information and to help organize the information in an easily understood process:

- 1) How do you get it? (Transmission)
- 2) How do you know you have it? (Testing and Symptoms)
- 3) Can it be treated or cured? (Treatment)
- 4) What can happen if you do not get it treated or cured? (Complications)
- 5) How can you prevent getting it or giving it to others? (Prevention)

These five questions were outlined on the fact sheets and helped to understand each disease. Peer educators were encouraged to deliver the information in a creative way and were witnessed to create raps, skits, games and artwork in their presentation.

Continuing Education, Observation and Follow-up

Peer educators were embedded with a variety of tools to ensure they are presenting quality information. The third component of this intervention is the continuing education, observation and follow-up processes. The NMPEP worked to ensure the peer educators feel they had ownership of the project. Peer educators had equal power in decision-making processes and conducted the training completely peer led. Staff had minimal oversight, with the exception of any security risk, and peer educators conducted their own planning meetings to prepare for their workshops. Because of this autonomy, the NMPEP created a plan to ensure adequate resources and support were provided by NMPEP staff to ensure communication and thorough follow-up and support was maintained.

During these site visits, the health educator would take notice of changes and improvements and provide constant affirmations of work accomplished. In addition, the health educator developed trust and respect by engaging in discussion about other aspects of each peer educators' life outside of peer education. Congratulations were offered when a GED Examination was passed, when a new grandchild was born or when someone completed another program. Relationships were built with the entire peer education group.

Communication Processes

Each facility with peer educators was asked to identify one staff member to act as a liaison to communicate between the peer educators and the NMPEP staff. This liaison was asked to provide clearance for NMPEP staff and community partners to enter the facility and help navigate needs peer educators or NMPEP staff had from the facility (such as classroom space, prison movement memos, supply entrance memos, etc.). This liaison role was filled by a variety of corrections professions including education staff, caseworkers, recreation officers, etc.

In addition, this liaison was asked to communicate any questions the peer educators had to NMPEP staff. Peer educators were trained to utilize a "parking lot" process where they wrote down questions they could not factually answer onto a sheet of newsprint. This allowed them to maintain their class and continue with the content. All parking lot questions were given to the facility liaison and s/he emailed the questions to NMPEP staff to be answered within 24-72 hours.

Monthly Teleconferences

The NMPEP staff also conducted monthly teleconferences to provide continuing education, create a network of peer educators to collaborate, problem solve, and to increase communication for needs and barriers encountered. The monthly teleconferences involved all trained peer educators, from each facility, and last one-and-a-half hours each session.

The teleconferences began with roll call to track who attended and from which facilities. Participants of the teleconference received continuing education credit for their attendance and participation. Next, an hour long didactic was presented on a variety of topics by experts in the field. Didactics topics were suggested by peer educators or selected by NMPEP staff and primarily fell into these categories: health information, communication and presentation skills and reentry skills and resources (creating an application, accessing social services support like food assistance, etc.). Teleconferences were also facilitated utilizing adult learning theory. The Health educator was innovative in teaching styles to ensure participants were engaged and interested in the topic. The last 15-20 minutes of the teleconference was a time to ask questions and network with other peer educators to help resolve any issues they faced.

Site Visits and Observation

In addition to the monthly teleconferences, NMPEP staff traveled to each facility at least once every two months to work with the peer educators. Continuing education was conducted to help learn new teaching strategies or other related health information. A meeting was conducted with the peer educators and NMPEP staff to identify any questions, or needs the peer educators had. The NMPEP staff also observed the peer

educators teach their peers and provided additional feedback on their presentations.

During this observation, the NMPEP staff also tracked any misinformation and corrected as appropriate.

Theory

Self-efficacy Theory

The intervention described above aligns with the Self-efficacy theory. Each component of this intervention applies methods to increase self-efficacy utilizing four constructs influencing self-efficacy: mastery attainment, vicarious learning, verbal persuasion, and somatic and emotional state.

Table 6- NMPEP Methods for Application of Constructs of Self-efficacy

Constructs of Self-efficacy	Methods
Mastery Attainment	<ul style="list-style-type: none"> • 40-hour intensive training, gradually building in difficulty of content • Site-visit and observation by Project ECHO® to continue quality of training and continued mastery attainment in presentation skills • Opportunities to enhance communication and team work skills through peer educator program autonomy
Vicarious Learning	<ul style="list-style-type: none"> • Facilitation skills and modeling provided by NMPEP staff • Direct observation and learning of other peer educators' practice presentation during training, including comprehensive constructive feedback
Verbal Persuasion	<ul style="list-style-type: none"> • Comprehensive feedback guideline by peers to encourage presentation skill enhancement • Delivery of peer-led workshops on a monthly basis to peers including health topics, values and attitudes assessment and harm reduction skill development • Monthly TeleECHO conferences to provide continuing education on health and reentry topics • Monthly site visits to provide continuing education and presentation skills feedback through direct observation
Somatic and Emotional States	<ul style="list-style-type: none"> • Rapport and trust building activities utilizing multiple learning styles incorporating culturally specific topics • Multiple ice breaker activities to establish collaborative learning approach

The self-efficacy theory suggests that incorporating these four constructs and creating positive influence on each, higher success of behavior change will occur. Utilizing this theory to predict behavior change, it is evident that we can predict a change in self-efficacy among the peer educators that will eventually lead to healthy behavior change.

Chapter Four

Results

The results of this evaluation are reported in two-parts: peer educators and students.

Peer Educators

Demographics

There was 167 peer educators sampled for this evaluation (N=167). The sample was broken down as follows:

Table 7 Sample Demographics: Peer Educators, N=167

	Frequency	Percent
Gender, Peer Educators (N=167)		
Male	148	88.6%
Female	19	11.4%
Age Groups, Peer Educators (N=167)		
<25	16	9.6%
26 – 35	63	37.7%
36 – 45	49	29.3%
46 – 55	32	19.2%
55 and old	7	4.2%
Race, Peer Educators (N=167)		
American Indian	22	13.2%
Asian	3	1.8%
Black	23	13.8%
Native Hawaiian or Pacific Islander	1	0.6%
Non-Hispanic, white	45	26.9%
Hispanic, white	73	43.7%
Level of Education, Peer Educators (N=167)		
No schooling completed	3	1.8%
Grades 1 – 11 completed	21	12.6%
HS Diploma	19	11.4%
GED	39	23.4%
Some college, no degree	64	38.3%
Associate's Degree	14	8.4%
Bachelor's Degree	3	1.8%
Graduate Degree or beyond	4	2.4%

In addition to the general demographics above, testing accessibility and delivery of results were collected. Table 7 below:

Table 8 HCV and HIV Testing and Receipt of Results, Peer Educators, N=167

	Frequency		Percent
	Tested for hepatitis C	Yes	149
No		7	4.2%
I don't know		10	6.0%
No response		1	0.6%
Received results for hepatitis C test	Yes	144	86.2%
	No	12	7.2%
	I don't know	4	2.4%
	I was not tested	7	4.2%
Tested for HIV	Yes	152	91%
	No	11	6.6%
	I don't know	4	2.4%
Received results for HIV test	Yes	142	85%
	No	13	7.8%
	I don't know	8	4.8%
	I was not tested	4	2.4

Knowledge

Using SPSS, a paired sample t-test was conducted on the peer educators (N=167). The baseline mean of knowledge for peer educators was 12.34 out of 20 points possible. Post training mean of knowledge was 16.37 out of 20 points, indicating a mean learning gain of 4.03 with statistical significance ($t(167) = 17.555, p < 0.01$). This learning gain rose from a mean of 61.7% correct answers on pretest to 81.8% correct answers on posttest. Figure 2 Mean score of knowledge, peer educators and Table 9 Mean Score and Percent Score Overall, Peer Educators: Tests for Significance depict the statistical significance for this knowledge gain below:

Figure 2 Mean score of knowledge, peer educators

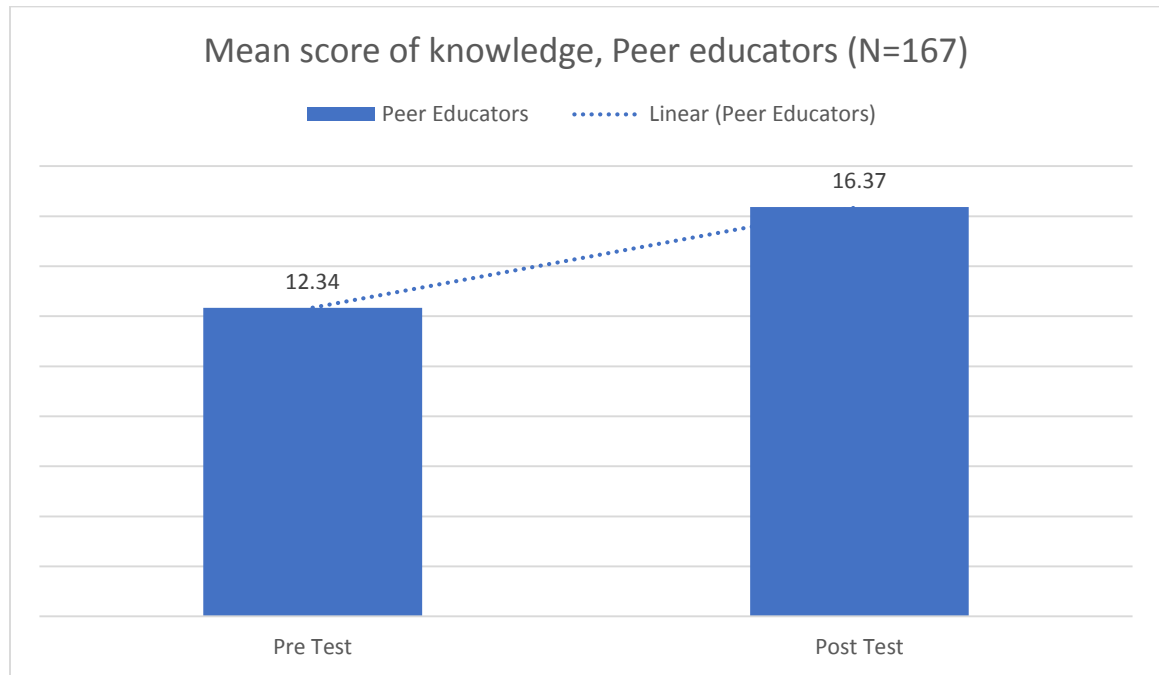


Table 9 Mean Score and Percent Score Overall, Peer Educators: Tests for Significance

Measure	Pre Mean	Post Mean	Difference					
			Mean	SD	% Change	Student's t	P-value	Effects Size(d)
Knowledge (20 points possible)	12.34	16.37	4.03	2.97	32.58%	17.555	<0.01	1.37
Percent Score (20 points possible)	61.7%	81.8%	20.1%	14.83%				

*Cohen's d: Cohen's d classification of effect size is: 0.2 = small, 0.5 = medium and 0.8 = large. (Cohen, 1988)

Attitudes

The baseline mean of the attitudes section for peer educators was 20.36 out of 25 preferred response points possible. Post training mean of the attitudes section was 20.89 out of 25 points, indicating a change in attitudes of 0.53 points with statistical significance ($t(167) = 2.57, p < 0.01$). Although this difference is statistically significant, Cohen's d remains a very small effect size with a score of 0.16.

Table 10 Difference Pre to post, attitudes, peer educators (N=167)

Measure	Pre Mean	Post Mean	Difference					
			Mean	SD	% Change	Student's t	P-value	Effects Size(d)*
Attitudes (25 points possible)	20.36	20.89	0.53	2.64	2.6%	2.57	<0.001	0.16

*Cohen's d: Cohen's d classification of effect size is: 0.2 = small, 0.5 = medium and 0.8 = large. (Cohen, 1988)

Behavior Intention

The baseline mean of the behavior intention section for peer educators was 22.15 out of 25 preferred response points possible. Post training mean of the behavior intention section was 22.87 out of 25 points, indicating a change in behavior intent of 0.72 points with statistical significance ($t(167) = 3.919, p < 0.01$). Although this difference is statistically significant, Cohen's d remains a very small effect size with a score of 0.29.

Table 11 Difference Pre to post, behavior intent, peer educators (N=167)

Measure	Pre Mean	Post Mean	Difference					
			Mean	SD	% Change	Student's t	P-value	Effects Size(d)*
Behavior (25 points possible)	22.15	22.87	0.72	2.35	3.3%	3.92	<0.001	0.29

*Cohen's d: Cohen's d classification of effect size is: 0.2 = small, 0.5 = medium and 0.8 = large. (Cohen, 1988)

Self-efficacy

The baseline mean of the self-efficacy section for peer educators was 27.86 out of 35 preferred response points possible. Post training mean of the self-efficacy section was 30.65 out of 35 points, indicating a change in self-efficacy of 2.79 points with statistical significance ($t(167) = 6.15, p < 0.01$). A medium effect size, defined by Cohen's d score of 0.51 exists.

Table 12 Difference pre to post, self-efficacy, peer educators (N=167)

Measure	Pre Mean	Post Mean	Difference					
			Mean	SD	% Change	Student's t	P-value	Effects Size(d)*
Self-efficacy (35 points possible)	27.86	30.65	2.79	5.88	20.33%	6.15	<0.001	0.51

*Cohen's d: Cohen's d classification of effect size is: 0.2 = small, 0.5 = medium and 0.8 = large. (Cohen, 1988)

Further analysis, by question response was conducted utilizing paired sample t-test in SPSS. The results follow in

Table 13 Difference pre to post, self-efficacy by question, peer educators (N=167):

Table 13 Difference pre to post, self-efficacy by question, peer educators (N=167)

Measure (7 points each)	Pre Mean	Post Mean	Difference					
			N	Mean	SD	Student's t	P-value	Effects Size(d)*
Q1	4.59	6.12	167	1.53	1.94	10.06	<0.001	2.78
Q2	5.09	5.99	167	0.9	1.81	6.40	<0.001	0.62
Q3	5.95	6.16	167	0.21	1.28	20.8	<0.05	0.14
Q4	6.19	6.37	167	0.18	1.13	2.07	0.05	0.13
Q5	6.23	6.42	167	0.19	1.28	1.88	0.06	0.13

*Cohen's d: Cohen's d classification of effect size is: 0.2 = small, 0.5 = medium and 0.8 = large. (Cohen, 1988)

Question 1: How confident are you that you have the information you need to be a peer educator?

Question 2: How confident are you that you have the teaching skills to be a peer educator?

Question 3: How confident are you in your ability to be a peer educator?

Question 4: How confident are you that you can set aside your own feelings about lifestyles that are different from your own interactions with your peers?

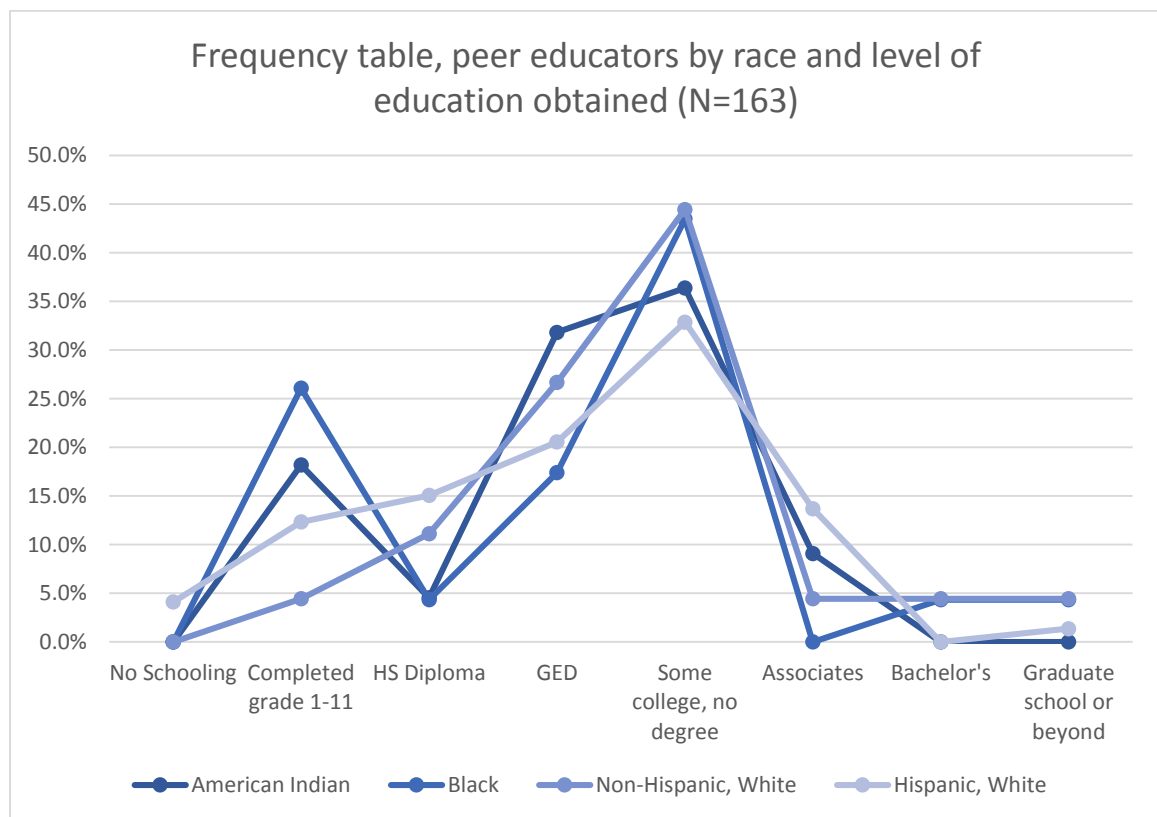
Question 5: How confident are you in your ability to talk with people about sensitive topics, such as safer sex and clean needles, to help them reduce their risk of getting or spreading HCV?

The analysis above shows greatest effect size and change in self-efficacy in questions 1 and 2, reflecting self-disclosure of confidence in knowledge and teaching skills to support efforts as a peer educator.

Disparities, Peer Educators

Prior to conducting an analysis of variance, descriptive analysis race to level of education cross tabulation was conducted to ensure one racial group did not vary from another in terms of level of education obtained. Review of descriptive statistics indicated that Asian (N=3) participants and Native Hawaiians (N=1) had very few participants; therefore, these two racial groups were not included in this analysis due to the small representation of these racial groups within this sample.

Figure 3 Frequency Table, peer educators by race and level of education obtained (N=163)

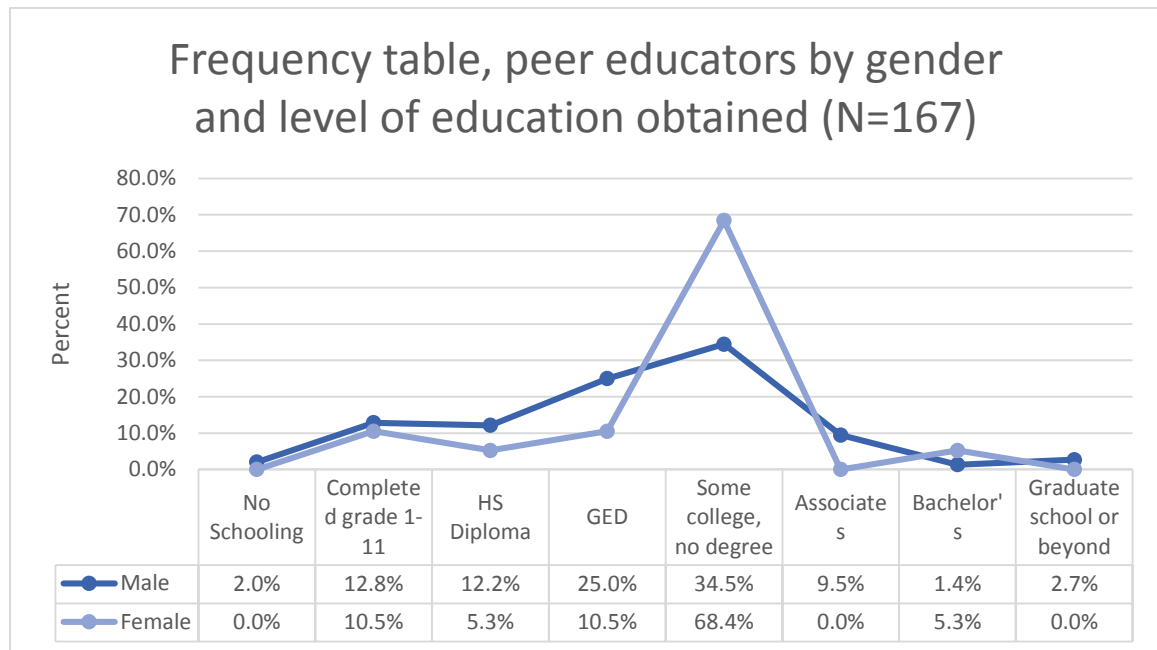


Analysis of variance was conducted using SPSS to compare race and level of education obtained. The results were statistically non-significant, suggesting no difference between

race and level of education obtainment $F(7, 155) = 1.173$ ($p = 0.321$). This result suggests that racial disparity was not confounded to education obtainment.

The same process was completed to determine any association with gender and level of education. Gender to level of education cross tabulation was conducted with the following results:

Figure 4 Frequency table, peer educators by gender and level of education obtained (N=167)



SPSS was utilized to assess the association between gender and level of education obtainment. Similarly to the previous race with level of education analysis, the analysis reported statistically non-significant $F(7, 159) = 1.677$ ($p = 0.118$) suggesting further analysis of gender disparity could not be attributed to differing level of education.

Analysis of variance was conducted using SPSS for both mean knowledge baseline and difference of means from pre to post test.

Race

Utilizing SPSS, a univariate analysis was conducted to assess for homogeneity of variance for race. Levene's test for homogeneity of variances resulted in a score of 0.351, which indicated the variances across the racial categories were not equal justifying a one-way ANOVA Analysis. The one-way ANOVA analysis was calculated on participant's baseline mean knowledge (dependent variable) by race (factor). The analysis was significant, $F(3, 159) = 7.905$ ($p < 0.01$). Results from this analysis are displayed in Table 14 Descriptives Baseline Knowledge, Peer Educators and Table 15 ANOVA Baseline Knowledge, by Race, Peer Educators below.

Table 14 Descriptives Baseline Knowledge, Peer Educators

	N	Mean	Std. Deviation	Std. Error
American Indian	22	12.00	3.19	0.68
Black	23	11.00	3.00	0.63
Non-Hispanic White	45	14.16	2.68	0.40
Hispanic White	73	11.70	3.25	0.38
Total	163	12.32	3.25	0.25

Table 15 ANOVA Baseline Knowledge, by Race, Peer Educators

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	222.130	4	74.043	7.905	0.000
Within Groups	1489.281	159	9.367		
Total	1711.411	162			

Blacks had the lowest baseline mean for knowledge, with a mean difference of 3.16 points less than the racial group with the highest baseline mean of knowledge (Non-Hispanic, white, mean = 14.16). This analysis prompted to look at the post intervention knowledge mean, utilizing the same technique. Levene's test for homogeneity of

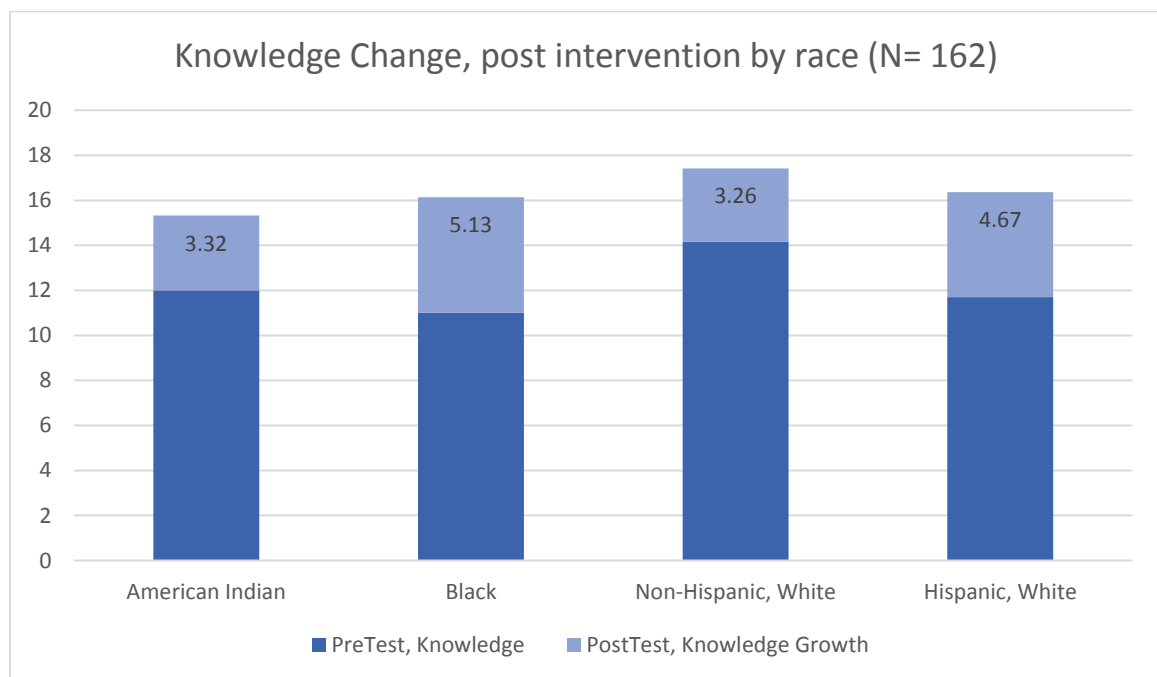
variances at post-intervention knowledge, by race, resulted in a score of 0.047 that indicated no statistically significant difference in variances across the racial categories at post-intervention. This was important because significant knowledge change was obtained by the racial groups who scored lowest at baseline. Table 16 Difference of Means, by race displays means pre-intervention, post-intervention and difference of means by race out of 20 possible points.

Table 16 Difference of Means, by race

	Pre-intervention Knowledge	Post-intervention mean knowledge	Difference of Mean
American Indian	12.00	15.32	3.32
Black	11.00	16.13	5.13
Non-Hispanic, White	14.16	17.42	3.26
Hispanic-White	11.70	16.11	4.67

Below, Figure 5 Knowledge Change, post intervention by race (N= 162) helps to conceptualize this change disparity among varying race.

Figure 5 Knowledge Change, post intervention by race (N= 162)



Gender

Levene's test for homogeneity of variances at pre-intervention knowledge, by gender, resulted in a score of 0.05 which indicated no statistically significant variances across gender at pre-intervention (baseline) for knowledge (N=167). These results did not suggest ANOVA was necessary for further analysis.

Students

Demographics

There were 1,113 students (of the peer educators) who completed the pre-test and 949 students who completed the posttest. This represents an attrition rate of 14.73% from pre to post intervention. Due to internal review board limitations, qualitative evaluation to follow-up with those lost during the intervention was unable to be conducted. Only students who took the pre-test are asked demographics-related questions. The sample was broken down as follows:

Table 17 Sample Demographics: Students

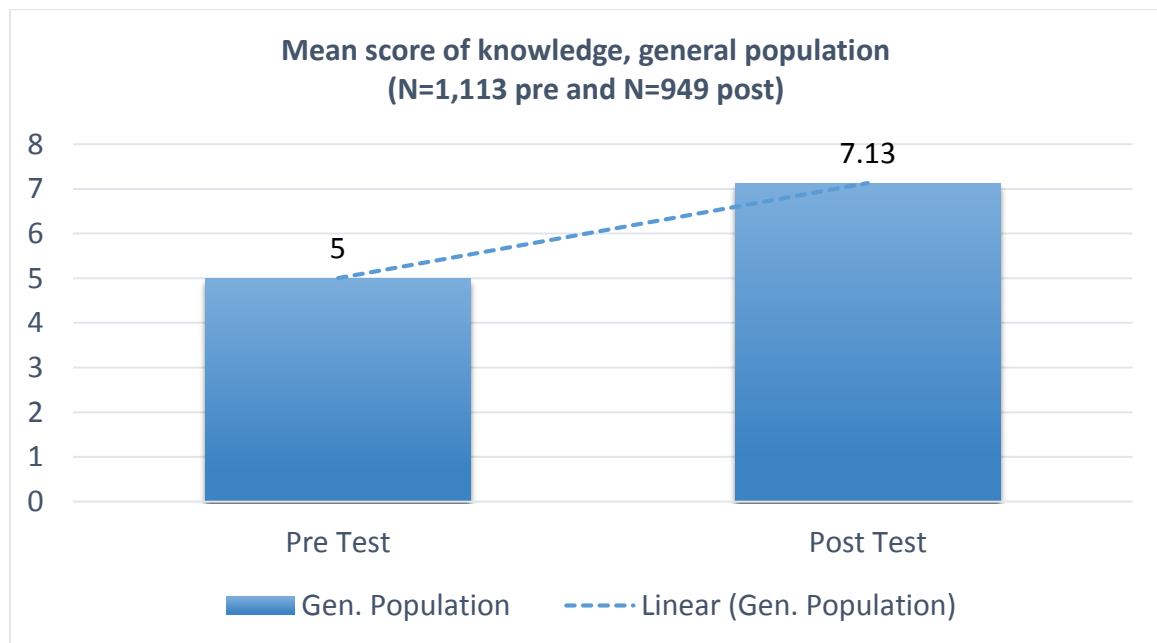
	Frequency	Percent
Gender, Students		
Male	564	50.7%
Female	549	49.3%
Age Groups, Students		
<25	156	14%
26 – 35	455	40.9%
36 – 45	284	25.5%
46 – 55	156	14%
55 and old	32	2.9%
Unknown	30	2.7%
Race, Students		
American Indian	190	17.1%
Asian	11	1%
Black	90	8.1%
Native Hawaiian or Pacific Islander	6	0.5%

Non-Hispanic, white	219	19.7%
Hispanic, white	583	52.4%
Unknown	14	1.3%
Level of Education, Students		
No schooling completed	61	5.4%
Grades 1 – 11 completed	388	34.9%
HS Diploma	158	14.2%
GED	203	18.2%
Some college, no degree	232	20.8%
Associate's Degree	54	4.9%
Bachelor's Degree +	16	1.4%
Unknown	2	0.2%

Knowledge

Using SPSS, an independent sample t-test was conducted with 1113 pretests and 949 posttests. The baseline mean knowledge was 5.00 out of 10 points and had a change of 2.13 points to a post mean knowledge score of 7.13 out of 10 points ($p < 0.001$). This learning gain rose from a mean of 50% correct answers on pretest to 71.3% correct answers on posttest. The Cohen's d effect size is 1.02, indicating a large effect size.

Table 18 Knowledge, Students



Measure	Pre Mean	Post Mean	Difference					
			N	Mean	SD	Student's t	p-value	Effects Size(d)
Knowledge (10 points possible)	5.00	7.13	1113 (pre) 949 (post)	2.13	0.09	23.03	<0.001	1.02
Percent Score 14	50%	71.3%	1113 (pre) 949 (post)	21.3%	9%	23.03	<0.001	1.02

*Cohen's d: Cohen's d classification of effect size is: 0.2 = small, 0.5 = medium and 0.8 = large. (Cohen, 1988)

Behavior Intention

The baseline mean of the behavior intention section for peer educators' students was 20.67 out of 25 preferred response points possible. Post training mean of the behavior intention section was 21.28 out of 25 points, indicating a change in behavior intent of 0.61 points with statistical significance ($t(2060) = 3.093$, $p=0.002$). Although this difference is statistically significant, Cohen's d remains a very small effect size with a score of 0.29.

Table 19 Difference Pre to post, behavior intent, students

Measure	Pre Mean	Post Mean	Difference					
			N	Mean	SD	Student's t	P-value	Effects Size(d)*
Behavior (25 points possible)	20.67	21.28	1113 (pre) 949 (post)	0.61	0.66	3.093	0.002	0.14

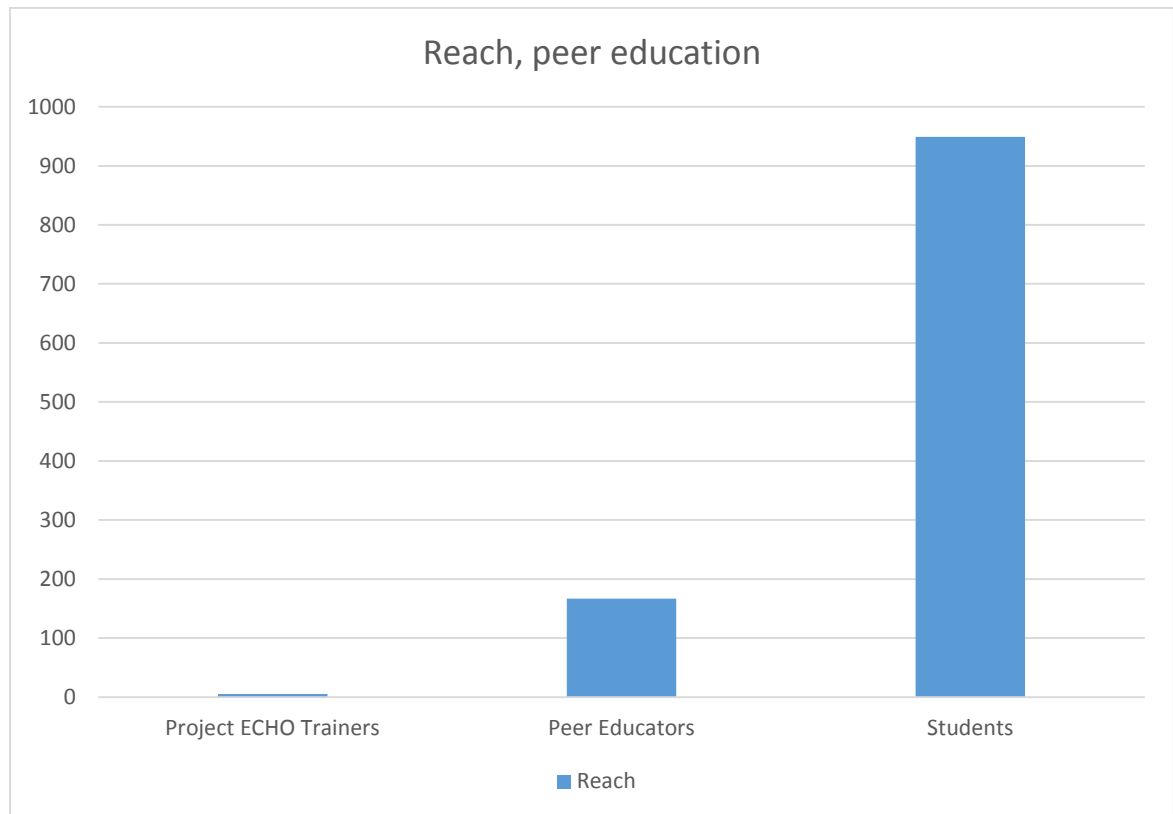
*Cohen's d: Cohen's d classification of effect size is: 0.2 = small, 0.5 = medium and 0.8 = large. (Cohen, 1988)

Reach

On average, three trainers from Project ECHO® are incorporated to facilitate the initial 40-hour training. A total of 167 peer educators received and completed the 40-hour intensive harm reduction and communicable disease training. In the general population, 1,113 inmates began the 10-hour peer-led harm reduction workshop; however only 949

completed the 10-hour training and posttest. This represents an attrition rate of 14.73% from pre to post intervention. At the minimum, this intervention model expanded the reach of information by 5.68 times (949 students/167 peer educators) by training 167 peer educators. Further analysis suggests that the female peer educators had a much more extensive reach. The students who received, and completed, the 10-hour peer-led workshop were made up of 49.3% (N=468) women, with only 11.4% (N=19) of the peer educators trained being women. This attributes to a reach of up to 24.63 times by training only 19 female peer educators. The ratio 2:167:949 (trainers: peer educators: students) is represented in Figure 6 Reach, peer education.

Figure 6 Reach, peer education



Chapter Five

Summary and Discussion

Summary

The present study was conducted to evaluate the effectiveness of a prison-based peer-led harm reduction program on knowledge, behavior intent, attitudes and self-efficacy. The study had 167 trained peer educators complete the intensive 40-hour training on common chronic and communicable diseases among the prison population in addition to skill building in group facilitation and public speaking. A total of 949 the peer educators' students completed the 10-hour health workshop intervention and associated pre and post intervention questionnaires from the original 1113 (14.73% attrition). The program took place in seven of New Mexico's state prison facilities in moderate to minimum-security levels. This evaluation sought to answer the following research questions:

1. How do peer educators' pre-training harm reduction (HR) knowledge, attitudes, self-efficacy and behavior intention scores compare at post-training?
2. To what extent are there differences across socio-demographic categories in peer educators' HR knowledge, attitudes, self-efficacy and behavior intention scores at pre-training and post-training?
3. To what extent do knowledge scores of the general population students differ at baseline and post training?
4. What is the diffusion rate of inmates exposed to HR education by peer educators?

Statistically significant results were seen across the board with positive changes in knowledge, attitudes, behavior intent and self-efficacy for peer educators (N=167).

Students also had statistically significant, positive changes knowledge and behavior intention (N=949). Baseline disparities were found among minority populations, with a mean baseline difference of 3.16 points out of 20 (or 15.8%) from black individuals compared to non-Hispanic whites.

The reach of peer education was most significant among female peer educators, with a 28.89-fold increased reach. The male reach was 6-fold which combines (male and female) to a total reach of 5.68-fold by training 167 total peer educators.

Discussion

People living incarcerated have had significant life experiences prior to incarceration and during their incarceration that make rapport and trust building an extreme challenge. It is recognized that these components are essential ingredients in any community based research project. Many dynamics witnessed among this population help contribute to the results from this evaluation. As Awofeso (2010) described, this population is dissimilar to the general population in the community. People living incarcerated are exposed to an environment which risky health behaviors become the norm therefore influencing attitudes and behaviors. There are many factors to consider in the prison including trust by these individuals, power dynamics among incarcerated people and their peer as well as incarcerated people and the prison officers and administration. The culture, power dynamics and social attitudes of the incarceration population is extremely hard to break into as an outside entity or individual. This project has proven successful in gaining trust and respect from this population to discuss sensitive topics and created opportunities to increase access to quality health education.

This project aimed to increase self-efficacy by aligning the intervention with Bandura's self-efficacy theory's components: mastery of attainment, vicarious learning, verbal persuasion and somatic and emotional status. The project was extremely successful in the mastery of attainment component as suggested by the significant gain in knowledge across the sample. In addition, statistically significant results in behavior intention, attitudes and self-efficacy were witnessed, suggesting that over time behavior change can successfully occur.

It is apparent significant reach can occur utilizing a peer-led health intervention such as this one. During the entire time working with these peer educators, many opportunities to discuss when, who and how they shared information was shared. Many peer educators stated they had shared the information through family visits, mail and over the phone with friends and family outside of the prison. A few peer educators utilized the health educator of the project to help family and friends locate a physician to treat their hepatitis C. In addition to the outside community, the majority of peer educators commented how after a 10-hour peer-led workshops, many of the students or others on their units would approach them with additional questions one-on-one. The peer educators were also utilized to help spread information about certain disease. For instance, one facility had a unit which had an increase in MRSA; because of this, the peer educators were asked to go into the unit to provide information about cleaning shared surfaces (such as showers and sinks) and encourage improved hand-washing. These instances are not captured in this current evaluation and needs to have a more thorough tool to capture the true picture of how peer educators share this information.

Unexpected Outcomes

Unethical health research practices among minority populations throughout history help to explain the evident disparities among health literacy level in minority populations (Shavers-Hornadaya, Lynchb, Burmeisterb, & Tornerb, 1997). This study identified a disparity among the baseline knowledge mean among varying racial groups. The difference of health literacy was lowest among black populations, which are also the population who are repeatedly acknowledged to have the lowest representation in health interventions and greatest attrition. This project was extremely successful in preventing attrition among this population for peer educators. Although these individuals had the lowest baseline mean in knowledge, they were the most successful in knowledge gain. This project offered a wonderful opportunity to not only reach the hidden, hard to reach incarcerated population, but also the black community whose need is evident in the results of this study. This finding is an essential component that adds to the literature discussed in chapter two. It identifies a smaller population within an already vulnerable and underserved population and allows program developers to target a population at extreme need who may otherwise go without access to quality health education.

In conclusion, prison facilities are ideal settings to reach one of the most underserved, vulnerable populations of our society to increase knowledge and harm reduction techniques to prevent the spread of communicable disease such as hepatitis C and HIV. Utilizing peer educators helps to overcome barriers of trust and respect associated with this culture. This model, in combination with the incarcerated population, can enhance public health by employing an intervention while these individuals are available, and at times, easier to access prior to being released back into the community. By utilizing peer

education, an expanded reach of health information and skills can be disseminated at an exponential rate with results in increasing knowledge among peer educators and their students.

Chapter 6

Limitations, Implications and Recommendations for Future Study

High Baseline Scores

It is important to recognize that the accepted cultural and behavioral norms among a prison population may attribute to higher scores at initial baseline in attitudes and behaviors, creating a ceiling effect and limiting the amount of change witnessed in these areas.

To combat this in the future, a larger scale of 7 or more points opposed to the 5-point scale may help to further evaluate these areas. It is also important to recognize that these individuals are well educated in “street knowledge” and are especially great in navigating systems in order to obtain resources. This may suggest that although questionnaires were distributed and collected anonymously that they may have been completed with the desire to appease the interest of the researcher, resulting in a halo effect.

Another limitation to the measurement of behaviors is the security-driven attitude of correctional facilities. Many behaviors assessed, including behaviors associated with sex, tattooing and drug use, were incorporated into this section. Many of these behaviors, if caught in the behavior, are against regulations in the prison and can lead to the person incarcerated receiving additional punishment and extending the length of their sentence. This additional dynamic could potentially lead to false assessment of behavior intention. Future efforts in analysis of behavior could incorporate a more extensive questionnaire which can cross-analyze similar behaviors among multiple questions. In addition, triangulation of methods can prove to be helpful to enhance the validity of measurement.

For example, when assessing whether or not one intends to use condoms or discuss sexually transmitted infections with partners, one could use a 7-point Likert scale pre and post intervention in addition to a post release survey with their sex partner(s) which assesses whether or not they used condoms and discussed sexually transmitted infections.

Behavior Change

Although it can be predicated that behavior change may occur by influencing multiple levels, it is evident that additional intervention components may be necessary which incorporate more of the vicarious learning component of Bandura's model. This could, incorporate a peer-mentoring component where peer educators are matched with comparable students to mentor and meet with regularly to discuss personal, client-centered health goals and behaviors. One could speculate that this component was lacking most by recognize the extent of change in knowledge that existed among peer educators and their students with little to no effect on behavior intent. This is further justified with significant change in the self-efficacy questions one and two which contributed most to the mean difference of self-efficacy overall. The self-efficacy questionnaire results suggest peer educators are confident they are able to incorporate mentoring skills, but the project limited their ability to employ those skills due to the limitation of the short intervention (10-hours) working with their peers.

Disparities

This study shed light to the health education disparities among racial minority groups in the prison population. The results were significant and unexpected. These results describe the differences among baseline and their growth post-intervention but provide no justification for the disparity to exist. Further investigation is necessary to evaluate the

differences amongst the racial groups to identify social and/or cultural influences and barriers to achieve high health literacy. To reduce the transmission of disease, researchers must further explore these disparities to better target vulnerable, underserved and at-risk populations and develop interventions which best support the increase of knowledge and healthy behavior change while creating components which are culturally sensitive to the needs of these populations.

Reach

Another component to investigate is the true reach of a peer education intervention. Another implication, not included in this study, was conducted and included a qualitative follow-up to discuss when, who and how peer educators shared information learned. It is evident that peer educators disseminate information in many settings within the prison and outside the walls. A thorough analysis of reach could help to determine the cost-effectiveness of a peer-led intervention to further investigate the cost-savings a corrections department could be presented with after implementing a prison-based peer-health education project. Similarly, to the literature discussed in chapter two, true, thorough analysis is necessary to truly understand the extent of health education from prisoners to the community.

Glossary of Keywords

General population students- participants who are taught by peer educators.

Peer educators – individuals who are currently living incarcerated who successfully completed the 40-hour peer educator training.

Self-efficacy - one's belief in one's ability to succeed in specific situations (Bandura, 2004)

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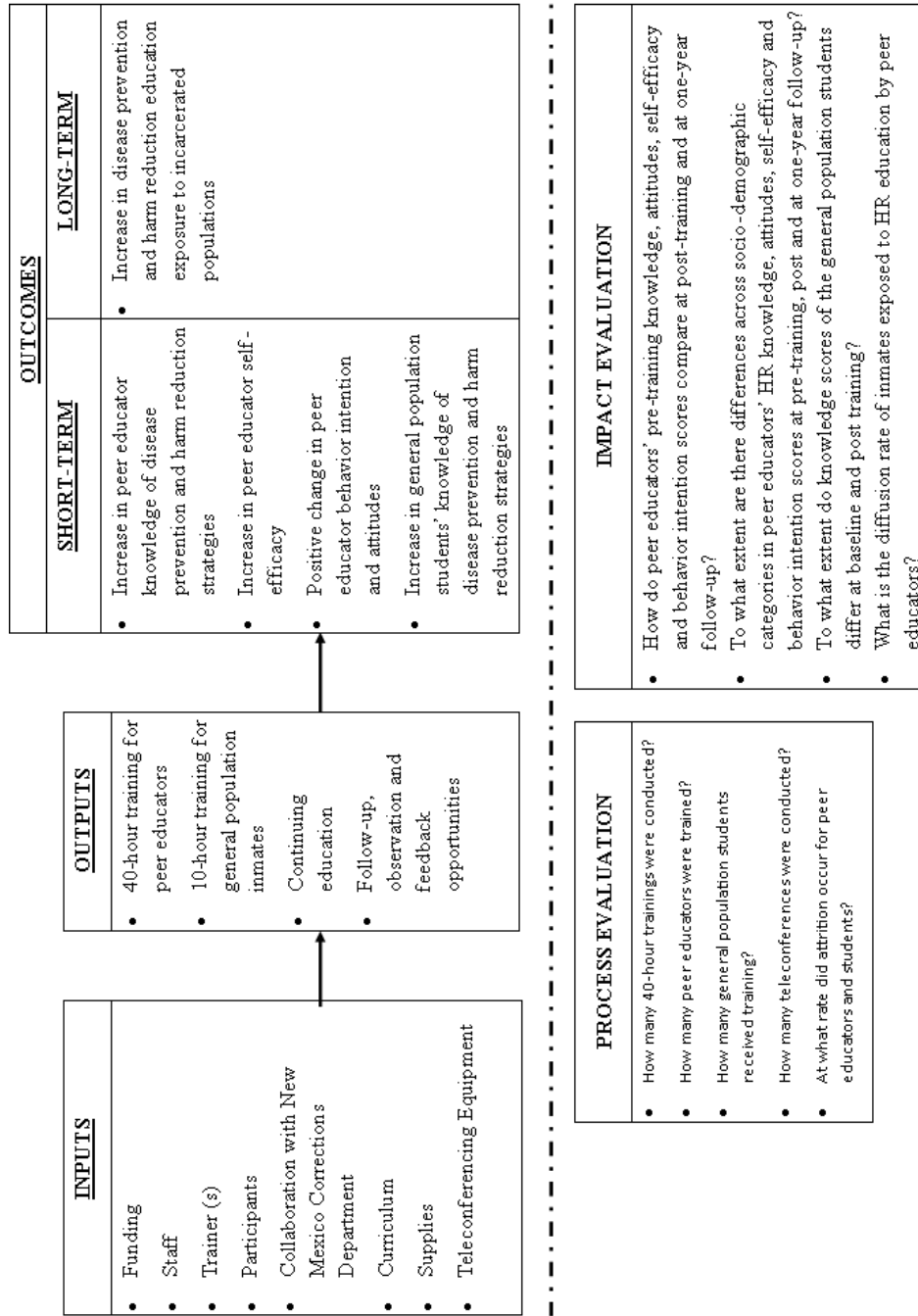
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Appendix A: Logic Model

Logic Model: The New Mexico Peer Education Project



Appendix B – Measurement Tools

NM PEP Peer Educator Pre-Test

Today's Date: ___/___/___ Your initials and year of birth (example – br1963): _____

Location of Training: _____ What is your age? _____

Please fill in the appropriate bubble for each answer.

For example if your answer is "B": (A) ● (C) (D)

Do you consider yourself to be Hispanic/Latino (a)? (1) Yes
(2) No

In addition, select one or more of the following racial categories to describe yourself:

(1)	American Indian or Alaska Native
(2)	Asian
(3)	Black or African American
(4)	Native Hawaiian or Pacific Islander
(5)	White

Tribal affiliation(s): _____

What is the highest degree or level of school you have completed? (mark only one box)

(1)	No schooling completed
(2)	Completed grade 1 through 11 (please write in highest grade completed) _____
(3)	Regular high school diploma
(4)	GED
(5)	Some college, no degree
(6)	Associate degree
(7)	Bachelor's degree
(8)	Graduate school

Have you ever been tested for hepatitis C (HCV)?

Yes	No	I don't know
(1)	(2)	(3)

If you were tested, did you get the results of your hepatitis C test?

Yes	No	I don't know	Not applicable, I was not tested
①	②	③	④

Have you ever been tested for HIV?

Yes	No	I don't know
①	②	③

If you were tested, did you get the results of your HIV test?

Yes	No	I don't know	Not applicable, I was not tested
①	②	③	④

Have you taken the 10-hour Project ECHO classes run by peer educators?

Yes	No	I don't know
①	②	③

Knowledge about HCV/HIV/other health issues
(Please fill in one bubble for each answer)

1) Approximately what percent of New Mexico state prison inmates are infected with hepatitis C?

Ⓐ	Less than 2%
Ⓑ	20%
Ⓒ	40%
Ⓓ	Over 50%

2) Hepatitis C can be spread in all of the following ways EXCEPT:

(B)	Sharing tattoo ink
(C)	Injecting drugs with a clean needle
(D)	Sexual intercourse
(E)	Sharing a toothbrush

3) Approximately what percent of people exposed to hepatitis C will develop chronic hepatitis C infection?

(A)	Less than 5%
(B)	About 25%
(C)	50%
(D)	75 – 85%
(E)	100%

4) Hepatitis C primarily infects what organ?

(A)	Liver
(B)	Kidneys
(C)	Heart
(D)	Brain

5) Which of the following is TRUE regarding hepatitis C symptoms?

(A)	People immediately know they have hepatitis C because they always become jaundiced (skin turns yellow).
(B)	Most people can live for many years with hepatitis C before they have any symptoms.
(C)	Within the first year of getting hepatitis C, everyone experiences flu-like symptoms.

<input type="radio"/> D	One can always tell whether or not they have hepatitis C by the way they feel.
-------------------------	--

6) Cirrhosis is the medical word for:

<input type="radio"/> A	Liver cancer
<input type="radio"/> B	Early stage of hepatitis C
<input type="radio"/> C	A lot of scarring in the liver
<input type="radio"/> D	Internal bleeding

7) What is the function of the liver?

<input type="radio"/> A	Removes toxins from the body
<input type="radio"/> B	Converts food into energy
<input type="radio"/> C	Aids in the digestion of food
<input type="radio"/> D	All of the above

8) Which of the following conditions increase scarring of the liver for people who have hepatitis C:

<input type="radio"/> A	Infection with HIV
<input type="radio"/> B	Alcohol use
<input type="radio"/> C	Being overweight
<input type="radio"/> D	All of the above

9) Chronic hepatitis C sometimes leads to:

<input type="radio"/> A	Pneumonia
<input type="radio"/> B	Cirrhosis (scarring of the liver)
<input type="radio"/> C	Liver cancer
<input type="radio"/> D	HIV/AIDS

(E)	Both b and c
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10) Which of the following is TRUE about hepatitis C treatment:

(A)	There is no cure for hepatitis C
(B)	Only a small minority of people getting treatment will be cured
(C)	Over 70% of those getting treatment will be cured
(D)	It generally takes one month to treat someone for hepatitis C

11) The following is a good way to prevent getting hepatitis C:

(A)	Get the hepatitis C vaccine
(B)	Wash your hands regularly
(C)	Use clean needles
(D)	Eat a nutritious diet
(E)	All of the above

12) You can tell you have HIV/AIDS by:

(A)	Symptoms such as swollen lymph nodes, fatigue, and flu-like symptoms
(B)	Loss of appetite
(C)	Getting tested
(D)	Serious weight loss for no apparent reason

13) HIV can be found in all of the following body fluids EXCEPT:

(A)	Blood
(B)	Saliva
(C)	Breast milk

Ⓓ	Vaginal fluid or semen
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14) A good way to prevent the spread of MRSA/ Staph infection is:

Ⓐ	Get lots of exercise
Ⓑ	Get a MRSA vaccine (shot)
Ⓒ	Wash your hands frequently
Ⓓ	Avoid fatty foods

15) There is a cure for all of the following sexually transmitted infections EXCEPT:

Ⓐ	Gonorrhea
Ⓑ	Syphilis
Ⓒ	Herpes Simplex
Ⓓ	Chlamydia

16) Which of the following is TRUE about gonorrhea and syphilis?

Ⓐ	If you do not have any symptoms, you cannot pass it on to others.
Ⓑ	There is a vaccine that can prevent you from getting them.
Ⓒ	These are both diseases that can be transmitted from a mother to her baby during childbirth.
Ⓓ	Only the person that has gonorrhea or syphilis needs to be treated, not their sex partner.

17) HPV, the virus associated with genital warts, causes:

Ⓐ	Cirrhosis
Ⓑ	cervical cancer
Ⓒ	enlarged lymph nodes
Ⓓ	frequent urination (peeing)

18) Addiction is:

(A)	A choice people make to use drugs or alcohol
(B)	An attitude
(C)	A personality characteristic
(D)	A medical disorder

19) The following can help prevent diabetes:

(A)	Get a vaccination (shot)
(B)	Lots of physical activity and a healthy diet
(C)	Wash your hands often
(D)	Quit smoking
(E)	All of the above

20) Which of the following sexually transmitted infections can be prevented by a vaccine?

(A)	HIV
(B)	Syphilis
(C)	Human Papilloma Virus (HPV)
(D)	Chlamydia

Please fill in one bubble for each answer that best describes your attitude:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
21) Injection drug users should have access to clean needles on the outside.	①	②	③	④	⑤
22) It is important to me to know whether or not I have hepatitis C.	①	②	③	④	⑤
23) People who are addicted to heroin should just make better choices about their drug use.	①	②	③	④	⑤
24) People who get hepatitis C through sharing needles deserve what they get.	①	②	③	④	⑤
25) If I had hepatitis C, I would want to get treatment.	①	②	③	④	⑤

Please fill in one bubble for each answer that best describes what you might do in the future:

Once you are released, how likely are you to:

	Very Unlikely	Unlikely	Neutral	Likely	Very Likely
26) find a primary health care provider	①	②	③	④	⑤
27) use condoms every time you have sex	①	②	③	④	⑤
28) get a tattoo using shared ink or equipment	①	②	③	④	⑤
29) talk to your sex partner about sexually transmitted infections	①	②	③	④	⑤
30) consistently wash your hands before meals and after using the bathroom	①	②	③	④	⑤

NM PEP Peer Educator Self Efficacy Pre-test

Today's Date: ___/___/___ Your initials and year of birth (example – br1963): _____

Location of Training: _____

Self-Efficacy Questions:

On a scale of 1 – 7 please completely fill in the bubble for the number that best describes your confidence;
 ① Not at all Confident, ④ Somewhat Confident, and ⑦ Extremely Confident.

	Not at all Confident			Somewhat Confident			Extremely Confident
1. How confident are you that you have the information you need to be a peer educator?	①	②	③	④	⑤	⑥	⑦
2. How confident are you that you have the teaching skills to be a peer educator?	①	②	③	④	⑤	⑥	⑦
3. How confident are you in your ability to be a peer educator?	①	②	③	④	⑤	⑥	⑦
4. How confident are you that you can set aside your own feelings about lifestyles that are different from your own in interactions with your peers?	①	②	③	④	⑤	⑥	⑦
5. How confident are you in your ability to talk with people about sensitive topics, such as safer sex and clean needles, to help them reduce their risk of getting or spreading HCV?	①	②	③	④	⑤	⑥	⑦

NM PEP Student Pre-Test Version 2

Today's Date: ___/___/___

What is your age? _____

Location of Training: _____

Please fill in the appropriate bubble for each answer.

For example if your answer is "B": (A) ● (C) (D)

Do you consider yourself to be Hispanic/Latino (a)? Yes

No

In addition, select one or more of the following racial categories to describe yourself:

<input type="checkbox"/> 1	American Indian or Alaska Native
<input type="checkbox"/> 2	Asian
<input type="checkbox"/> 3	Black or African American
<input type="checkbox"/> 4	Native Hawaiian or Pacific Islander
<input type="checkbox"/> 5	White

Tribal affiliation(s): _____

What is the highest degree or level of school you have completed? (mark only one box)

<input type="checkbox"/> 1	No schooling completed
<input type="checkbox"/> 2	Completed grade 1 through 11 (please write in highest grade completed) _____
<input type="checkbox"/> 3	Regular high school diploma
<input type="checkbox"/> 4	GED
<input type="checkbox"/> 5	Some college, no degree
<input type="checkbox"/> 6	Associate degree
<input type="checkbox"/> 7	Bachelor's degree

Have you ever been tested for hepatitis C (HCV)?

Yes	No	I don't know
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3

If you were tested, did you get the results of your hepatitis C test?

Yes	No	I don't know	Not applicable, I was not tested
①	②	③	④

Have you ever been tested for HIV?

Yes	No	I don't know
①	②	③

If you were tested, did you get the results of your HIV test?

Yes	No	I don't know	Not applicable, I was not tested
①	②	③	④

Have you taken the introductory training on hepatitis C and hand washing at RDC run by Project ECHO peer educators?

Yes	No	I don't know
①	②	③

Knowledge about HCV/HIV/other health issues

(Please fill in one bubble for each answer)

1) Approximately what percent of New Mexico state prison inmates are infected with hepatitis C?

Ⓐ	Less than 2%
Ⓑ	20%
Ⓒ	40%
Ⓓ	Over 50%

2) Hepatitis C can be spread in all of the following ways EXCEPT:

(B)	Sharing tattoo ink
(C)	Injecting drugs with a clean needle
(D)	Sexual intercourse
(E)	Sharing a toothbrush

3) Which of the following is TRUE regarding hepatitis C symptoms?

(A)	People immediately know they have hepatitis C because they always become jaundiced (skin turns yellow).
(B)	Most people can live for many years with hepatitis C before they have any symptoms.
(C)	Within the first year of getting hepatitis C, everyone experiences flu-like symptoms.
(D)	One can always tell whether or not they have hepatitis C by the way they feel.

4) Which of the following is TRUE about hepatitis C treatment:

(A)	There is no cure for hepatitis C
(B)	Only a small minority of people getting treatment will be cured
(C)	Over 70% of those getting treatment will be cured
(D)	It generally takes one month to treat someone for hepatitis C

5) The following is a good way to prevent getting hepatitis C:

(A)	Get the hepatitis C vaccine
(B)	Wash your hands regularly
(C)	Use clean needles
(D)	Eat a nutritious diet
(E)	All of the above

6) HIV can be found in all of the following body fluids EXCEPT:

(A)	Blood
(B)	Saliva
(C)	Breast milk
(D)	Vaginal fluid or semen

7) A good way to prevent the spread of MRSA/ Staph infection is:

(A)	Get lots of exercise
(B)	Get a MRSA vaccine (shot)
(C)	Wash your hands frequently
(D)	Avoid fatty foods

8) There is a cure for all of the following sexually transmitted infections EXCEPT:

(A)	Gonorrhea
(B)	Syphilis
(C)	Herpes Simplex
(D)	Chlamydia

9) Addiction is:

(A)	A choice people make to use drugs or alcohol
(B)	An attitude
(C)	A personality characteristic
(D)	A medical disorder

10) The following can help prevent diabetes:

Ⓐ	Get a vaccination (shot)
Ⓑ	Lots of physical activity and a healthy diet
Ⓒ	Wash your hands often
Ⓓ	Quit smoking
Ⓔ	All of the above

Please fill in one bubble for each answer that best describes what you might do in the future:

Once you are released, how likely are you to:

	Very Unlikely	Unlikely	Neutral	Likely	Very Likely
11) find a primary health care provider	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
12) use condoms every time you have sex	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
13) get a tattoo using shared ink or equipment	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
14) talk to your sex partner about sexually transmitted infections	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
15) consistently wash your hands before meals and after using the bathroom	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ