The Effect of Self-Efficacy on Treatment Outcomes of Clients Enrolled in a Methadone Treatment Program in Rural Maryland

Bonnie A. Franckowiak
Ellicott City, MD

BSN, D'Youville College, 1975
MSN, Mississippi University for Women, 1984

A Capstone presented to the Faculty
Of the University of Virginia in Candidacy for the Degree of
Doctor of Nursing practice

School of Nursing

University of Virginia
May, 2014

Doris Glick, PhD, RN _____
Signature of Chair

Catherine Kane, PhD, RN _____
Signature of Member

Virginia Coletti, PhD, RN _____
Signature of Member

Abstract

The number of people diagnosed with substance abuse and dependence continues to increase with serious implications for individuals and groups. Addiction treatment can be effective, and certain principles, when adhered to, increase the likelihood of success: engagement, retention and individualization. Becker's Health Belief Model (HBM, 1974) has been used successfully to address behavior change in chronic diseases, as well as smoking and alcohol dependence. This project applies the HBM to opiate addiction treatment, specifically medication assisted treatment (MAT). The purpose of this study was to measure the relationship between self-efficacy and treatment outcomes for opiate dependent clients on MAT. A convenience sample of 50 persons with addiction to opiates was admitted to an outpatient substance abuse treatment program for MAT using methadone, and followed for a period of 6 months. Pre- and post-treatment self-efficacy scores were obtained using a modified General Self-Efficacy Scale (GSE; Schwarzer & Jerusalem, 1995). Treatment outcomes were measured by the number of negative random monthly urine screens, attendance at group and individual counseling sessions, daily dosing adherence, and retention in treatment for at least 6 months. Pre- and post- treatment self-efficacy scores were compared using a t-test, and self-efficacy scores were compared to client outcomes using Pearson Correlation. GSE scores demonstrated improvement after 6 months in treatment ($p=<.01$). However, no statistically significant relationship was found between GSE scores and treatment outcomes.

Table of Contents

The Effect of Self-Efficacy on Treatment Outcomes of Clients Enrolled in a Methadone Maintenance Treatment Program in Rural Maryland

Section I: Introduction

Drug addiction is a "chronic, relapsing brain disease" (Qureshi, Al-Ghamdy, & Al-Habeeb, 2000, p. 724), which has implications not only as an individual health problem, but also as a public health problem. Addiction impacts the drug abuser and the community on a physical, mental, psychological and social level. According to statistics from the Substance Abuse and Mental Health Services Administration (SAMHSA, 2013), 23.9 million Americans used illicit drugs in 2012, or 9.2% of the population over the age of 12. There were 7,900 new users per day. Opiates were the second most commonly used substance, marijuana being the most common.

The initiative for Healthy People 2010 (Centers for Disease Control and Prevention [CDC], 2011) identified twenty-six priorities. Among the focus areas were promoting healthy behavior, and the health and safety of communities. Substance abuse was defined as one of ten leading health indicators of Healthy People 2010. In the current initiative for Healthy People 2020 (HP 2020; Department of Health and Human Services [HHS], 2013), two of the four overarching goals are: (1) attaining quality, longer lives, free of preventable disease or injury; and (2) creating social and physical environments that promote health for all persons. Two of the objectives of HP 2020 are to decrease abuse of opiates, both prescribed and non-prescribed, and to decrease drug-induced deaths.

Substance abuse has also been associated with several other health indicators, resulting from the lifestyle and problems commonly associated with drug dependence.

These other indicators are tobacco use, responsible sexual behavior, mental health, injury and violence, and access to health care (CDC, 2011). Many addicts smoke cigarettes, engage in risky behaviors that could lead to communicable disease or injury, or are involved in crime or violent acts. The Office of National Drug Control Policy (2011) reported that in 2010, more than 50% of all the people arrested in the United States, including those for violent crime and theft, tested positive for illicit drugs. In 2011, the National Institute on Drug Abuse (NIDA) reported that 25% of all AIDS cases were the result of IV drug use. According to the report, the estimated cost to our nation, considering lost productivity and health and crime related costs, is over $600 billion annually. Every year in the United States, approximately 40 million debilitating injuries or illnesses occur as a result of tobacco, alcohol, or other illicit drug use. For some patients, entry into substance abuse treatment is their only access to any form of medical care, since they are frequently uninsured and homeless (NIDA, 2008). This is a burden felt both by those who use drugs and those who do not.

Opiate Dependence

Opiate dependence is a chronic medical disease, often characterized by relapse, and is accompanied by other social, physical and psychological issues. Half of those who enter publicly funded addiction treatment programs require multiple treatment attempts over a period of years in order to achieve and maintain recovery (Dennis, Foss, & Scott, 2007). The number of individuals diagnosed with substance dependence continues to increase, and therefore presents a growing health problem.

Dependence on opiates is a public health problem that extends globally. Not only is it the fastest growing substance abuse problem in the United States today, it is also the reason for the majority of people seeking drug treatment around the world. Opiate

dependence adds to the burden of morbidity and mortality, overdose is a frequent cause of death, and the incidence and prevalence of HIV and Hepatitis are higher among illicit opiate users than among the general population (Bart, 2012).

A recently published study by Degenhardt et al. (2013) estimated the global burden of disease, measured in disability-adjusted life years (DALYs). Findings revealed that illicit drug dependence was responsible for 20 million DALYs in 2010, with opioid dependence being the largest contributor (9.2 million). Increased burden was noted in countries with higher incomes, and the highest rates of burden were found in the USA, UK, Russia and Australia. These results point out the need for various interventions aimed at reducing the global effects of illicit drug use, one of which is to increase the availability of treatment. Treatment for opiate addiction can be effective. In a publication entitled "Principles of Addiction Treatment: A Research-based Guide," NIDA (1999) set forth some basic tenets related to treatment which included: no single treatment is appropriate for all individuals; treatment must attend to multiple needs of the individual, not just drug use; and remaining in treatment for an adequate period of time is critical for treatment effectiveness.

Engaging clients in treatment is important. This means they need to be involved in their treatment plan, and it should focus on their individual needs. With the ultimate goal being to help the client maintain a drug-free lifestyle, retention in a treatment program is most important. If clients do not remain in treatment for a sufficient length of time, they will have little chance of benefitting, and achieving a positive outcome. Retention has been shown to be the single most important factor influencing success in treatment (Fareed, Casarella, Amar, Vayalapalli, & Drexler, 2009; Joe, Simpson, Dansereau, & Rowan-Szal, 2001; Zhang, Friedman, & Gerstein, 2003). Increased duration of treatment

has also been shown to decrease transmission of HIV and other communicable diseases, lessen criminal activity, increase employment, and improve relationships, parenting, general health and overall level of functioning for the addicted client (American Academy for the Treatment of Opioid Dependence Inc., 2010; Mancino, Humphreys, & Booth, 2010). Retention is also often used to measure the effectiveness of medication assisted treatment (MAT), and is associated with numerous positive outcomes. Retention in treatment is supported by adequate methadone dosing, and psychosocial support (Cox, Allard, Maurais, Haley, & Small, 2013).

Medication Assisted Treatment

MAT refers to the use of pharmacological agents combined with education, counseling and behavioral therapy, and support. MAT is a comprehensive approach to treating substance use disorders, it is evidence-based, and focuses on the client as an individual. The goal of MAT is to return the client to a state of health and well-being, and assist them to function well in their family and community. The most commonly used medications in MAT for the treatment of opiate addiction are Buprenorphine and Methadone.

Methadone maintenance therapy has been in use for over 6 decades, and has come to be the treatment of choice for opiate dependence. The low cost, general safety and effectiveness of methadone have led to its acceptance not only in the United States, but around the world (Stoller & Bigelow, 2006). Methadone dosing can be individualized according to client need, and is closely monitored during the course of treatment. There are strict state and federal regulations governing the distribution of methadone.

Theoretical Framework

The framework for this study is Becker's Health Belief Model (HBM, 1974). The HBM (see Appendix A) is one of the most widely accepted and frequently used models for the implementation and maintenance of behavior change (Harrison, Mullen, & Green, 1992). Researchers have used various theories of change to address problems in smoking and alcohol dependence. Addiction is, by definition, a chronic disease, and the HBM has been used effectively in the study of many other chronic illnesses.

According to the HBM model (Becker, 1974), people will take action to make change if they believe they are susceptible to a condition, they believe it would have serious consequences for them, they believe there would be some benefit to change, and if the barriers are outweighed by the benefits. There must also be some cues to action that serve as impetus to start the change process.

Self-efficacy, another component of the model, is the person's own level of confidence that they are able to take action (Janz & Becker, 1984). Taking action and incorporating health behaviors into one's daily life is important in the treatment of any chronic illness. The effectiveness of nursing and medical interventions is often dependent on the client's involvement in self-care activities. Many times, health care providers are most helpful in the roles of "educators and facilitators" (Connelly, 1993, p. 247). In this role, they provide teaching and support that may serve as a "cue to action", influencing a client's decision about health behavior.

The HBM (Becker, 1974) has been successfully used as the framework for many studies related to chronic illness. Research has been conducted with patients suffering with diabetes (Koch, 2002), hypertension (Strychar, Potvin, Pineault, Pineau, & Prevost,

1993), chronic renal disease (Ghaddar, Shamsedden, & Elzein, 2009) and HIV/AIDS (Malcolm, Ng, Rosen, & Stone, 2003; Orel, Stelle, Watson, & Bunner, 2010). When applied to chronic conditions, the model has proven useful in increasing client compliance (McDonald-Miszcak, Wister, & Gutman, 2001).

The purpose of this study is to examine the relationship between self-efficacy and treatment outcomes for opiate dependent clients on MAT. Figure 2 (Appendix B) illustrates the model as it applies to this study. A vast amount of research has incorporated the concept of self-efficacy and self-management in other areas of substance use. However, despite its chronic nature, little work has been done thus far to apply this concept to the problem of opiate dependence.

Section II: Literature Review

A great amount of research has been conducted in the field of substance abuse regarding factors that affect treatment outcomes. However, very few studies have examined the effect of self-efficacy, particularly among opiate addicted clients. Most studies of self-efficacy are focused on alcohol, marijuana and cocaine abuse. This study looks at self-efficacy and treatment outcomes of opiate addicted clients on medication-assisted treatment.

A review of the literature was conducted, using PubMed, Medline and CINAHL databases. Search terms included opiate addiction, opiate addiction treatment, methadone, medication assisted treatment, retention in treatment, opiate treatment outcomes, psychosocial support, and self-efficacy. These terms were chosen because, in this study, the primary variables were self-efficacy, treatment outcomes, and medication assisted treatment.

Psychosocial Support

A Cochrane Review (Amato et al., 2009) reported that the addition of psychosocial support to medication treatment had a positive effect on outcome when compared to medication treatment alone. A total of 28 randomized control trials, comprised of 2,945 subjects, were reviewed. At follow-up, clients who had received counseling and support were able to maintain abstinence longer. Counseling has long been the foundation of chemical dependence treatment. The addition of counseling to treatment yields a better outcome than that of medication alone (McLellan, Arndt, Metzger, Woody, & O'Brien, 1993).

There is evidence to suggest that increased client satisfaction and rapport between

client and staff can lead to a decrease in illicit use, better compliance with treatment, and overall improved outcomes. A study of two cohorts of clients receiving MAT were studied in four cities, in both community non-profit and private for-profit treatment programs. A total of 577 subjects were enrolled in the study, which assessed the importance of counseling rapport as a predictor of treatment outcome. It was found that lower rapport was associated with worse outcome, and higher incidence of drug use in both cohorts. The researchers concluded that a therapeutic relationship is a vital factor in favorable treatment outcome (Joe et al., 2001).

Another study examined the relationship between client satisfaction and treatment outcome (Zhang, Gerstein, & Freidman, 2008). Self-rated satisfaction with treatment services was compared to client drug use at one year post-treatment. Those who expressed satisfaction with their treatment, and felt as though their needs were met by a variety of services, had more favorable outcomes at one year follow up (Zhang et al., 2008).

Client satisfaction is associated with treatment compliance, and satisfaction is increased when clients feel "connected" to their health care provider. Continuity of care is another important factor in client satisfaction, especially for clients dealing with any chronic or long-term illness (Cornwall, Moore & Plant, 2008).

Retention in Treatment

Because addiction is a chronic disease, treatment is a long term process. Retention in treatment is critical to success. Specific reasons have been identified as to why clients express dissatisfaction and discontinue treatment programs. Most often it is because their needs are not being met. Clients who have a wide array of services available to them are generally the most satisfied, remain in treatment longer, and have

better outcomes (Kelly, O'Grady, Mitchell, Brown, & Schwartz, 2011). Sometimes there is a barrier that must be overcome. This may be something as simple as lack of transportation preventing a client from keeping clinic appointments. During MAT, clients may need assistance with dealing with somatic complaints, such as insomnia. Restful sleep can enhance the benefits of MAT (Barta, Kurth, Stein, Tennen, & Kiene, 2009). A study of 21 heroin addicted subjects on MAT were asked to keep a diary over a 5 week period. Diary entries from before subjects reached a therapeutic dose were compared to those written after they reached a therapeutic dose. A positive relationship was found between discomfort due to withdrawal and drug cravings, and also a correlation between better sleep and higher self-efficacy (Barta et al., 2009).

Individualized treatment plans are associated with higher retention and better outcomes because of the many life issues that clients bring with them when they enter treatment. Therefore, treatment interventions should be focused not only on substance abuse issues, but on all the areas of need that are necessary for full recovery (Hser, Evans, Huang, & Anglin, 2004). In a longitudinal study of 1,939 subjects, clients on MAT were assessed on admission, after 3 months and 9 months of treatment, and at discharge. Services were provided according to need. The results showed greater satisfaction, longer retention, and better outcome for those who felt their needs were being addressed (Hser et al., 2004). Once basic needs are met, clients can focus on their recovery (Friedmann, Lemon, & Stein, 2001; Barta et al., 2009; Hser et al., 2004).

Another reason for discontinuing treatment is an unfavorable relationship between client and care providers. Any chronic illness is best treated when approached collaboratively by client and provider. Providers may tend to see a problem only in terms of diagnosis and client compliance, while clients see a problem more in terms of their

symptoms, their level of functioning and the effect on their lives. Everyone can benefit, especially the client, if these 2 views come together (VonKorff, Gruman, Schaefer, Curry, & Wagner, 1997). The most successful programs assure that clients are on the correct methadone dose, and are receiving adequate medical and psychiatric care and behavioral counseling (Ciraulo, Piechniczek-Buczek, & Iscan, 2003). The more supported clients feel, the longer they are likely to remain in treatment.

Self-Efficacy

Self-efficacy was first introduced by Albert Bandura (1977), as a component of social learning theory, and is briefly defined as one's belief in their ability to succeed at tasks. Bandura identified 4 factors that affect self-efficacy: (1) past experience – success will raise one's self-efficacy while failure tends to lower it; (2) modeling, or vicarious experience – when we see someone succeeding, we tend to believe that we can also; (3) social persuasion, or the direct encouragement or discouragement we receive from other people; and (4) physiological factors, how we react to stress and how we perceive it, affect our sense of efficacy (Bandura, 1977).

Perceived self-efficacy is the belief that one can change risky health behaviors as a result of their own actions. The act of engaging in positive health behavior has been associated with one's sense of efficacy (Schwarzer & Fuchs, 1995). Generalized self-efficacy levels can reinforce or interfere with one's ability to take on a task.

Self-efficacy has been shown to be an important factor in achieving and maintaining recovery (DiClemente, Carbonari, Montgomery, & Hughes, 1994) and perhaps the single most important factor in behavior change (Lusczcynska, 2004). Higher self-efficacy has been associated with better success in treatment. Clients in substance abuse treatment who have higher self-efficacy and better coping skills

generally have better outcomes and are less likely to relapse. Treatment aimed at increasing self-efficacy leads to an improved outcome (Ciraulo et al., 2003).

Although there is less research related specifically to self-efficacy and opiate use, self-efficacy has been linked to avoidance of other substances. Studies of alcoholics show that those with higher self-efficacy scores were better able to resist the urge to drink when tempted, and remained sober longer (Allsop, Saunders, & Phillips, 2000; Rychtarik, Prue, Rapp, & King, 1992; Solomon & Annis, 1990; Vielva & Iraurgi, 2001). Self-efficacy has also been found to be useful in the prediction of treatment effectiveness. Studies have been conducted to examine self-efficacy, and how it changed, in attempt to predict treatment outcome. A therapeutic relationship was found to counteract the effects of low baseline self-efficacy, and clients had more successful treatment outcomes (Ilgen, Tiet & Finney, 2006).

Self-management is crucial to living with any chronic disease, and these skills must be mastered. Self-efficacy refers to the client's level of confidence that they can perform these actions on their own on a daily basis. Self-efficacy in drug dependent clients promotes a sense that they can exert some amount of control over their disease, and perform their newly acquired health behaviors over time. Enhancement and maintenance of client's self-efficacy during treatment is likely to decrease their use of illicit substances, and improve retention and completion rates (Bourbeau, 2008; Senbanjo, Wolff, Marshall, & Strang, 2009). A study of 191 heroin users was performed in England, to determine the association between self-efficacy and persistent heroin use. After adjusting for other factors such as inadequate dose, financial difficulties, and mental health issues, persistent heroin use was linked significantly to a poor sense of self-efficacy (Senbanjo et al., 2009). Individuals in recovery have varying levels of self-

efficacy. Some are very confident while others have little confidence in their ability to reduce or stop their use. Promoting self-efficacy and self-management skills are important goals of treatment.

Behavior Change

Behavior change is a complex process, and can be affected by many factors. Rothman (2000) stated that what initiates behavior change is different from that which maintains it. First, there must be some initial impetus to change. Motivation is an important factor in behavior change (Kelly, Zyzanski, & Alemagno, 1991).One's self-efficacy can have an effect on whether or not they elect to change a particular behavior or engage in prevention (Stewart, Wolfe, Maeder, & Hartz. 1996). In order to maintain a new behavior, an individual must have some expectation of benefit, and have some degree of confidence in their ability to perform the new behavior (Baldwin et al., 2006). Maintenance of new behaviors has been shown to be related to the achieved outcome and an individual's sense of self-efficacy (Scherbaum, 2008). One way to assist the individual in maintaining their new behaviors, is through the use of "teachable moments", that occur during client - caregiver interactions (Lawson & Flocke, 2009). These moments encourage health behavior change, and are not only a source of education, but support as well. The elements of behavior change align with the concepts of perceived susceptibility and benefit, cues to action, and self-efficacy of the HBM.

The General Self-Efficacy Scale

The General Self-Efficacy scale (GSE) was developed in 1979 by Schwarzer and Jerusalem (1995). The GSE has since been adapted and translated into 33 languages by various co-authors. The original purpose was to assess a general sense of self-efficacy, with the aim of predicting coping and self-management skills. When measuring

self-efficacy regarding a specific behavior, it is suggested to add questions related to that particular behavior, as a test of specific self-efficacy (Schwarzer & Fuchs, 1996). The scale is designed for adults and adolescents over the age of twelve (Appendix C). General self-efficacy is the belief that oneself is competent to deal with a broad range of stressors or demands. Perceived self-efficacy is an operative construct related to subsequent behavior, and therefore an appropriate concept for clinical practice and behavior change.

Summary

There is a scarcity of literature about the Health Belief Model (Becker, 1974) applied to opiate addiction treatment. It has been used extensively in research on alcohol dependence, smoking, and other chronic diseases. Treatment is effective, especially when efforts are made to engage and retain clients in treatment, and to improve their self confidence in their ability to learn and maintain behavior change. Support has been a mainstay of the treatment process for decades. Medication assisted treatment has been shown to be more effective when support is added to the treatment regimen (McLellan et al., 1993).

One's self-efficacy determines one's feelings and thoughts, how they are motivated, and how they act. Someone with a strong sense of self-efficacy can face challenges with a commitment to overcoming them. They are able to recover quickly after any failure or setback. The opposite is true for the person with a low sense of self-efficacy. Such an individual is prone to shy away from difficult tasks, dwell on their weaknesses, and give up quickly. Also, they have little faith in their own ability and are slow to recover from any setback (Bandura, 2004). This study explores how determining

the self-efficacy of the opiate addicted client can be applied in medication assisted treatment, specifically for individualizing the treatment plan.

Implications for Nursing and Research

The outcome of this study may provide new insight about treating the disease of addiction. The concept that addiction is a disease is important for practitioners as well as clients to understand: practitioners, so they can be therapeutic in their care, and clients, so they can proceed to recovery with a minimum of shame and guilt.

The General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995) has proven useful in the study of a number of other medical conditions and behavioral issues. This study provides an opportunity to apply the scale to an opiate addicted population.

Bandura's (1977) social learning theory states that self-efficacy is a dynamic concept; that self-efficacy beliefs are changing throughout time. This suggests the benefit of repeated measurements, as in this study, and in future studies.

Section III: Methods

Purpose

The purpose of this study is to examine the relationship between self-efficacy and treatment outcome in a sample of opiate addicted clients.

Research Design

This study used a quasi-experimental pre-test post-test design to examine the relationship between treatment outcome and self-efficacy among a convenience sample of clients.

Setting

The setting for this study was a free-standing, for-profit outpatient substance abuse treatment facility. The facility was located in a rural area in northeast Maryland, near the Delaware and Pennsylvania state borders. The facility first opened in 2009, and the site where this particular study was conducted has been in operation since May, 2012. At the time of the study, in addition to administrative staff, there were 7 counselors, 3 methadone dispensing nurses, a nurse practitioner, and medical director. A laboratory facility is located on site to perform all urine and blood collection, which is then sent to a central lab for testing. On admission, all clients were tested for Hepatitis, HIV, Syphilis and TB. Referrals were made for any positive findings.

Once admitted, clients begin medication-assisted treatment with methadone. Standard MAT at the facility consists of daily methadone dosing, monthly individual counseling sessions, monthly group counseling sessions, and random monthly urine drug screens. Clients may attend more counseling sessions if they desire to do so, or if it is recommended by their counselor. Their initial methadone dose is determined by the medical staff and increased according to established facility protocols, and clients are

monitored daily by skilled nurses. Follow up visits are scheduled with the nurse practitioner as needed for dosing or medical issues. Treatment is individualized according to client needs. A client reports to the facility for dosing Monday through Saturday, and is given a take-home dose for Sunday when the facility is closed. Clients may earn one additional day of take-home dosing by maintaining drug free urines for 3 consecutive months. With continued abstinence, additional take home doses can be earned according to a schedule that complies with state and federal regulations. Take-home doses can be revoked for noncompliance or behavioral issues. This policy is the standard care for all clients receiving MAT at this facility.

Participants

There were approximately 350 clients actively enrolled in treatment for opiate dependence at the study facility, with 8-10 new admissions per week. The client population was 96% Caucasian and 3% African-American, which mirrors the population of the surrounding county and the area from which most of the client population was drawn. The majority of clients were residents of the surrounding county, with 2.4% from Delaware and <1% from Pennsylvania.

All clients were 18 years of age or older, with an average age of 34 years. Approximately 54% were female, and 4% were pregnant. Just over 70% of clients were unemployed, and 4% were disabled. Referrals to the facility come from physician's offices, the judicial system, and self-referrals. Approximately 80% of clients were Medicaid and 20% were self-pay.

Recruitment

A convenience sample of clients meeting criteria was recruited from consecutive admissions to the program between April 22 and June 22, 2013, until the target number

of 50 participants was reached. Pregnant women and clients admitted for short term supervised withdrawal using methadone were excluded from the study. Criteria for inclusion in the study were admission into MAT, and the ability to read and understand English. Clients who had co-occurring chronic illnesses, such as hypertension or diabetes, were eligible for the study, if their illnesses were stable.

Procedure

The duration of the study was 6 months. The study period for each individual began on day of admission and ended 180 days from that date, +/- 4 days. On day of admission, all eligible clients completed the usual admission process, which included an Addiction Medical Assessment, HIV/AIDS Risk Assessment, TB Risk Assessment, Modified General Self-Efficacy Scale (GSE), and a physical exam by the nurse practitioner. Following completion of the admission process MAT was initiated. After completing 6 months in treatment as described, each eligible participant signed informed consent for use of their retrospective data, and then repeated the modified GSE. When completing the GSE scales, all subjects were advised to answer according to how they were feeling at that moment in time.

Measures

The GSE is a ten item questionnaire scored on a 4-point scale (Appendix C). Self-efficacy scores range from 10 to 40. Specific self-efficacy refers to competence related to a particular task at hand (Luszczynska, Scholz, & Schwarzer, 2005). When used as a specific behavioral measure, however, it is suggested to add a few questions specific to the task or behavior (Schwarzer & Fuchs, 1996). For this study, 4 questions

relating specifically to opiate use were added to the questionnaire by the researcher (Appendix C). Possible scores, including these behavior specific questions, range from 14 to 56.

GSE Reliability and Validity

In samples from twenty-three countries, Cronbach's alphas for the GSE ranged from .76 to .90, with most in the high .80s. Criterion-related validity is well documented in numerous studies where positive coefficients were found with favorable emotions, optimism, and work satisfaction. Negative coefficients were found with depression, anxiety, stress, and health complaints (Schwarzer & Jerusalem, 1995). The GSE has been used for 3 decades, successfully predicting outcomes based on pre-treatment measures of self-efficacy (Luszczynska et al., 2005; Rychtarik et al., 1992; Schwarzer & Jerusalem, 1995; Schwarzer & Renner, 2000).

Data Management

Since self-efficacy evaluation was part of the admission process at this treatment facility, initial GSE scores were part of the electronic medical record (EMR) and available for record review, as was data concerning attendance at counseling sessions and groups, daily dosing, urine drug screen results, and length of stay in treatment.

Data on each participant's daily dosing attendance, group and individual counseling session attendance, and urine drug screen results, as well as pre-treatment GSE score were collected from review of the client's record (Figure 3, Appendix D). Pre- and post- treatment scores were statistically analyzed for change in self-efficacy.

Initial GSE scores, 6 month follow up GSE scores, and all data related to treatment outcomes for each participant was compiled on an Excel spreadsheet, using an assigned

subject identification number with no link to the client's name, medical record number, or other identifying information. The Excel spreadsheet was stored on a separate portable drive, and not stored at the study site.

A separate list linking subject number to client medical record number was maintained in a separate locked location, only accessible to the researcher. Every effort was made to protect each subject's identity. The only demographic data collected was age and gender. Race was not a factor in this study, given the homogeneous nature of the population.

Protection of Human Subjects

A letter of support was obtained from the administration of the treatment facility, allowing the study to take place at that site (Appendix E). Before this study was initiated, approval was obtained from the Institutional Review Board (IRB) of the University of Virginia (Appendix F). All information was collected and stored in compliance with IRB requirements, and with regard for each subject's privacy. The GSE was administered in a private setting. Each participant was fully informed of the purpose of the survey and had an opportunity to have their questions answered. Every subject was also aware of their right to withdraw from the study, and of their right to be informed of their GSE scores, if they desired.

Data Analysis

A power analysis was performed to determine sample size necessary for significance. To measure medium effect, at a 95% CI and a power of .80, a sample size of 27 was determined to be sufficient. The actual dropout rate at this facility was 5%. However, to allow for the often high dropout rate among the addicted population, additional subjects were added to the projected sample, for a total of 50.

The pre- and post-differences in GSE scores were computed for each participant. A t-test was utilized to compare the results, and to address the first research question about the effect of MAT on self-efficacy. Next, data was collected for each participant in the following areas: number of drug free urines, number of groups attended, number of individual counseling sessions attended, and daily dosing attendance. Pearson correlation was then be used to answer the second study questions about the relationship between GSE scores and treatment outcomes.

Section IV: Results

At the end of the 6 month study period, 28 subjects remained in treatment. This number exceeded 27, the number required for sufficient power. Mean pretreatment GSE scores for subjects who dropped out of treatment were an average of 1 to 2 points higher than those of subjects who completed the study. See Table 1 (Appendix G).

Self-Efficacy Scores

Data for the 28 subjects who completed the study was analyzed using SPSS. Results were computed at 95% LOC, Alpha level .05. Fourteen males and 14 females, remained in treatment for at least 180 days, and repeated the GSE at +/- 4 days of 6 months in treatment. The mean GSE scores for females were lower than those of the males who completed the study. Combined scores, males and females, showed a 4.46 point increase in general self-efficacy, and a 5.46 point increase in specific self-efficacy after 6 months. The means of their pre-treatment and post-treatment GSE scores are shown in Table 2 (Appendix H).

Comparison of pre-treatment to post-treatment GSE scores (Post- minus Pre-score) was analyzed using a Paired t-test. General, Specific and Total scores all improved significantly ($p = .000$). Using a 95% Confidence Interval of the difference, on average, General GSE scores improved 5.1 points, Specific GSE scores improved 5.2 points, and Total GSE scores improved 10.1 points. See Table 3 (Appendix I).

Treatment Outcomes (MAT)

Urine testing is regarded as the most accurate means of drug screening, and is the most frequently used method for random screening in MAT. Negative urine screens are used to measure client compliance. In addition, urine screens are one tool used by governing bodies to measure the success of a treatment facility. Data related to treatment

outcomes were analyzed using Pearson correlation. The number of opiate negative urines for months 2 through 6 were counted for each subject. Month #1 was disregarded since that drug screen was taken on day of admission and all were opiate positive, as expected. Analysis showed no correlation between General, Specific or Total GSE scores and the number of opiate negative urines during the study period, with a Pearson coefficient of -.152. See Table 4 (Appendix J). Having higher self-efficacy was not associated with a client's ability to maintain opiate negative urine screens.

Attendance at Counseling Sessions

Clients at this facility are required to attend a minimum of one group and one individual counseling session per month. Failure to do so constitutes noncompliance with treatment. It is frequently stressed that medication alone is not sufficient. Education, support, and therapy are vital to successful treatment. No significant correlation was found between GSE scores and either group or individual counseling sessions over the 6 month period. Self-efficacy was not related to preference for individual or group counseling. General, Specific and Total GSE scores were analyzed, showing Pearson coefficients of .095 for individual sessions, and -.338 for group sessions. See Table 5 (Appendix K).

Descriptive Analysis

Some descriptive information was obtained from the data. Those with increased GSE scores had more opiate negative urines. Overall, older females are more likely to attend groups than all other participants. Additional analysis was done for those subjects (n = 5) who had unchanged or lowered post-treatment GSE scores. Using an Independent sample t-test, no significant results were found regarding urine results, or individual or group session attendance for this group. However, study participants with unchanged or

lowered GSE scores went to more individual sessions (5 out of 6 compared to 3.9 out of 6), while those with increased GSE scores attended more group sessions (2.96 out of 6 compared to 1.8 out of 6).

Section V: Discussion

This study examined the relationship between MAT and self-efficacy, and self-efficacy and treatment outcome. Based on the results of this study and statistical analysis, medication-assisted treatment demonstrates a direct relationship with self-efficacy. Scores increased significantly in both general and specific self-efficacy. No correlation was found, however, between self-efficacy scores and any of the treatment outcomes measured.

Self-efficacy

Overall, the study showed a significant increase in General, Specific, and Total GSE scores over the 6 month treatment period (Appendix L). This is an important finding because of the role self-efficacy plays in chronic disease management. The more confidence an individual has in his or her ability to accomplish a task, the more likely they are to succeed. With regard to use of some illicit substances, higher self-efficacy has been linked to decreased use, better retention in treatment, and lower incidence of relapse (Senbanjo et al., 2009; Allsop et al., 2000; Ciraulo et al., 2003). Knowing the benefits of higher self-efficacy, treatment providers can incorporate it's enhancement into the treatment plan for individuals with substance use disorders. Through tailored counseling and group activities, improved self-efficacy becomes a treatment goal.

Five subjects showed no change or a decrease in score over time. There are 2 possible explanations for this. First, self-efficacy is a fluid concept, and changes over time. An individual's level of self-efficacy can fluctuate, depending on the events taking place in their life. The life of a substance user is generally unstable, and these lowered scores may be a reflection of other influences, such as family, financial or

legal issues. Future studies that measure self-efficacy more frequently and over a longer period of time would be useful. Pairing these measurements with client interviews about stressors in their lives at time of testing would provide further insight.

Second, many opiate users also abuse other substances, which can in turn, affect behavior. This particular study did not control for use of other substances. If an individual has stopped using opiates, but continues to abuse alcohol or cocaine, they are less likely to be compliant with treatment requirements, and likely to score lower on self-efficacy, especially with regard to substance use (Allsop et al., 2000).

Being more susceptible to relapse, a client may not attend the clinic regularly for daily MAT dosing, fail to attend groups and counseling sessions, and may eventually drop out of treatment. Despite not controlling for other substance use, these particular subjects remained in treatment for the 6 month study period. Further study of this group, with attention to their drug use history, would provide information about substance use and self-efficacy, specifically regarding cause and effect.

Treatment Outcomes

The results of this study vary from those of studies conducted with subjects who are using other substances such as alcohol, cocaine, and occasionally opiates, where improved self-efficacy was shown to have a positive relationship to outcome (Ciraulo et al., 2003; Rychtarik et al., 1992; Vielva & Iraurgi, 2001; Allsop et al., 2000). According to the literature, clients with high GSE scores are better able to remain abstinent from opiates. Although subjects in this study with higher GSE scores did have more opiate negative urine screens, the findings were not statistically significant.

No significant statistical relationship was found in this study between self-efficacy

scores and attendance at either group or individual counseling sessions, but interesting trends were identified. Subjects with higher GSE scores attended more groups, and fewer individual sessions. The opposite was true for subjects with lower GSE scores. This is useful knowledge in the clinical setting, because it could be theorized that the person with lower self-efficacy feels the need for more individualized attention, and lacks the confidence to attend and participate in the groups. Higher scores on the GSE may indicate a person who is more confident and less afraid to express their feelings in a group.

This study also found that older women attended more groups than individual sessions. Possible reasons for this trend may be that these older women enjoy the support and companionship the group provides, since many of them may feel isolated in their lives. They may also feel somewhat reluctant to open up to an individual with whom they are not too familiar, due to years of abuse and mistrust. Their choice may change based on their group experience or after they have had time to build a relationship with their counselor. Although this study measured only whether or not subjects met the minimum requirement for monthly group attendance, assessment of client's group preferences would be a useful addition to future studies.

An important factor, when working with this population, is motivation for treatment. Clients enter treatment for many reasons. However, if they are not committed to stopping their drug use, treatment is less likely to be effective. Data was not collected as to whether the subjects in this study entered voluntarily or were court-ordered into treatment. Motivation for treatment would be an interesting variable to include in future studies.

Retention

The dropout rate for this study was 44%. The percentage of clients who left before completing treatment at this facility at the time of the study was only 5%. Twenty-two subjects were lost to this study for various reasons. See Table 6 (Appendix J). The admission GSE scores of subjects who dropped out of treatment averaged slightly higher than the scores of those who remained in treatment for the duration of the study. Among those who left, some had no choice to leave due to hospitalization, incarceration, or loss of insurance coverage. Others left voluntarily because they moved out of the area, transferred to another treatment facility, or were not yet ready to commit to treatment. Some individuals overestimate their ability to stop using drugs, and leave treatment against medical advice. They are often "over confident" about their ability to control their substance use. This might explain their unwillingness to remain in treatment, and their higher GSE scores may reflect their overconfidence.

Strengths and Limitations

One of the strengths of this study was the homogeneity of the sample. All subjects were Caucasian, and of the same socio-economic class. The sample was evenly divided between males and females, and all subjects received the same medicated-assisted treatment protocol. Another strength is that the study met the 6 month minimum time duration recommended for MAT.

The duration of the study, however, was a limitation, because 6 months is a relatively short time to study a changeable concept like self-efficacy. As previously stated, self-efficacy is fluid and dynamic. Self-efficacy is greatly influenced by the events taking place in one's life at any given time. The life of an individual with a substance use disorder is generally not stable, so the same might be expected of their

measure of self-efficacy. Substance users face physical, mental, financial and many other burdens. Self-efficacy rises and falls as these stressors come and go in their lives. The study was also limited by the small sample size and high attrition rate, which is not uncommon when working with such a challenging population.

Another limitation of the study is that it measured only whether or not subjects attended the required minimum of one individual session or group per month. In fact, subjects were free to attend as many sessions as they wanted or needed. The number and also the type of groups attended may have varied, either by subject choice or counselor recommendation. A variety of groups are offered at the treatment facility, including a Men's and a Women's group, Surviving Trauma, Self-Empowerment, Relapse Prevention, Grief Counseling, Relationships, and Parenting. Attendance at these or other sessions may have affected self-efficacy scores.

The study is limited by not being able to control confounding variables, such as use of additional substances, and other stressful issues in the life of subjects that affect behavior. Many other factors in the life of an individual who suffers from a substance use disorder can affect how they act. In many cases, they are not financially stable, and are dependent on others for transportation. Transportation is often a reason why clients drop out of treatment before completion. Even when they continue in treatment, these factors can impact their attendance, and therefore affect outcome.

Implications for Nursing

According to the American Nurses Association (ANA, 2011), registered nurses rank as the largest group of licensed health professionals in the United States. In addition to being the largest, they are also considered to be among the most ethical and honest (Gallup, 2012). The profession itself is poised to take on a vital role in the provision of

health care services in this country, and were called upon to do so in a recent Institute of Medicine report (IOM, 2011). Due to the current political and social climate, as well as the expanding problem of substance abuse, nurses are faced with both challenges and opportunities. One of the challenges is the growing number of people affected by substance use disorders (SUD), and one opportunity is to lead as providers of quality and innovative care.

The field of addictions nursing has recently undergone an evolution, due in part to the nature and extent of substance use in this country, and globally. With regard to opiates in particular, incidence and prevalence of abuse have increased, as have associated medical and psychological issues. Dealing with these issues requires more than technical abilities. Nurses working in substance treatment today need keen interpersonal skills, as well as improved means of assessment.

This study deals with assessment of self-efficacy of clients on medication assisted treatment. The incorporation of self-efficacy testing into the admission process for MAT clients can be a useful tool. Knowing an individual's level of self-efficacy can be helpful during counselor assignment. Clients are individuals and require individual approaches to treatment. Likewise, counselors are individuals, and each possesses a different skill set. Matching personalities and skills can help to maximize rapport and client satisfaction, both of which are proven factors in successful treatment (Kelly et al, 2011).

Knowledge of self-efficacy can also be useful in treatment planning. As this study demonstrated, clients with lower GSE scores preferred individual counseling to group sessions. This may be due to feelings of insecurity, and therefore they respond better to individual attention. Clients with higher self-efficacy might be more confident, better able to speak in a group setting, and respond to group feedback and support. If self-

efficacy is assessed by the nurse on admission to treatment, a plan can be formulated that better suits the client's needs. As noted in the literature, treatment that meets a client's needs increases satisfaction, rapport, and retention in treatment (Hser et al., 2004).

Nurses understand the importance of collaboration with other health care providers. An interdisciplinary approach is especially necessary in care of the addicted client. In substance abuse treatment, care is managed by a "treatment team". At this facility, the team consists of the executive director, clinical supervisor, counselors, nurses and nurse practitioner. Since self-efficacy can affect behavior and behavior change (Lusczcynska, 2004), knowledge of client's self-efficacy could be beneficial to all team members. Ultimately, the client benefits from coordination of care.

Nurses have a unique and vital place on the treatment team. Through daily interaction at the dosing station, medication dispensing nurses have an opportunity to observe a client's physical and mental status. Their assessments provide guidance for other members of the clinical staff, and aid in decision making about care. Self-efficacy testing on MAT helps to complete the assessment.

Recommendations for Research

First, this study should be replicated with a larger sample size to increase significance. It should also be conducted for a longer duration, in order to capture the fluid nature of self-efficacy. Because an individual's self-efficacy can vary according to stressful events in their life, it would also be advisable to administer the GSE at more frequent intervals throughout the study period, in order to capture those changes. Personal interviews or a tool to evaluate level of stress might be added to the study, providing insight into when and why changes in self-efficacy occur.

Second, although events that occur in the life of a person with a substance use disorder cannot be controlled, some additional variables could be identified in future studies. Variables that can be controlled include; number of previous treatment attempts, onset of drug use, and concurrent use of substances other than opiates. Motivation is another important factor in treatment outcome (Kelly et al, 1991). Understanding the reason why clients seek treatment would add insight.

This study identified preferences for group or individual sessions based on self-efficacy scores. Future studies might also incorporate a group designed to increase self-efficacy during MAT, with comparison of GSE scores for those who attend the group against the scores of a control group who does not receive this intervention. Increasing self-efficacy has been shown to improve outcomes in individuals who use alcohol, cocaine and marijuana. More research is needed in the area of opiate addiction.

Another area where self-efficacy can be applied is in relapse prevention. Identification of high risk situations is key to prevention of relapse. A high risk situation is any person, place, thing or emotion that puts an individual at increased risk to return to their previous unhealthy behavior. Low self-efficacy has been linked to lapse in sobriety after treatment in some studies. Lowered self-efficacy was noted on the day preceding relapse to alcohol use. Continued daily monitoring of self-efficacy was shown to predict the progression from mild to heavy drinking (Demmel & Rist, 2005; Shiffman, Balabanis, Paty, Engberg, Gwaltney & Liu, 2000). These findings show that, when measured over time, lowered self-efficacy scores can signal impending relapse. Further research is needed with opiate relapse prevention programs.

Recommendations for Practice

Nurses obtain important information about clients through a variety of means; physical assessment, mental status exam, direct observation and interview. In MAT, this information is shared with the other members of the treatment team. To enhance the depth of this knowledge, self-efficacy testing should remain a part of the MAT admission process, and perhaps be repeated several times throughout an individual's course of treatment. Nurses should be trained in administration of the GSE.

Knowledge of fluctuations in GSE scores can be used in treatment planning. It is especially applicable to the Phase System of treatment, which this facility is preparing to implement. Rather than a minimum monthly group and individual session, clients progress through different phases of treatment, each with its own set of requirements for attendance and completion goals. Initially, clients would have to attend more groups and individual sessions, and the frequency would decrease as they move through the phases. Each phase also has steps that must be accomplished regarding abstinence, first from opiates, then from other substances, and each phase builds on the one that precedes it.

The phase system is multi-directional, meaning that clients may move back and forth between stages if they suffer a setback or have other issues that affect their recovery. Self-efficacy testing fits well into this model. As previously stated, a decrease in self-efficacy score can predict a lapse. By incorporating self-efficacy testing into the phase system, clinical teams can be proactive, and move clients to a more appropriate level of care when needed.

Conclusion

Self-efficacy was the focus of this study because of its relevance to substance use and recovery. A sense of efficacy and the ability to manage one's chronic illness is

essential to restoring and maintaining health. The same applies to substance abuse, a chronic illness by definition.

Medication assisted treatment combines pharmacological and behavioral treatments, counseling, and a number of support services when needed. Treatment is most effective when the client is viewed, and treated, as a "whole person". The inclusion of self-efficacy testing allows for individualization of care.

The findings in this study support those of others found in the literature: medication assisted treatment is related to self-efficacy. This is important to know because, for the individual with a substance use disorder, recovery is a long and challenging process. Support and encouragement is needed on a variety of levels. As care providers in the field, nurses need to find ways to increase client's confidence, and help them feel as though they can meet the challenges they face.

Products of the Capstone

Following completion of this study, the Journal of Addictions Nursing (See Appendix M for Author Guidelines), the official publication of the International Nurses Society on Addictions (IntNSA) was selected for submission of the manuscript (see Appendix N). This study has been accepted for presentation at the West Coast Symposium on Addictive Disorders in May, 2014, and the IntNSA annual educational conference in October, 2014. An abstract was submitted for presentation at the Cape Cod Symposium on Addictive Disorders to be held in July, 2014.

References

Allsop, S., Saunders, B., & Phillips, M. (2000). The process of relapse in severely dependent male problem drinkers. *Addiction*, 95(1), 95-106.

Amato, L., Minozzi, S., Davoli, M., Vecchi, S., Ferri, M. & Mayet, S. (2009). Psychosocial and pharmacological treatments versus pharmacological treatments for opioid detoxification. Retrieved from Cochrane Database of Systematic Reviews.

American Association for the Treatment of Opioid Dependence Inc. (2010). *Fact sheet: Methadone research findings.* Retrieved from http://www.aatod.org

American Nurses Association. (2011). Fact Sheet. Retrieved from hhtp://nursingworld.org/NursingbytheNumbersFactSheet.aspx

Baldwin, A.S., Rothman, A.J., Hertel, A.W., Linde, J.A., Jeffery, R.W., Finch, E.A., Lando, H.A. (2006). Specifying the Determinants of the Initiation and Maintenance of Behavior Change: An Examination of Self-Efficacy, Satisfaction, and Smoking Cessation. *Health Psychology*, 25(5), 626-634.

Bandura, A. (1977). Toward a unifying theory of behavioral change. P*sychological Review*, 84(2), 191-215.

Bandura, A. (2004). Health promotion by social cognitive means. *Health Education and Behavior*, 31 (2), 143-64.

Bart, G. (2012). Maintenance medication for opiate addiction: The foundation of recovery. *Addiction*, 31(3), 217-225.

Barta, W. D., Kurth, M. E., Stein, M. D., Tennen, H., & Kiene, S. M. (2009). Craving and self-efficacy in the first five weeks of methadone maintenance therapy: A daily process study. *Journal for the Study of Alcohol and Drugs,* 70(5), 735-740.

Becker, M. H. (1974). The health belief model and personal health behavior. *Health Education Monographs, 2,* 324-473.

Bourbeau, J. (2008). Clinical decision processes and patient engagement In self-management. *Disease Management and Health Outcomes*, 16(5), 327- 333.

Centers for Disease Control and Prevention. (2011). *Healthy people 2010 leading health indicators at a glance.* Retrieved from http://www.cdc.gov/nchs/healthy_people/hp2010/ hp2010_indicators.htm

Ciraulo, D. A., Piechniczek-Buczek, J., & Iscan, E. N. (2003). Outcome predictors in substance use disorders. *Psychiatric Clinics of North America,* 236(2), 381-409.

Connelly, C. E., (1993). An empirical study of a model of self-care in chronic illness. *Clinical Nurse Specialist: The Journal for Advanced Nursing Practice*, 7(5), 247253.

Cornwall, A., Moore, S., & Plant, H. (2008). Embracing technology: Patients', family members' and nurse specialists' experience of communicating using email. *European Journal of Oncology Nursing, 12*, 198-208.

Cox, J., Allard, R., Maurais, E., Haley, N., & Small, C. (2013). Predictors of methadone program non-retention for opioid analgesic dependent patients. *Journal of Substance Abuse Treatment,* 44, 52-60.

Degenhardt, L., Whiteford, H.A., Ferrari, A.J., Baxter, A.J., Charlson, F.J., Hall, W.D., Freedman, G., Burstein, M.R., Johns, N., Engell, R.E., Flaxman, A., Murray, C.J.L., & Vos, T. (2013). *Global burden of disease attributable to illicit drug use and dependence: findings from the global burden of disease study 2010.* Retrieved from www.medscape.com

Dennis, M. L., Foss, M. A., & Scott, C. K. (2007). An 8-year perspective on the relationship between the duration of abstinence and other aspects of recovery. *Evaluation Review, 31*(6), 585-612.

DiClemente, C.C., Carbonari, J. P., Montgomery, R. P. G., & Hughes, S. O. (1994). The alcohol abstinence self-efficacy scale. *Journal of Studies on Alcohol,* 55(2), 141148.

Demmel, R. & Rist, F. (2005).Prediction of treatment outcome in a clinical sample of problem drinkers: Self-efficacy and coping style. *Addictive Disorders and their Treatment,* 4(1), 5-10.

Fareed, A., Casarella, J., Amar, R., Vayalapalli, S., & Drexler, K. (2009). Benefits of retention in methadone maintenance and chronic medical conditions as risk factors for premature death among older heroin addicts. *Journal of Psychiatric Practice,* 15(3), 227-234.

Friedmann, P. D., Lemon, S. C., & Stein, M. D. (2001). Transportation and retention in outpatient drug abuse treatment programs. *Journal of Substance Abuse Treatment,* 21(2), 97-103.

Gallup. (2012). Honesty / ethics in professions. Retrieved from http://www.gallup.com/poll/1654honesty-ethics-professions.aspx

Ghaddar, S., Shamseddeen, W., & Elzein, H. (2009). Behavioral modeling to guide adherence to fluid control in hemodialysis patients. *Journal of Renal Nutrition,* 19(2), 153-160.

Harrison, J., Mullen, P., & Green, W. (1992). A meta-analysis of studies of the health belief model with adults. *Health Education Research,* 7(1), 107-116.

Hser, Y., Evans, E., Huanh, D., & Anglin, D. M. (2004). Relationship between drug treatment services, retention and outcomes. *Psychiatric Services,* 55(7), 767-774.

Hser, Y. (2007). Predicting Long-Term Recovery from Heroin Addiction: Findings from a 33-Year Follow-Up Study. *Journal of Addictive Diseases,* 26(1), 51-60.

Ilgen, M., Tiet, Q., & Finney, J. (2006). Self-efficacy, therapeutic alliance, and alcohol use disorder treatment outcomes. *Journal of Studies on Alcohol and Drugs,* 67, 465-472.

Institute of Medicine (2011) The Future of Nursing: Leading Change, Advancing Health. The National Academies Press, Washington, DC.

Janz, N. K., & Becker, M. H. (1984). The health belief model: A decade later. *Health Education Quarterly,* 11(1), 1-47.

Joe, G. W., Simpson, D. D., Dansereau, D. F., & Rowan-Szal, G. (2001). Relationships between counseling rapport and drug abuse treatment outcomes. *Psychiatric Services,* 52(9), 1223-1229.

Kelly, R.B., Zyzanski, S.J., Alemagno, S.A. (1991). Prediction of motivation and behavior change following health promotion: role of health beliefs, social support, and self-efficacy. *Social Science & Medicine,* 32(3), 311-320.

Kelly, S.M., O'Grady, K.E., Mitchell, S.G., Brown, B.S., & Schwartz, R.S. (2011). Predictors of methadone treatment retention from a multi-site study: A survival analysis. *Drug and Alcohol Dependence,* 117 (2011), 170-175.

Koch, J. (2002). The role of exercise in the African-American woman with type 2 diabetes mellitus: Application of the health belief model *Journal of the American Academy of Nurse Practitioners,* 14(3), 126-129.

Lawson, P.J., & Flocke, S.A. (2009). Teachable moments for health behavior change: A concept analysis. *Patient Education and Counseling,* 76, 25-30.

Luszczynska, A. (2004). Change in Breast Self-Examination Behavior: Effects of Intervention on Enhancing Self-Efficacy. *International Journal of Behavioral Medicine,* 11(2), 95-103.

Luszczynska, A., Scholz, U., & Schwarzer, R. (2005). The general self-efficacy scale: Multi-cultural validation studies. *The Journal of Psychology,* 139(5), 439-457.

Malcolm, S. E., Ng, J. J., Rosen, R. K. & Stone, V. E. (2003). An examination of HIV/AIDS patients who have excellent adherence to HAART. *AIDS Care,* 15(2), 251-261.

Mancino, M., Humphreys, K., & Booth, B. (2010). Predictors of attrition from a national sample of methadone maintenance patients. *The American Journal of Drug and Alcohol Abuse, 36,* 155-160.

McDonald-Miszczak, L., Wister, A. V., & Gutman, G. M. (2001). Self-care among older adults: An analysis of the objective and subjective illness contexts. *Journal of Aging and Health, 13*(1), 120-145.

McLellan, T., Arndt, I., Metzger, D. Woody, G. E., & O'Brien, C. P. (1993). The effect of psychosocial services in substance abuse treatment. *Journal of the American Medical Association,* 269(15), 1953-1959.

National Institute on Drug Abuse. (1999). *Principles of drug addiction treatment: A research-based guide* (2nd ed.). Washington, DC: Author.

National Institute on Drug Abuse. (2009). *Addiction Science: From Molecules to Managed Care Addiction Science: From Molecules to Managed Care.* Retrieved from http://www.drugabuse.gov/ publications/ addictionscience/introduction/effects-drug-abuse-are-wide-ranging-affect-people-all-ages

National Institute on Drug Abuse. (2011a). Drug abuse and the link to HIV/AIDS and other infectious diseases. *NIDA Info Facts.* Bethesda, MD: Author.

National Institute on Drug Abuse. (2011b). Understanding drug abuse and addiction. *NIDA Info Facts.* Bethesda, MD: Author.

Office of National Drug Control Policy. (2011). Annual Report: Arrestee Drug Abuse Monitoring Program II. Washington, DC: Author.

Orel, N. A., Stelle, C., Watson, W. K., & Bunner, B. L. (2010). No one is immune: A community partnership addressing HIV/AIDS and older adults. *Journal of Applied Gerontology,* 29(3), 352-370.

Qureshi, N. A., Al-Ghamdy, Y. S., & Al-Habeeb, T. A. (2000). Drug addiction: A general review of new concepts and future challenges. *Eastern Mediterranean Health Journal*, 6(4), 723-732

Rothman, A.J. (2000). Toward a theory-based analysis of behavioral maintenance. *Health Psychology,* 19, 1-6.

Rychtarik, R., Prue, D., Rapp, S., & King, A. (1992). Self-efficacy, aftercare and relapse in a treatment program for alcoholics. *Journal of Studies in Alcoholism,* 53, 435440.

Scherbaum, N. & Specka, M. (2008). Factors influencing the course of opiate addiction. *International Journal of Methods in Psychiatric Research,* 17(S1): S39-S44.

Schwarzer, R., & Fuchs, R. (1996). Self-efficacy and health behaviours. In M. Connern, & P. Norman, (Eds.), *Predicting Health Behaviour: Research and Practice with Social Cognition Models.* Buckingham: Open University Press.

Schwarzer, R. & Jerusalem, M. (1995). Generalized self-efficacy scale. In J. Weinman, S.Wright & M. Johnston (Eds.), *Measures in Health Psychology: A Users Portfolio* (pp. 35-37). Windsor, U.K.: NFER-NELSON.

Schwarzer, R., & Renner, B. (2000). Social-cognitive predictors of health behavior: Action self-efficacy and coping self-efficacy. *Health Psychology,* 189, 487-495.

Senbanjo, R. Wolff, K., Marshall, E. J., & Strang, J. (2009). Persistence of heroin use despite methadone treatment: Poor coping self-efficacy predicts continued heroin use. *Drug and Alcohol Review*, 28(6), 608-615.

Shiffman, S., Balabanis, M.H., Paty, J.A., Engberg, J., Gwaltney, C.J., & Liu, K.S. (2000). Dynamic effects of self-efficacy on smoking lapse and relapse. *Health Psychology,* 19(4), 315-323.

Solomon, K.E., & Annis, H.M. (1990). Outcome and efficacy expectancy in the prediction of post-treatment drinking behavior. *British Journal of Addictions,* 85(5), 659-665.

Stewart, J.E., Wolfe, G.R., Maeder, L., & Hartz, G.W. (1996) Changes in dental knowledge and self-efficacy scores following interventions to change oral hygiene behavior. *Patient Education and Counseling,* 27, 267-277.

Stoller, K. B., & Bigelow, G. E. (2006). Introduction and Historical Overview. In E. C. Strain & M. L. Stitzer (Eds.). *The Treatment of Opioid Dependence* (pp. 1-17). Baltimore, MD: The Johns Hopkins University Press.

Strychar, I. M., Potvin, L., Pineault, R., & Prevost, D. (1993). Change in knowledge and food behavior following a screening program held in a supermarket. *Canadian Journal of Public Health,* 84(6), 383-388.

Substance Abuse and Mental Health Services Administration. (2013). Results from the 2012 National Survey on Drug Use and Health: Summary of National Findings, NSDUH Series H-46, HHS Publication No. (SMA) 13-4795. Rockville, MD: Author.

U.S. Department of Health and Human Services (2013). Healthy People 2020. Retrieved from http://www.healthypeople.gov/ 2020/default.aspx

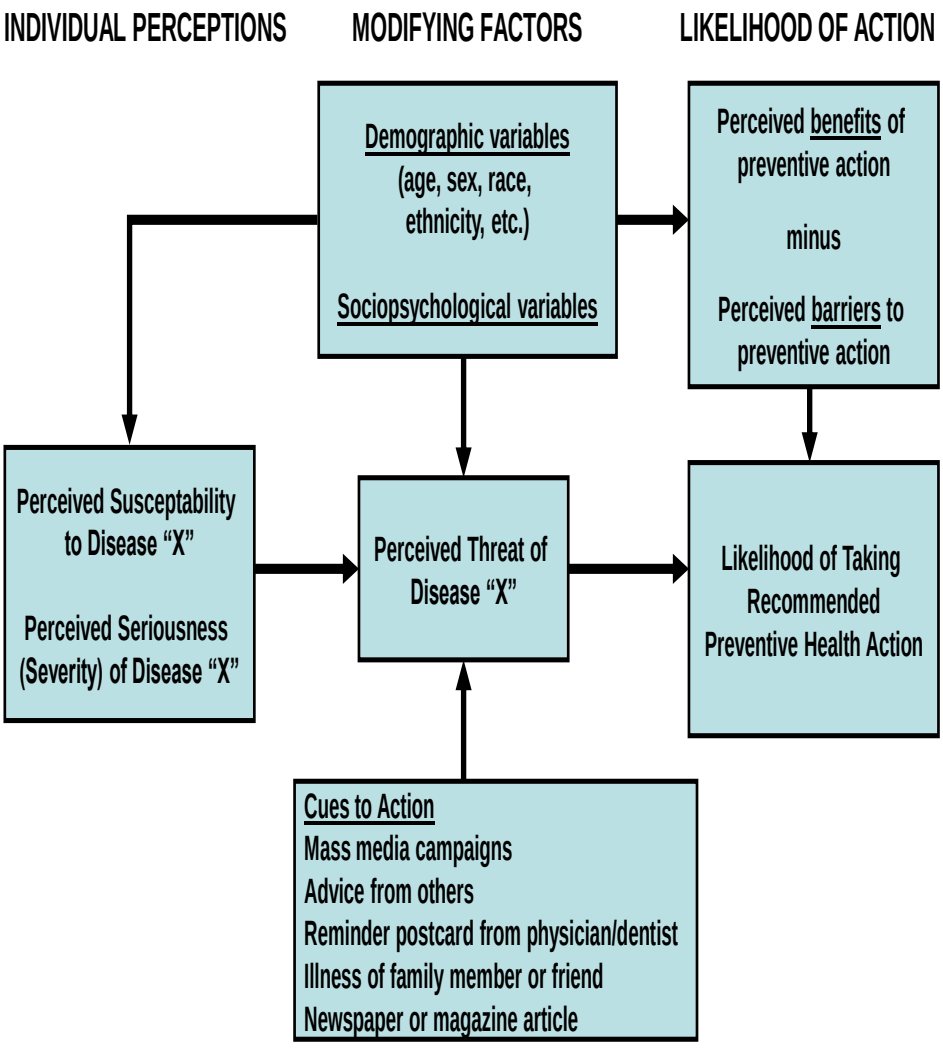
Vielva, I., & Iraurgi, I. (2001). Cognitive and behavioural factors as predictors of abstinence following treatment for alcohol dependence. *Addiction,* 96, 297-303.

Von Korff, M., Gruman, J., Schaefer, J. Curry, S., & Wagner, E. (1997). Collaborative management of chronic illness. *Annals of Internal Medicine*, 127(12), 1097-1102.

Zhang, Z., Friedman, P. D., & Gerstein, D. R. (2003). Does retention matter? Treatment duration and improvement in drug use. *Addiction*, 98(5), 673-684.

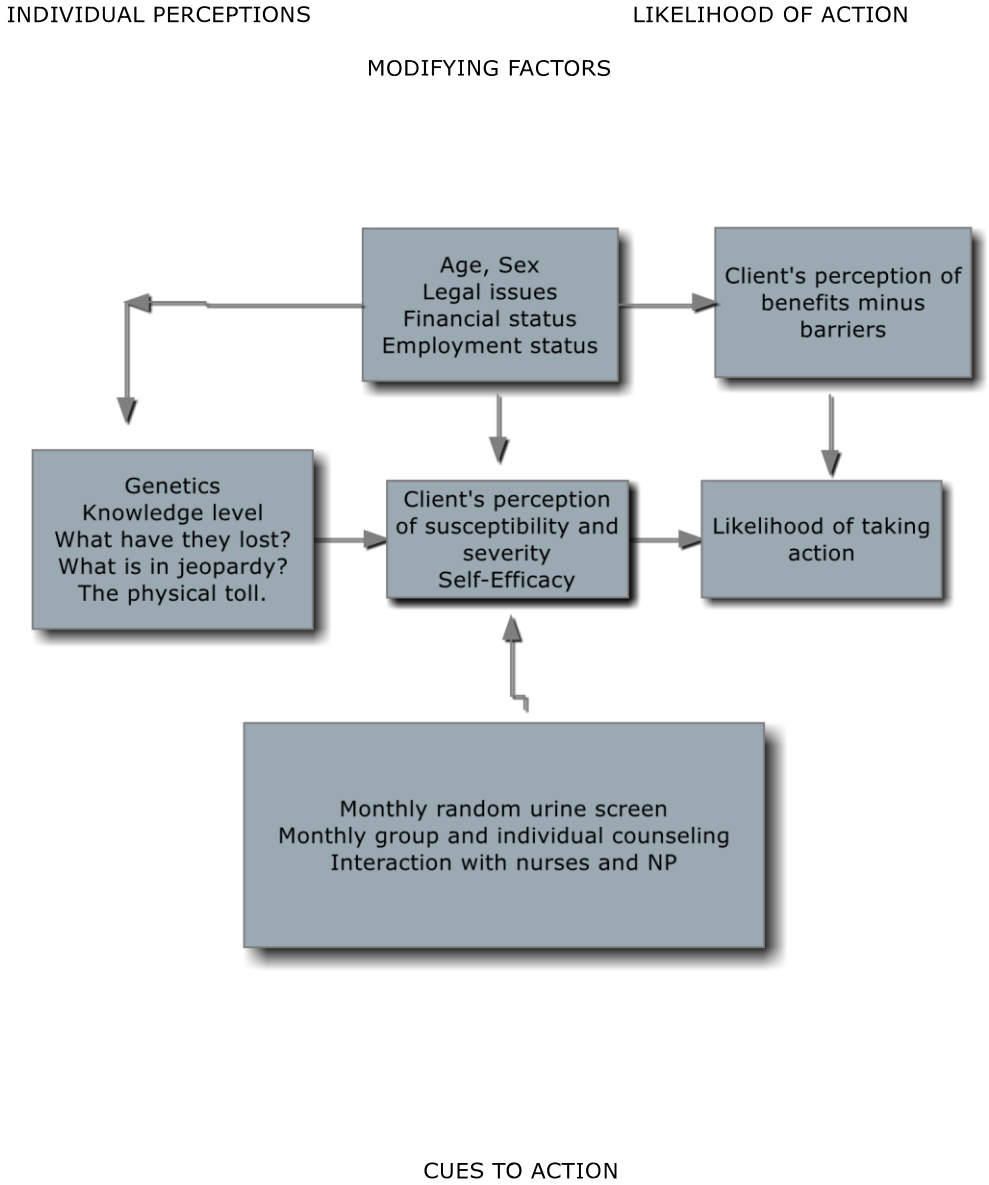
Zhang, Z., Gerstein, D. R., & Freidman, P. D. (2008). Patient satisfaction and sustained outcomes of drug abuse treatment. *Journal of Health Psychology*, 13(3), 388-400.

Figure 1. The Health Belief Model



Janz, N. K., & Becker, M. H. (1984). The health belief model: A decade later. *Health Education Quarterly*, 11(1), 1-47

Figure 2. Health Belief Model with "cues to action"



Adapted from: Becker, M. H. (1974).The health belief model and personal health behavior. *Health Education Monographs*, 2, 324-473.

Figure 3. Measurement of Variables

VARIABLE	MEASURE					
Negative urine drug screen	Month 1 N/A	Month 2 Y / N	Month 3 Y / N	Month 4 Y / N	Month 5 Y / N	Month 6 Y / N
Individual session attended	Month 1 Y / N	Month 2 Y / N	Month 3 Y / N	Month 4 Y / N	Month 5 Y / N	Month 6 Y / N
Monthly group session attended	Month 1 Y / N	Month 2 Y / N	Month 3 Y / N	Month 4 Y / N	Month 5 Y / N	Month 6 Y / N
Total number of days in treatment						# days

Note. Data was collected for each subject regarding 1) number of opiate negative urine screens obtained in treatment months #2-6; 2) whether or not client attended required individual and group session in treatment months #1-6; and 3) total number of days in treatment.

VARIABLE	MEASURE		
Modified GSE	Score#1 On admission (pre-treatment)	Score #2 After 6 months (post-treatment)	Difference in scores (Post – Pre) treatment

Note. Clients were administered the GSE on admission and after 6 months of treatment. Post- minus Pre- differences in scores were recorded.

Table 1. Comparison of Mean Pre - GSE Scores

		Group Mean	N	SD
Pre GSE (General)	Dropped Out	27.77	22	6.443
	Completed Study	26.11	28	4.924
	Total	26.84	50	5.644
Pre GSE (Specific)	Dropped Out	8.23	22	3.007
	Completed Study	7.79	28	3.337
	Total	7.98	50	3.172
Pre GSE (Total)	Dropped Out	36.00	22	7.316
	Completed Study	33.89	28	6.425
	Total	34.82	50	6.841

Note. Subjects who dropped out of the study scored higher on the admission GSE than those who completed the study, with a mean difference in Total GSE scores of 2.1 points.

Table 2. Mean GSE Scores by Gender

	Gender	Mean	N	Std. Deviation
Pre GSE (General)	Females	25.86	14	4.276
	Males	26.36	14	5.652
	Combined	26.11	28	4.924
Pre GSE (Specific)	Females	7.07	14	3.245
	Males	8.50	14	3.391
	Combined	7.79	28	3.337
Pre GSE (Total)	Females	32.93	14	4.358
	Males	34.86	14	8.047
	Combined	33.89	28	6.425
Post GSE (General)	Females	30.43	14	2.243
	Males	31.07	14	5.166
	Combined	30.75	28	3.922
Post GSE (Specific)	Females	12.71	14	2.758
	Males	13.79	14	3.118

Note. Females scored slightly lower than males in both Pre- and Post-treatment GSE, in both general and specific self-efficacy.

Table 3. Comparison of Pre- and Post-treatment GSE Scores

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Post-Pre GSE score (General)	5.730	27	.000	5.107	3.28	6.94
Post-Pre GSE score (Specific)	7.163	27	.000	5.286	3.77	6.80
Post-Pre GSE score (Total)	7.928	27	.000	10.107	7.49	12.72

Note. After 6 months of treatment, GSE scores had improved: General by 5.1 points, Specific by 5.2 points, and Total by 10.1 points.

Table 4. Correlation of GSE Scores and Number of Opiate Negative Urines

		Pre - GSE (General)	Pre - GSE (Specific)	Pre - GSE (Total)
Opiate Negative Urines	Pearson Correlation	-.152	.047	-.092
	Sig. (2-tailed)	.441	.810	.643
	N	28	28	28

Note. Analysis showed no correlation between GSE scores and number of opiate negative urine screens obtained during the study period.

Table 5. Correlation of GSE Scores and Individual and Group Sessions

		Pre GSE (General)	Pre GSE (Specific)	Pre GSE (Total)
Individual Sessions	Pearson Correlation	.010	.168	.095
	Sig. (2-tailed)	.962	.392	.632
	N	28	28	28
Group Sessions	Pearson Correlation	-.283	-.234	-.338
	Sig. (2-tailed)	.145	.232	.078
	N	28	28	28

Note. Analysis showed no correlation between GSE scores and number of group and individual sessions attended during the study period.

Table 6. Reasons for Leaving Treatment before Completion

Reason	Number
Transferred to other treatment facility	3
Moved out of area	2
Medical issues / Hospitalization	4
Incarceration	6
Administrative discharge	1
Referred to pain management	1
Left AMA	2
Unknown	3

Note. Study dropout rate = 44%; (n = 22)

Appendix A

The Generalized Self-Efficacy Scale

1. I can always manage to solve difficult problems if I try hard enough.
2. If someone opposes me, I can find the means and ways to get what I want.
3. It is easy for me to stick to my aims and accomplish my goals.
4. I am confident that I could deal efficiently with unexpected events.
5. Thanks to my resourcefulness, I know how to handle unforeseen circumstances.
6. I can solve most problems, if I invest the necessary effort.
7. I can remain calm when facing difficulty because I can rely on my coping abilities.
8. When I am confronted with a problem, I usually find several solutions.
9. If I am in trouble, I can usually think of a solution.
10. I can usually handle whatever comes my way.
Responses: 1=Not true at all 2= Hardly true 3=Moderately true 4= Exactly true

English version by Schwarzer, R. & Jerusalem, M. (1995).Generalized self-efficacy scale. In J. Weinman, S. Wright & M. Johnston (Eds.) *Measures in Health Psychology: A Users Portfolio* (pp 35-37). Windsor, U.K.: NFER-NELSON

Additional questions added by investigator relating to opiate dependence:

11. If I ran into old friends who offered me pills or heroin, I could resist using.
12. I can stay away from people I used to use drugs with, and I feel strong.
13. If I was in a situation where people were using drugs, I would have the strength to leave.
14. I feel that I can cope with stress in ways other than using drugs.

Responses: 1=Not true at all 2= Hardly true 3= Moderately true 4= Exactly true.

Appendix B

Letter of Support

Serenity HEALTH

September 18, 2012

Re: Capstone Project

Dear Bonnie Franckowiak, CRNP:

I am writing you to advise that I am granting you approval to move forward with the Capstone Project as discussed. You may conduct studies at both Serenity Health, LLC. locations. We have approximately 350 patients enrolled in our methadone maintenance programs. You will have access to all patients and their medical records. Should you have any further questions feel free to contact me at 443-603-6685 cell.

Sincerely,

Tonia C. McMillan M.S.
Executive Program Director
Serenity Health, LLC.
443-603-6685 cell
tmcmillan@serenityllc.net

Appendix C

IRB Approval Documents

University of Virginia
Institutional Review Board for Health Sciences Research
Protection of Human Subjects Approval
Assurance Identification/Certification/Declaration
(Common Federal Rule)

HSR # 16898		
Event: Approval New Protocol - Expedited	Type: Protocol	Sponsor(s): Sponsor Protocol #: Principal Investigator: Catherine Kane, PhD

Title: The Effect of Treatment on the Self-Efficacy of Clients Enrolled in a Methadone Treatment Program in Rural Maryland

Assurance: Federal Wide Assurance (FWA)#: 00006183

Certification of IRB Review: The IRB-HSR abides by 21CFR50, 21CFR56, 45CFR46, 45CFR160, 45CFR164, 32CFR219 and ICH guidelines. This activity has been reviewed and approved by the IRB in accordance with these regulations.

Approval Date: 09/04/13

Protocol Expiration Date: 09/03/14

Approved to Enroll 50 subjects.

HSR Protocol Version Date: 08/13/13

Current Status: Open to enrollment

Consent Version Dates:

Adult consent -- 08/13/2013

Committee Members (did not vote):

Comments: The purpose of this study is to measure the relationship between self-efficacy and treatment outcomes for opiate dependent clients on medication assisted treatment. Study data will include pre- and post-treatment self-efficacy scores, as measured by the General Self-Efficacy Scale, along with information from medical record review.

There is no outside sponsor for this study.

N= 50

Ages: greater than or = 18 years

The following items were reviewed with this approval: modified General Self-Efficacy Scale.

Letter of support on file from Serenity Health, LLC.

A Certificate of Confidentiality application is on file.

No compensation.

REGULATORY INFORMATION:

The IRB determined this protocol met the criteria of minimal risk.

Protocol Expedited by Category #5: Research involving materials (data, documents, records or specimens) that have been collected solely for non-research purposes (such as medical treatment and/or diagnosis).

Protocol Expedited by Category #7: Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

This protocol has been granted a Waiver of Consent to identify potential subjects via 45CFR46.116.

This protocol has been granted a Waiver of Consent via 45CFR46.116 to contact potential subjects by direct contact by a person who is their health care provider. Direct contact may include phone, letter, direct email or potential subject approached at UVa by a person is their health care provider. Phone, letter or emails will be approved by the IRB-HSR prior to use.

Subjects will sign a consent form to participate in this study.

PLEASE REMEMBER:

•If an outside sponsor is providing funding or supplies, you must contact the SOM Grants and Contracts Office/ OSP regarding the need for a contract and letter of indemnification. If it is determined that either of these documents is required, participants cannot be enrolled until these documents are complete.
•You must notify the IRB of any new personnel working on the protocol PRIOR to them beginning work.
•You must obtain IRB approval prior to implementing any changes to the approved protocol or consent form except in an emergency, if necessary to safeguard the well-being of currently enrolled subjects.
•If you are obtaining consent from subjects, prisoners are not allowed to be enrolled in this study. If one of your subjects becomes a prisoner after they are enrolled in the protocol you must notify the IRB **immediately.**
•You must notify the IRB-HSR office within 30 days of the closure of this study.
•Continuation of this study past the expiration date requires re-approval by the IRB-HSR.

The official signing below certifies that the information provided above is correct and that, as required, future reviews will be performed and certification will be provided.

Name: Lynn R. Noland , RN PhD **Title:** Vice Chair, Institutional Review Board for Health Sciences Research **Phone:** 434-924-9634 **Fax:** 434-924-2932	**Name and Address of Institution:** Institutional Review Board for Health Sciences Research PO Box 800483 University of Virginia Charlottesville, VA 22908
Signature: Lynn R. Noland	**Date:** SEP 05 2013

Appendix D

Journal of Addictions Nursing

Online Submission and Review System

Scope:

The ***Journal of Addictions Nursing***, the official journal of the International Nurses Society on Addictions (IntNSA), an international peer-reviewed quarterly journal, published by Wolters Kluwer Health / Lippincott Williams and Wilkins, invites original manuscripts on current research, issues, practices and innovations as they relate to the field of addictions.

Submissions are solicited from professional nurses and other healthcare professionals engaged in treatment, prevention, education, research, and consultation. All pertinent topics are sought.

Copyright Transfer and Conflicts of Interest:

Each author must complete and submit the journal's copyright transfer and disclosure agreement, which includes a section on potential conflicts of interest based on the recommendations of the International Committee of Medical Journal Editors, "Uniform
Requirements for Manuscripts Submitted to Biomedical Journals" (www.icmje.org/update.html). The form is readily available on the manuscript submission page (http://www.editorialmanager.com/jan/). The form may be signed electronically using a valid digital signature, or by hand. For additional information about electronically signing this form, go to http://links.lww.com/ZUAT/A106. All authors' signed forms must be submitted along with the manuscript files in Editorial Manager.

Authors must state all possible conflicts of interest on the title page, including financial, consultant, institutional and other relationships that might lead to bias or a conflict of interest. If there is no conflict of interest, this should also be explicitly stated as none declared. All sources of funding should be acknowledged in the manuscript. All relevant conflicts of interest and sources of funding should be included on the title page of the manuscript with the heading "Conflicts of Interest and Source of Funding:".

For example:

Conflicts of Interest and Source of Funding: A has received honoraria from Company Z. B is currently receiving a grant (#12345) from Organization Y, and is on the speaker's bureau for Organization X – the CME organizers for Company A. For the remaining authors none were declared.

Compliance with NIH and Other Research Funding Agency Accessibility Requirements:

A number of research funding agencies now require or request authors to submit the postprint (the article after peer review and acceptance but not the final published

article) to a repository that is accessible online by all without charge. As a service to our authors, LWW will identify to the National Library of Medicine (NLM) articles that require deposit and will transmit the post-print of an article based on research funded in whole or in part by the National Institutes of Health, Wellcome Trust, Howard Hughes Medical Institute, or other funding agencies to PubMed Central. The revised Copyright Transfer Agreement provides the mechanism.

Manuscript Submission

On-line manuscript submission: All manuscripts must be submitted online via Editorial
Manager™, at http://www.editorialmanager.com/jan. Paper submissions will not be accepted. **Submissions which do not comply with the guidelines below will be returned to the authors for correction.**

First-time users: Please click the Register button on the Editorial Manager home page (http://www.editorialmanager.com/jan/). Enter the requested information to complete your registration. Upon successful registration, an email containing your user name and password will be sent to you. Please be sure to enter your email address correctly; if an error has been made or an incorrect email address has been provided, you will not receive this notification.

Note: If you have already received an email containing your User ID and password, or if you are already registered, do not register again. You may log in to the site using the information previously provided to you. You may access your Author, Reviewer, and/or Editor accounts with the same log-in information.

Authors: Click the log-in button on the Editorial Manager home page, enter your username and password, and click on Author Login. Click on the Submit Manuscript link to begin the submission process. Be sure to prepare your manuscript according to the requirements laid out in these author instructions. Following submission to the journal office, you will be able to track the progress of your manuscript through the system.

If you experience any problems with Editorial Manager or have any questions, please contact the Editorial Office at jaddictionsnursing@gmail.com.

Blinding Your Manuscript

To preserve review anonymity, **please remove the authors' names** and other identifiable information from the manuscript pages that will be sent out for peer review. It is also important to verify that your title page is not included in the main text file.

Manuscript Format

Authors are instructed to use the 6th edition of the *Publication Manual of the American Psychological Association* for preparation of manuscripts for submission. No references should be cited in the abstract. The article should have a main title, with

subheads to indicate subdivisions in the text, and an abstract. Abbreviations and acronyms should be spelled out when first used, unless common to the field. Generic names for drugs are preferred over brand names.
A checklist for submission is included at the end of this document.

Title page: Include on the title page (a) the complete manuscript title; (b) author list with titles, affiliations, credentials, and degrees for each author; (c) name and address for correspondence, including fax number, telephone number, and e-mail address; (d) address for reprints if different from that of corresponding author; and (e) a conflict of interest / disclosure statement (see the "Conflicts of Interest" section above) including any sources of support that require acknowledgment. This includes disclosure of funding received for the work from any of the following organizations: National Institutes of Health (NIH); Wellcome Trust; Howard Hughes Medical Institute (HHMI); and other(s). If there are no potential conflicts of interest to disclose, please include a statement to that effect. There is a title page template on the last page of this document.

Text: The manuscript text should be submitted as a Microsoft Word file that is double spaced and uses Times New Roman size 12 font. **Do not submit your manuscript as a pdf file.**

The manuscript text file should contain an ABSTRACT, main text, and a Reference list. The length of your manuscript should be between 3,000 to 5,000 words. No tables or figures should be included within the main text. All tables and figure should be submitted as separate individual files according to the guidelines provided below. Manuscripts should be original, never before published, and not submitted simultaneously to another publication.

Figures and Tables:
Figures and tables should NOT be embedded in the text, but should be included as separate files. Use Arabic numerals to number tables/figures. Each table/figure must stand alone - i.e., contain all necessary information in the caption, and the table/figure itself must be understood independently of the text.

Illustrations
Color illustrations will be considered for publication; however, the author will be required to bear the full cost involved in their printing and publication. Good-quality color prints should be provided in their final size. The publisher has the right to refuse publication of color prints deemed unacceptable.

Digital Artwork Guideline Checklist
Here are the basics to have in place before submitting your digital art to *JAN*:

- Figures should not be embedded in the manuscript text file.
- Artwork is created as the actual size (or slightly larger) it will appear in the journal. (To get an idea of the size images should be when they print, study a copy of the journal. Measure the artwork typically shown and scale your

image to match.) Crop out any white or black space surrounding the image.

- Each figure must be submitted as a separate file in one of the accepted formats: TIFF (tagged image file format), EPS (encapsulated PostScript), PDF (*Portable* Document Format), JPEG, PPT (PowerPoint), or DOC (Word document).
- Line art must be vector or have a resolution of at least 1200 dpi (dots per inch),
- Electronic photographs -- radiographs, CT scans, and so on -- and scanned images must have a resolution of at least 300 dpi.
- Photographs containing text must have a resolution of at least 600 dpi.
- If fonts are used in the artwork, they must be converted to paths or outlines or they must be embedded in the files.

- Cite figures consecutively in your manuscript.
- Number figures in the figure legend in the order in which they are discussed.
- Upload figures consecutively to the Editorial Manager web site and number figures consecutively in the Description box during upload.
- For multi-panel or composite figures only: Any figure with multiple parts should be sent as one file with each part labeled the way it is to appear in print.

For additional information, please refer to the journal's Creating Digital Artwork file at http://links.lww.com/ES/A42.

Tables: Create tables using the table creating and editing feature of the word processing software (i.e., Microsoft Word). Do not use Excel or comparable spreadsheet programs. Cite tables consecutively in the text, and number them in that order. Submit each as a separate document which includes the table title, appropriate column heads, and explanatory legends (including definitions of any abbreviations used). Do not embed tables within the body of the manuscript. They should be self-explanatory and should supplement, rather than duplicate, the material in the text.

Supplemental Digital Content (SDC): Authors may submit SDC that enhances their article's text to be considered for online-only posting. SDC may include standard media such as text documents, graphs, audio, video, etc. On the Attach Files page of the submission process, please select Supplemental Audio, Video, or Data for your uploaded file as the Submission Item. If an article with SDC is accepted, our production staff will create a URL with the SDC file. The URL will be placed in the call-out within the article. SDC files are not copy-edited by LWW staff; they will be presented digitally as submitted. For a list of all available file types and detailed instructions, please visit http://links.lww.com/A142.

SDC Call-outs

Supplemental Digital Content must be cited consecutively in the text of the submitted manuscript. Citations should include the type of material submitted (Audio, Figure, Table, etc.), be clearly labeled as "Supplemental Digital Content," include the sequential list number, and provide a description of the supplemental content. All descriptive text should be included in the call-out as it will not appear elsewhere in the article.

Example:
We performed many tests on the degrees of flexibility in the elbow (see Video, Supplemental Digital Content 1, which demonstrates elbow flexibility) and found our results inconclusive.

List of Supplemental Digital Content

A listing of Supplemental Digital Content must be submitted at the end of the manuscript file. Include the SDC number and file type of the Supplemental Digital Content. This text will be removed by our production staff and not be published.
Example: Supplemental Digital Content 1.wmv

SDC File Requirements

All acceptable file types are permissible up to 10 MBs. For audio or video files greater than 10 MBs, authors should first query the journal office for approval. For a list of all available file types and detailed instructions, please visit http://links.lww.com/A142.

Acceptable SDC File Types:

Text files and Tables	Any format or file type is acceptable Common file extensions include: **.doc, .xls, .pdf, .pptx**
Figures and Images	**.tif, .eps, .ppt, .jpg*, .pdf*, .gif*** *Only acceptable for online-only figures. Figures intended to be printed in the journal may not be submitted as .jpg or .pdf file types.
Audio	**.mp3, .wma, .wav**
Video	**.wmv, .swf, .flv, .mov, .qt, .mpg, .mpeg, .mp4**

References:

Example for a journal article:
Ziegler, P. P., Compton, P., & Goldenbaum, D. M. (2011). Prescription drug abuse and diversion in clinical practice: What can be learned from regulatory sanction data. *Journal of Addictions Nursing*, *22*(1-2), 13-18. doi: 10.3109/10884602.2010.545093

Example for a chapter in a book:
Johnson, T. R. (2003). The neurobiological perspective: A theory of addiction. In C. L. Burns & J. Stoner (Eds.), *Trends in addictions for the 21st century* (pp. 89-122). Baltimore: The New Era Press.

Submission Format for Systematic Reviews and Meta-Analyses:
It is strongly suggested that authors submitting manuscripts of systematic reviews and metaanalyses follow the PRISMA (Preferred Reporting Items for Systematic reviews and MetaAnalyses) guidelines, located online at http:/www.prisma-statement.org/.

Editorial Review:
Manuscripts are reviewed by the Editor and members of the Editorial board. Publication is at the discretion of the Editor. The *Journal of Addictions Nursing* is the official publication of the International Nurses Society on Addictions (IntNSA).

Submitting a Revised Manuscript:
When you are ready to submit a revised manuscript, go to Editorial Manager and log in as an Author. Click on the "Submissions Needing Revision" link. You may view a copy of the decision letter, view the original submission PDF, and view the Reviewer Comments (if applicable) prior to beginning the resubmission process.

When ready to submit your revision, click on "Submit revision" and proceed through each of the steps as prompted by the system. You may select files from the previous version of the submission that should be carried over into the revision, then upload your revised files and remove those which are no longer needed. IMPORTANT: When submitting a revised manuscript, be sure to provide a detailed description of how you responded to each of the reviewer's comments. Be sure to include all of the reviewers' comments in this document and provide your response directly below each.

When your resubmission is complete, you will receive a confirmation email and an "R1" (for revision 1) will be appended to the original manuscript number. If you are submitting a revision, make sure that you do NOT submit your manuscript as a new original manuscript.

Columns and Regular Features:
Regular columns include:
Resource Watch- provides summaries and critiques of books, videos, and CAI.
Innovative Roles- examines unique roles that nurses in addictions are implementing.
Research Reviews- offers summaries and critiques of research studies in the field.
Webwatch- is a list of available web sites on a particular topic.

Other regular features and columns include: *Perspective*- features points of view and commentaries on relevant issues; *Clinical Reviews*; *Pharmacology Corner*; *Peer Assistance*; and *Policy Watch*.

Journal Copies:
Corresponding authors will each receive 1 complimentary issue per article. Offprints and extra journal copies can be ordered at the page proof stage through the publisher.

Permissions: Authors must submit written permission from the copyright owner (usually the publisher) to use direct quotations, tables, or illustrations that have appeared in copyrighted form elsewhere, along with complete details about the source. Any permissions fees that might be required by the copyright owner are the responsibility of the authors requesting use of the borrowed material, not the responsibility of the IntNSA or Lippincott Williams & Wilkins.

For permission and/or rights to use content for which the copyright holder is LWW or the society, please go to the journal's website and after clicking on the relevant article, click on the "Request Permissions" link under the "Article Tools" box that appears on the right side of the page. Alternatively, send an e-mail to customercare@copyright.com.

For Translation Rights & Licensing queries, contact Silvia Serra, Translations Rights, Licensing & Permissions Manager, Wolters Kluwer Health (Medical Research) Ltd, 250 Waterloo Road,
London SE1 8RD, UK. Phone: +44 (0) 207 981 0600. E-mail: silvia.serra@wolterskluwer.com

For Special Projects and Reprints (U.S./Canada), contact Alan Moore, Director of Sales,
Lippincott Williams & Wilkins, Two Commerce Square, 2001 Market Street, Philadelphia, PA
19103. Phone: 215-521-8638. E-mail: alan.moore@wolterskluwer.com

For Special Projects and Reprints (non-U.S./Canada), contact Silvia Serra, Translations Rights, Licensing & Permissions Manager, Wolters Kluwer Health (Medical Research) Ltd, 250 Waterloo Road, London SE1 8RD, UK. Phone: +44 (0) 207 981 0600. E-mail: silvia.serra@wolterskluwer.com

After Acceptance

Page proofs and corrections: Corresponding authors will receive electronic page proofs to check the copyedited and typeset article before publication. Portable document format (PDF) files of the typeset pages and support documents (e.g., reprint order form) will be sent to the corresponding author by e-mail. Complete instructions will be provided with the e-mail for downloading and printing the files and for faxing the corrected pages to the publisher. Those authors without an e-mail address will receive traditional page proofs. It is the author's responsibility to ensure that there are no errors in the proofs. Changes that have been made to conform to journal style should be allowed to stand if they do not alter the authors' meaning. Authors may be charged for alterations to the proofs beyond those required to correct errors or to answer queries. Proofs must be checked carefully and corrections faxed within 24 to 48 hours of receipt, as requested in the cover letter accompanying the page proofs.

Reprints: Authors will receive a reprint order form and a price list with the page proofs.

Reprint requests should be faxed to the publisher with the corrected proofs, if possible. Reprints are normally shipped 6 to 8 weeks after publication of the issue in which the item appears. You can also order them by contacting the Reprint Department, Lippincott Williams & Wilkins, 351 W. Camden Street, Baltimore, MD 21201.Fax: 410.528.4434; Email: reprints@wolterskluwer.com.

Publisher's contact: Send corrected page proofs, reprint order forms, color cost approval form, and any other related materials to: Amy Myers, Senior Production Editor; Email: amy.myers@wolterskluwer.com / FAX: +1 215 521 8916.

Appendix E. Manuscript

Title: The Effect of Self-Efficacy on Treatment Outcomes of Clients Enrolled in a Methadone Treatment Program in Rural Maryland

The Effect of Self-Efficacy on Treatment Outcomes

Bonnie A. Franckowiak, DNP, FNP, CARN-AP

University of Virginia

Charlottesville, VA, USA

Doris Glick, PhD, RN

University of Virginia School of Nursing

Charlottesville, VA, USA

Corresponding author:

Bonnie A. Franckowiak, DNP, FNP, CARN-AP

P.O. Box 5123, Ellicott City, MD 21041 USA

Phone: 443-520-0359

Email: bfranckowiak@addictionmatters.net

The authors report no conflicts of interest.

This study was done as a requirement for candidacy for the degree of Doctor of Nursing Practice and presented to the faculty of the University of Virginia in May, 2014. The authors acknowledge the contributions of Capstone committee members Catherine Kane, PhD, RN, of the University of Virginia, and Virginia Coletti, PhD, RN, of Stony Brook University.

Abstract

Becker's Health Belief Model (HBM, 1974) has been used successfully to address behavior change in chronic diseases, including smoking and alcohol dependence. This project applies the HBM to opiate addiction treatment, specifically medication assisted treatment (MAT). The purpose of this study was to measure the relationship between self-efficacy and treatment outcomes for opiate dependent clients on MAT. A convenience sample of 50 persons with addiction to opiates was admitted to an outpatient substance abuse treatment program for MAT, and followed for a period of 6 months. Pre- and post-treatment self-efficacy scores were obtained using a modified General Self-Efficacy Scale (GSE; Schwarzer & Jerusalem, 1995). Treatment outcomes were measured by the number of negative random monthly urine screens, attendance at group and individual counseling sessions, and retention in treatment for at least 6 months. Pre- and post- treatment self-efficacy scores were compared using a t-test, and self-efficacy scores were compared to client outcomes using Pearson's correlation. GSE scores demonstrated improvement after 6 months in treatment ($p=<.01$). However, no statistically significant relationship was found between GSE scores and treatment outcomes.

Key Words: self-efficacy, opiate addiction, methadone, medication-assisted treatment, treatment outcomes

The Effect of Self-Efficacy on Treatment Outcomes of Clients Enrolled in a Methadone Treatment Program in Rural Maryland

Introduction

Drug addiction is a "chronic, relapsing brain disease" (Qureshi, Al-Ghamdy, & Al-Habeeb, 2000, p. 724), with implications as an individual, as well as a public health problem. It impacts the drug abuser and the community on a physical, mental, psychological and social level. According to statistics from the Substance Abuse and Mental Health Services Administration (SAMHSA, 2013), 23.9 million Americans used illicit drugs in 2012, or 9.2 % of the population over the age of 12. Opiates were the second most commonly used substance, marijuana being the most common (SAMHSA, 2013).

A report by the National Institute on Drug Abuse (NIDA) in 2011 estimated the cost to our nation in lost productivity and health and crime related costs to be over $600 billion annually. Every year in the United States, approximately 40 million debilitating injuries or illnesses occur as a result of tobacco, alcohol, or other illicit drug use. Not only is opiate dependence the fastest growing substance abuse problem in this country, it is also the reason for the majority of people seeking drug treatment around the world, making opiate dependence a global health problem. The burden of morbidity and mortality is increased, overdose is a frequent cause of death, and the incidence and prevalence of HIV and Hepatitis are higher among illicit opiate users than among the general population (Bart, 2012). The burden is felt both by those who use drugs and those who do not.

Treatment for opiate addiction is effective. In a publication entitled "Principles of Addiction Treatment: A Research-based Guide," NIDA (1999) set forth some basic tenets related to treatment which included; no single treatment is appropriate for all individuals; treatment must attend to multiple needs of the individual, not just drug use; and remaining in treatment for an adequate period of time is critical for treatment effectiveness. Retention has been shown to be the single most important factor influencing success in treatment (Fareed, Casarella, Amar, Vayalapalli, & Drexler, 2009; Joe, Simpson, Dansereau, & Rowan-Szal, 2001; Zhang, Friedman, & Gerstein, 2003).

The framework for this study is Becker's Health Belief Model (HBM, 1974). The HBM is one of the most widely accepted and frequently used models for the implementation and maintenance of behavior change (Harrison, Mullen, & Green, 1992). Researchers have used various theories of change to address problems in smoking and alcohol dependence. Addiction is, by definition, a chronic disease, and the HBM has been used effectively in the study of many other chronic illnesses.

According to the HBM model (Becker, 1974), it is believed that people will take action to make change if they believe they are susceptible to a condition, they believe it would have serious consequences for them, they believe there would be some benefit to change, and if the barriers are outweighed by the benefits. There must also be some cues to action that serve as impetus to start the change process. Self-efficacy, another component of the model, is the person's own level of confidence that they are able to take action (Janz &

Becker, 1984). Taking action and incorporating health behaviors into one's daily life is important in the treatment of any chronic illness. The effectiveness of nursing and medical interventions is often dependent on the client's involvement in self-care activities. The HBM (Becker, 1974) has been framework for many studies related to chronic medical illnesses, and has proven useful in increasing client compliance (McDonald-Miszcak, Wister, & Gutman, 2001). Figure 1 illustrates the HBM.

Background

Psychosocial Support

There is evidence to suggest that increased client satisfaction and rapport between client and staff can lead to a decrease in illicit use, better compliance with treatment, and overall improved outcomes. A study of two cohorts of clients receiving MAT were studied in four cities, in both community non-profit and private for-profit treatment programs. A total of 577 subjects were enrolled in the study, which assessed the importance of counseling rapport as a predictor of treatment outcome. It was found that lower rapport was associated with worse outcome, and higher incidence of drug use in both cohorts. The researchers concluded that a therapeutic relationship is a vital factor in favorable treatment outcome (Joe et al., 2001).

Another study examined the relationship between client satisfaction and treatment outcome (Zhang, Gerstein, & Freidman, 2008). Self-rated satisfaction with treatment services was compared to client drug use at one year post-treatment. Those who expressed satisfaction with their treatment, and felt as

though their needs were met by a variety of services, had more favorable outcomes at one year follow up (Zhang et al., 2008). Continuity of care is another important factor in client satisfaction, especially for clients dealing with any chronic or long-term illness (Cornwall, Moore & Plant, 2008).

Retention in Treatment

Retention in treatment is critical to success. Clients who have a wide array of services available to them are generally the most satisfied, remain in treatment longer, and have better outcomes (Kelly, O'Grady, Mitchell, Brown, & Schwartz, 2011). Individualized treatment plans are also associated with higher retention and better outcomes. Interventions should be focused not only on substance abuse issues, but on all the areas of need that are necessary for full recovery (Hser, Evans, Huang, & Anglin, 2004). In a longitudinal study of 1,939 subjects, inpatient and outpatient clients on MAT were assessed on admission, at 3 months and 9 months into treatment, and at discharge. The results showed greater satisfaction, longer retention, and better outcome for clients who felt their needs were being addressed (Hser et al., 2004). Another significant reason for discontinuing treatment is an unfavorable relationship between client and care providers. Any chronic illness is best treated when approached collaboratively (VonKorff, Gruman, Schaefer, Curry, & Wagner, 1997).

Self-Efficacy

Self-efficacy was first introduced by Albert Bandura (1977), as a component of social learning theory, and is defined as one's belief in their ability to succeed at tasks. Bandura identified 4 factors that affect self-efficacy: (1) past

experience, (2) modeling, or vicarious experience, (3) social persuasion, and (4) physiological factors (Bandura, 1977).

Perceived self-efficacy is the belief that one can change risky health behaviors as a result of their own actions. The intent and ability to engage in positive health behavior has been positively associated with one's sense of efficacy (Schwarzer & Fuchs, 1995). Self-efficacy has been shown to be an important factor in achieving and maintaining recovery (DiClemente, Carbonari, Montgomery, & Hughes, 1994) and perhaps the single most important factor in behavior change (Lusczcynska, 2004). Higher self-efficacy has been associated with better success in treatment. Clients in substance abuse treatment who have higher self-efficacy and better coping skills generally have better outcomes and are less likely to relapse. Treatment aimed at increasing self-efficacy leads to an improved outcome (Ciraulo et al., 2003).

Self-management is crucial to living with any chronic disease. Enhancement and maintenance of client's self-efficacy during treatment is likely to decrease their use of illicit substances, and improve retention and completion rates (Bourbeau, 2008; Senbanjo, Wolff, Marshall, & Strang, 2009). A study of 191 heroin users was performed in England, to determine the association between self-efficacy and persistent heroin use. After adjusting for other factors such as inadequate dose, financial difficulties, and mental health issues, persistent heroin use was linked significantly to a poor sense of self-efficacy (Senbanjo et al., 2009).

The General Self-Efficacy Scale

The General Self-Efficacy scale (GSE) was developed in 1979 by Schwarzer and Jerusalem (1995). Its original purpose was to assess a general sense of self-efficacy, with the aim of predicting coping and self-management skills. It is designed for adults and adolescents over the age of twelve. General self-efficacy is the belief that oneself is competent to deal with a broad range of stressors or demands. Perceived self-efficacy is an operative construct related to subsequent behavior, and therefore an appropriate concept for clinical practice and behavior change.

Behavior Change

Behavior change is a complex process, and can be affected by many factors. Rothman (2000) states that what initiates behavior change is different from that which maintains it. First, there must be some initial impetus to change. Motivation is an important factor in behavior change (Kelly, Zyzanski, & Alemagno, 1991).One's self-efficacy can have an effect on whether or not they elect to change a particular behavior or engage in prevention (Stewart, Wolfe, Maeder, & Hartz. 1996). In order to maintain a new behavior, an individual must have some expectation of benefit, and have some degree of confidence in their ability to perform the new behavior (Baldwin et al., 2006). Maintenance of new behaviors has been shown to be related to the achieved outcome and an individual's sense of self-efficacy (Scherbaum, 2008). One way to assist the individual in maintaining their new behaviors, is through the use of "teachable moments", that occur during client - caregiver interactions (Lawson & Flocke, 2009). These moments encourage health behavior change, and are not only a source of education, but support as well. The elements of behavior change align with the concepts

of perceived susceptibility and benefit, cues to action, and self-efficacy, of the HBM.

Methods

The purpose of this study was to use the Health Belief Model (Becker, 1974), to determine the relationship between self-efficacy and outcomes for opiate addicted clients on medication assisted treatment.

Setting

The setting for this study was a free-standing, for-profit, outpatient methadone treatment facility, located in a rural area in northeast Maryland, near the Delaware and Pennsylvania state borders. The facility first opened in 2009, and the site where this particular study was conducted has been in operation since May, 2012. At the time of the study, in addition to administrative staff, there were 7 counselors, 3 dispensing nurses, a nurse practitioner, and medical director. A laboratory facility is located on site to perform all urine and blood collection, which is then sent to a central lab for testing.

Participants

At the time the study was conducted, there were approximately 350 clients actively enrolled in treatment for opiate dependence at the facility, with 8-10 admissions per week. The current client population was 96% Caucasian and 3% African-American, which mirrors the population of the surrounding county and the area from which most of the client population was drawn.

All clients were 18 years of age or older, with an average age of 34 years. Approximately 54% were female, and 4% were currently pregnant. Just over

70% of clients were unemployed, and 4% were disabled. Referrals to the facility come from physician's offices, the judicial system, and self-referrals. Approximately 80% of clients were Medicaid and 20% were self-pay.

Recruitment

A convenience sample of clients was recruited from consecutive admissions to the program until the target number of 50 participants was reached. Pregnant women and clients admitted for short term supervised withdrawal from opiates were excluded from the study. Clients with co-occurring chronic illness were eligible for the study if their illness was stable. Inclusion criteria included admission for MAT and the ability to understand English.

Procedure

The duration of the study was 6 months. The study period for each individual began on day of admission and ended 180 days from that date, +/- 4 days. On day of admission, all eligible clients completed the usual admission process, which includes an Addiction Medical Assessment, HIV/AIDS Risk Assessment, TB Risk Assessment, Modified General Self-Efficacy Scale (GSE), and a physical exam by the nurse practitioner. Following completion of the admission process MAT was initiated. After completing 6 months in treatment as described, each eligible participant signed informed consent for use of their retrospective data, and then repeated the modified GSE.

The GSE is a ten item questionnaire scored on a 4-point scale. Self-efficacy scores range from 10 to 40. When used as a specific behavioral measure,

however, it is suggested to add a few questions specific to the task or behavior (Schwarzer & Fuchs, 1996). For this study, 4 questions relating specifically to opiate use were added to the questionnaire by the researcher. Possible scores, including these behavior specific questions, range from 14 to 56. See Figure 2.

Data on each participant's daily dosing attendance, group and individual counseling session attendance, and urine drug screen results, as well as pre-treatment GSE score were collected from review of client records. Pre- and post-treatment scores were compared, and evaluated for changes in self-efficacy.

Data Analysis

A power analysis was performed to determine sample size necessary for significance. To measure medium effect, at a 95% CI and a power of .80, a sample size of 27 was determined to be sufficient. The actual dropout rate at this facility was 5%. However, to allow for the often high dropout rate among the addicted population, additional subjects were added to the projected sample, for a total of 50.

Pre- and post-treatment differences in GSE scores were computed for each participant. A t-test was utilized to compare the results, and to measure the effect of MAT on self-efficacy. Next, data was collected for each participant in the following areas: number of drug free urines, number of groups attended, number of individual counseling sessions attended, and daily dosing attendance. Pearson correlation was then be used to examine the relationship between GSE scores and treatment outcomes.

Results

At the end of the 6 month study period, 28 subjects remained in treatment. This number exceeded 27, the number required for sufficient power. Mean pretreatment GSE scores for subjects who dropped out of treatment were 1 to 2 points higher on average than those of subjects who completed the study.

Self-Efficacy Scores

Data for the 28 subjects who completed the study was analyzed using SPSS. Results were computed at 95% LOC, Alpha level .05. Fourteen males and 14 females, remained in treatment for at least 180 days, and repeated the GSE at +/- 4 days of 6 months in treatment. The mean GSE scores for females were 1 to 2 point lower than those of the males who completed the study. The means of their pre-treatment and post-treatment GSE scores are shown in Table 1.

Comparison of pre-treatment to post-treatment GSE scores was analyzed using a Paired t-test. Using a 95% Confidence Interval of the difference, the average increase in General GSE scores was 5.1 points, Specific GSE scores increased an average of 5.2 points, and Total GSE scores increased an average of 10.1 points. See Table 2 for results.

Treatment Outcomes

Data related to treatment outcomes were analyzed using Pearson correlation. The number of opiate negative urines for months 2 through 6 were counted for each subject. Month #1 was disregarded since that drug screen was taken on day of admission and all were opiate positive, as expected. Analysis

showed no correlation between GSE scores and the number of opiate negative urines during the study period, with a Pearson coefficient of -.152. See Table 4.

Attendance at Counseling Sessions

No significant correlation was found between GSE scores and either group or individual counseling sessions over the 6 month period. GSE scores were analyzed, showing Pearson coefficients of .095 for individual sessions, and -.338 for group sessions.

Descriptive Analysis

Some descriptive information was obtained from the data. Subjects with higher GSE scores had more opiate negative urines. Overall, older females are more likely to attend groups than all other participants. Additional analysis was done for those subjects (n = 5) who had unchanged or lowered post-treatment GSE scores. Using an Independent sample t-test, no relationships were found regarding urine results, or individual or group session attendance for this group. However, it was found that study participants with unchanged or lowered scores went to more individual sessions (5 out of 6 compared to 3.9 out of 6), while those with increased scores attended more group sessions (2.96 out of 6 compared to 1.8 out of 6).

Discussion

This study examined the relationship between MAT and self-efficacy, and self-efficacy and treatment outcome. Based on the results of this study and statistical analysis, medication-assisted treatment demonstrated a direct

relationship with self-efficacy. No correlation was found, however, between self-efficacy scores and any of the treatment outcomes measured.

Self-efficacy

Overall, the study showed a significant increase in GSE scores over the 6 month treatment period. Five subjects showed no change or a decrease in score over time. There are 2 possible explanations for this. First, self-efficacy is a fluid concept, and changes over time. Future studies that measure self-efficacy more frequently and over a longer period of time, and with the addition of client interviews about level of stress, would provide further insight.

Second, many opiate users also abuse other substances, and this particular study did not control for this variable. Continued substance use can cause a client to be noncompliant with treatment requirements, and likely score lower on self-efficacy, especially with regard to substance use (Allsop et al., 2000). Further study with attention to drug use history, would provide information about substance use and self-efficacy.

Treatment Outcomes

The results of this study vary from those of studies conducted with subjects who are using other substances, where improved self-efficacy was shown to have a positive effect on outcome (Ciraulo et al., 2003; Rychtarik et al., 1992; Vielva & Iraurgi, 2001; Allsop et al., 2000). According to the literature, clients are better able to remain abstinent from opiates when scoring high on the self-efficacy scale. Although subjects with higher GSE scores did

have more opiate negative urine screens, no correlation between self-efficacy and number of opiate negative urine screens was found in this study.

No correlation was found in this study between self-efficacy scores and attendance at either group or individual counseling sessions, but interesting trends were identified. Subjects with higher scores attended more groups, and fewer individual sessions. The opposite was true for subjects with lower GSE scores. This is useful knowledge in the clinical setting, because could be theorized that the person with lower self-efficacy feels the need for more individualized attention, and lacks the confidence to attend and participate in the groups. Higher scores on the GSE may indicate a person who is more confident and less afraid to express their feelings in a group.

This study also found that older women seemed to prefer groups over individual sessions. Possible reasons for this trend may be that these older women enjoy the support and companionship the group provides, since many of them may feel isolated in their lives. They may also feel somewhat reluctant to open up to an individual with whom they are not too familiar, due to years of abuse and mistrust. Although this study measured only whether or not subjects met the minimum requirement for monthly group attendance, assessment of client's group preferences would be a useful addition to future studies.

It is difficult to control all intervening variables, but an important factor when working with this population, is motivation for treatment. Data was not collected as to whether the subjects in this study entered voluntarily or were court-ordered into treatment. Motivation for treatment would be an interesting variable to include in future studies.

Retention

The dropout rate for this study was 44%. The percentage of clients who left before completing treatment at this facility at the time of the study was only 5%. Twenty-two subjects were lost to this study for various reasons. The admission GSE scores of subjects who dropped out of treatment averaged slightly higher than the scores of those who remained in treatment for the duration of the study. Among those who left, some had no choice to leave due to hospitalization, incarceration, or loss of insurance coverage. Others left voluntarily because they moved out of the area, transferred to another treatment facility, or were not yet ready to commit to treatment. Some individuals overestimate their ability to stop using drugs, and leave treatment against medical advice. They are often "over confident" about their ability to control their substance use. This might explain their unwillingness to remain in treatment, and their higher GSE scores may reflect their overconfidence.

Strengths and Limitations

One of the strengths of this study was the homogeneity of the sample. All subjects were Caucasian, and of the same socio-economic class. The sample was evenly divided between males and females, and all subjects received the same medicated-assisted treatment protocol. Another strength is that the study met the 6 month minimum time duration recommended for medication-assisted treatment.

The duration of the study, however, was a limitation, because 6 months is a relatively short time to study a changeable concept like self-efficacy. As previously stated, self-efficacy is fluid and dynamic, and influenced by events

taking place in one's life at any given time. Self-efficacy rises and falls as stressors come and go in one's life. The study was also limited by the small sample size and high attrition rate, which is not uncommon when working with such a challenging population.

Another limitation of the study is that it measured only whether or not subjects attended the required minimum of one individual session or group per month. In fact, subjects were free to attend as many sessions as they wanted or needed. The number and also the type of groups attended may have varied, either by subject choice or counselor recommendation. Attendance at these or other sessions may have affected self-efficacy scores.

Implications for Nursing

According to the American Nurses Association (ANA, 2011), registered nurses rank as the largest group of licensed health professionals in the United States. In addition to being the largest, they are also considered to be among the most ethical and honest (Gallup, 2012). The profession itself is poised to take on a vital role in the provision of health care services in this country, and were called upon to do so in a recent Institute of Medicine report (IOM, 2011). Due to the current political and social climate, as well as the expanding problem of substance abuse, nurses are faced with both challenges and opportunities. One of the challenges is the growing number of people affected by substance use disorders (SUD), and one opportunity is to lead as providers of quality and innovative care.

The field of addictions nursing has recently undergone an evolution, due in part to the nature and extent of substance use in this country, and globally. With

regard to opiates in particular, incidence and prevalence of abuse have increased, as have associated medical and psychological issues. Dealing with these issues requires more than technical abilities. Nurses working in substance treatment today need keen interpersonal skills, as well as improved means of assessment.

This study deals with assessment of self-efficacy of clients on medication assisted treatment. The incorporation of self-efficacy testing into the admission process for MAT clients can be a useful tool. Knowing an individual's level of self-efficacy can be helpful during counselor assignment. Clients are individuals and require individual approaches to treatment. Likewise, counselors are individuals, and each possesses a different skill set. Matching personalities and skills can help to maximize rapport and client satisfaction, both of which are proven factors in successful treatment (Kelly et al, 2011).

Knowledge of self-efficacy can also be useful in treatment planning. As this study demonstrated, clients with lower GSE scores preferred individual counseling to group sessions. This may be due to feelings of insecurity, and therefore they respond better to individual attention. Clients with higher self-efficacy might be more confident, better able to speak in a group setting, and respond to group feedback and support. If self-efficacy is assessed by the nurse on admission to treatment, a plan can be formulated that better suits the client's needs. As noted in the literature, treatment that meets a client's needs increases satisfaction, rapport, and retention in treatment (Hser et al., 2004).

Nurses understand the importance of collaboration with other health care providers. An interdisciplinary approach is especially necessary in care of the addicted client. In substance abuse treatment, care is managed by a "treatment

team". Since self-efficacy can affect behavior and behavior change (Lusczcynska, 2004), knowledge of client's self-efficacy could be beneficial to all team members. Ultimately the client benefits from coordination of care.

The researcher believes that nurses have a unique and vital place on the treatment team. Through daily interaction at the dosing station, medication dispensing nurses have an opportunity to observe a client's physical and mental status. Their assessments provide guidance for other members of the clinical staff, and aid in decision making about care. Self-efficacy testing on MAT helps to complete the assessment.

Recommendations for Research

First, this study should be replicated with a larger sample size to increase significance. It should also be conducted for a longer duration and with more frequent GSE testing, in order to capture the fluid nature of self-efficacy. Personal interviews or a tool to evaluate level of stress might be added to the study, providing insight into when and why changes in self-efficacy occur.

Second, some additional variables could be identified in future studies. These include; number of previous treatment attempts, onset of drug use, and concurrent use of substances other than opiates. Motivation is another important factor in treatment outcome (Kelly et al, 1991). Understanding the reason why clients seek treatment would also add insight.

This study identified group preferences based on self-efficacy scores. Future studies might incorporate a group designed to increase self-efficacy during MAT, with comparison of GSE scores for those who attend the group

against the scores of a control group who does not. Increasing self-efficacy has been shown to improve outcomes in individuals who use other substances. More research is needed in the area of opiate addiction.

Another area where self-efficacy can be applied is in relapse prevention. Low self-efficacy has been linked to relapse in sobriety after treatment in some studies. Studies have shown that lowered self-efficacy scores can signal impending relapse (Demmel & Rist, 2005; Shiffman, Balabanis, Paty, Engberg, Gwaltney & Liu, 2000). Further research is needed with opiate relapse prevention programs.

Recommendations for Practice

Nurses perform an assessment on all clients admitted to MAT. Self-efficacy testing should remain a part of the MAT admission process, repeated throughout a client's treatment, and nurses should be trained in its administration.

Knowledge of fluctuations in GSE scores is especially applicable to the Phase System of treatment, which this facility is preparing to implement. The phase system is multi-directional, meaning that clients may move back and forth between stages if they suffer a setback or have other issues that affect their recovery. Since self-efficacy can be predictive of relapse, clinical teams can use this knowledge to be proactive and move clients to a more appropriate level of care when needed.

Conclusion

The concept of self-efficacy is relevant to substance use and recovery. A sense of efficacy and the ability to manage one's chronic illness is essential to

restoring and maintaining health. The same applies to substance abuse, a chronic illness by definition.

Medication assisted treatment combines pharmacological and behavioral treatments, counseling, and a number of support services when needed. Treatment is most effective when the client is viewed, and treated, as a "whole person".

The findings in this study support those of others found in the literature: medication assisted treatment is related to one's self-efficacy. This is important to know because, for the individual with a substance use disorder, recovery is a long and challenging process. As care providers in the field, we need to find ways to increase client's confidence, and empower them to feel as though they can meet the challenges they face in their recovery.

References

Allsop, S., Saunders, B., & Phillips, M. (2000). The process of relapse in severely dependent male problem drinkers. *Addiction*, 95(1), 95-106.

Amato, L., Minozzi, S., Davoli, M., Vecchi, S., Ferri, M. & Mayet, S. (2009). Psychosocial and pharmacological treatments versus pharmacological treatments for opioid detoxification. Retrieved from Cochrane Database of Systematic Reviews.

American Association for the Treatment of Opioid Dependence Inc. (2010). *Fact sheet: Methadone research findings.* Retrieved from http://www.aatod.org

Baldwin, A.S., Rothman, A.J., Hertel, A.W., Linde, J.A., Jeffery, R.W., Finch, E.A., Lando, H.A. (2006). Specifying the Determinants of the Initiation

and Maintenance of Behavior Change: An Examination of Self-Efficacy, Satisfaction, and Smoking Cessation. *Health Psychology,* 25(5), 626-634.

Bandura, A. (1977). Toward a unifying theory of behavioral change. *Psychological Review,* 84(2), 191-215.

Bandura, A. (2004). Health promotion by social cognitive means. *Health Education and Behavior,* 31 (2), 143-64.

Bart, G. (2012). Maintenance medication for opiate addiction: The foundation of recovery. *Addiction*, 31(3), 217-225.

Becker, M. H. (1974). The health belief model and personal health behavior. *Health Education Monographs, 2,* 324-473.

Bourbeau, J. (2008). Clinical decision processes and patient engagement in self management. *Disease Management and Health Outcomes*, 16(5), 327-333.

Centers for Disease Control and Prevention. (2011). *Healthy people 2010 leading health indicators at a glance.* Retrieved from http://www.cdc.gov/nchs/healthy_people/hp2010/hp2010_indicators.htm

Ciraulo, D. A., Piechniczek-Buczek, J., & Iscan, E. N. (2003). Outcome predictors in substance use disorders. *Psychiatric Clinics of North America,* 236(2), 381-409.

Cornwall, A., Moore, S., & Plant, H. (2008). Embracing technology: Patients', family members' and nurse specialists' experience of communicating using email.

European Journal of Oncology Nursing, 12, 198-208.

Cox, J., Allard, R., Maurais, E., Haley, N., & Small, C. (2013). Predictors of methadone program non-retention for opioid analgesic dependent patients. *Journal of Substance Abuse Treatment,* 44, 52-60.

Dennis, M. L., Foss, M. A., & Scott, C. K. (2007). An 8-year perspective on the relationship between the duration of abstinence and other aspects of recovery. *Evaluation Review, 31*(6), 585-612.

DiClemente, C.C., Carbonari, J. P., Montgomery, R. P. G., & Hughes, S. O. (1994). The alcohol abstinence self-efficacy scale. *Journal of Studies on Alcohol,* 55(2), 141148.

Fareed, A., Casarella, J., Amar, R., Vayalapalli, S., & Drexler, K. (2009). Benefits of retention in methadone maintenance and chronic medical conditions as risk factors for premature death among older heroin addicts. *Journal of Psychiatric Practice,* 15(3), 227-234.

Friedmann, P. D., Lemon, S. C., & Stein, M. D. (2001). Transportation and retention in outpatient drug abuse treatment programs. *Journal of Substance Abuse Treatment,* 21(2), 97-103.

Harrison, J., Mullen, P., & Green, W. (1992). A meta-analysis of studies of the health belief model with adults. *Health Education Research,* 7(1), 107-116.

Hser, Y., Evans, E., Huanh, D., & Anglin, D. M. (2004). Relationship between drug treatment services, retention and outcomes. *Psychiatric Services,* 55(7), 767-774.

Ilgen, M., Tiet, Q., & Finney, J. (2006). Self-efficacy, therapeutic alliance, and alcohol use disorder treatment outcomes. *Journal of Studies on Alcohol and Drugs,* 67, 465-472.

Janz, N. K., & Becker, M. H. (1984). The health belief model: A decade later. *Health Education Quarterly,* 11(1), 1-47.

Joe, G. W., Simpson, D. D., Dansereau, D. F., & Rowan-Szal, G. (2001). Relationships between counseling rapport and drug abuse treatment outcomes. *Psychiatric Services,* 52(9), 1223-1229.

Kelly, R.B., Zyzanski, S.J., Alemagno, S.A. (1991). Prediction of motivation and behavior change following health promotion: role of health beliefs, social support, and self-efficacy. *Social Science & Medicine,* 32(3), 311-320.

Kelly, S.M., O'Grady, K.E., Mitchell, S.G., Brown, B.S., & Schwartz, R.S. (2011). Predictors of methadone treatment retention from a multi-site study: A survival analysis. *Drug and Alcohol Dependence*, 117 (2011), 170-175.

Lawson, P.J., & Flocke, S.A. (2009). Teachable moments for health behavior change: A concept analysis. *Patient Education and Counseling,* 76, 25-30.

Luszczynska, A. (2004). Change in Breast Self-Examination Behavior: Effects of Intervention on Enhancing Self-Efficacy. *International Journal of Behavioral Medicine,* 11(2), 95-103.

Luszczynska, A., Scholz, U., & Schwarzer, R. (2005). The general self-efficacy scale: Multi-cultural validation studies. *The Journal of Psychology*, 139(5), 439-457.

McDonald-Miszczak, L., Wister, A. V., & Gutman, G. M. (2001). Self-care among older adults: An analysis of the objective and subjective illness contexts. *Journal of Aging and Health, 13*(1), 120-145.

McLellan, T., Arndt, I., Metzger, D. Woody, G. E., & O'Brien, C. P. (1993). The effect of psychosocial services in substance abuse treatment. *Journal of the American Medical Association,* 269(15), 1953-1959.

National Institute on Drug Abuse. (1999). *Principles of drug addiction treatment: A research-based guide* (2nd ed.). Washington, DC: Author.

National Institute on Drug Abuse. (2009). *Addiction Science: From Molecules to Managed Care Addiction Science: From Molecules to Managed Care.* Retrieved from http://www.drugabuse.gov/publications/addictionscience/introduction/effects-drug-abuse-are-wide-ranging-affect-people-all-ages

National Institute on Drug Abuse. (2011a). Drug abuse and the link to HIV/AIDS and other infectious diseases. *NIDA Info Facts.* Bethesda, MD: Author.

National Institute on Drug Abuse. (2011b). Understanding drug abuse and addiction. *NIDA Info Facts.* Bethesda, MD: Author.

Office of National Drug Control Policy. (2011). Annual Report: Arrestee Drug Abuse Monitoring Program II. Washington, DC: Author.

Qureshi, N. A., Al-Ghamdy, Y. S., & Al-Habeeb, T. A. (2000). Drug addiction: A general review of new concepts and future challenges. *Eastern Mediterranean Health Journal,* 6(4), 723-732

Rothman, A.J. (2000). Toward a theory-based analysis of behavioral maintenance. *Health Psychology,* 19, 1-6.

Rychtarik, R., Prue, D., Rapp, S., & King, A. (1992). Self-efficacy, aftercare and relapse in a treatment program for alcoholics. *Journal of Studies in Alcoholism,* 53, 435-440.

Scherbaum, N. & Specka, M. (2008). Factors influencing the course of opiate addiction. *International Journal of Methods in Psychiatric Research,* 17(S1): S39-S44.

Schwarzer, R., & Fuchs, R. (1996). Self-efficacy and health behaviours. In M. Connern, & P. Norman, (Eds.), *Predicting Health Behaviour: Research and Practice with Social Cognition Models.* Buckingham: Open University Press.

Schwarzer, R. & Jerusalem, M. (1995). Generalized self-efficacy scale. In J. Weinman, S.Wright & M. Johnston (Eds.), *Measures in Health Psychology: A Users Portfolio* (pp. 35-37). Windsor, U.K.: NFER-NELSON.

Schwarzer, R., & Renner, B. (2000). Social-cognitive predictors of health behavior: Action self-efficacy and coping self-efficacy. *Health Psychology,* 189, 487-495.

Senbanjo, R. Wolff, K., Marshall, E. J., & Strang, J. (2009). Persistence of heroin use despite methadone treatment: Poor coping self-efficacy predicts continued heroin use. *Drug and Alcohol Review,* 28(6), 608-615.

Solomon, K.E., & Annis, H.M. (1990). Outcome and efficacy expectancy in the prediction of post-treatment drinking behavior. *British Journal of Addictions,* 85(5), 659-665.

Stewart, J.E., Wolfe, G.R., Maeder, L., & Hartz, G.W. (1996) Changes in dental knowledge and self-efficacy scores following interventions to change oral hygiene behavior. *Patient Education and Counseling,* 27, 267-277.

Stoller, K. B., & Bigelow, G. E. (2006). Introduction and Historical Overview. In E. C. Strain & M. L. Stitzer (Eds.). *The Treatment of Opioid Dependence* (pp. 1-17). Baltimore, MD: The Johns Hopkins University Press.

Substance Abuse and Mental Health Services Administration. (2013). Results from the 2012 National Survey on Drug Use and Health: Summary of National Findings, NSDUH Series H-46, HHS Publication No. (SMA) 13-4795. Rockville, MD: Author.

U.S. Department of Health and Human Services (2013). Healthy People 2020. Retrieved from http://www.healthypeople.gov/ 2020/default.aspx

Vielva, I., & Iraurgi, I. (2001). Cognitive and behavioural factors as predictors of abstinence following treatment for alcohol dependence. *Addiction,* 96, 297-303.

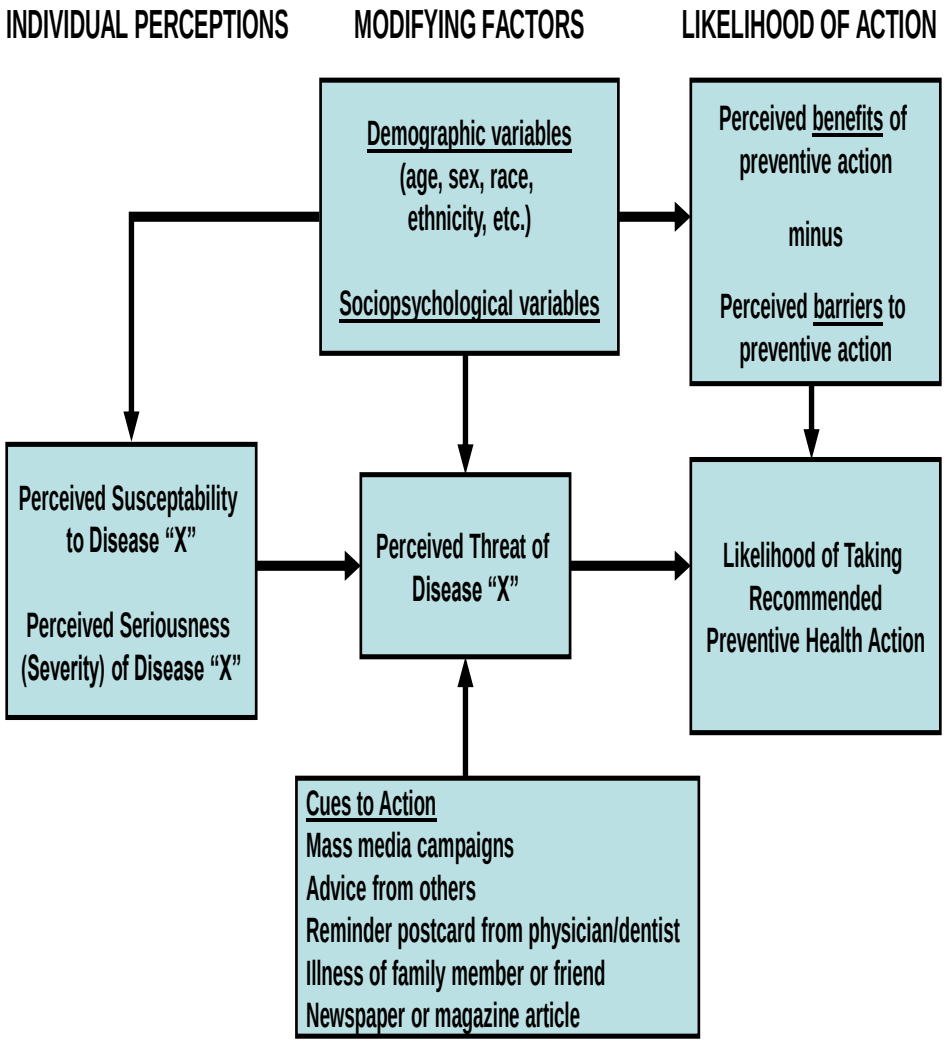
Von Korff, M., Gruman, J., Schaefer, J. Curry, S., & Wagner, E. (1997). Collaborative management of chronic illness. *Annals of Internal Medicine,* 127(12), 1097-1102.

Zhang, Z., Friedman, P. D., & Gerstein, D. R. (2003). Does retention matter? Treatment duration and improvement in drug use. *Addiction*, 98(5), 673-684.

Zhang, Z., Gerstein, D. R., & Freidman, P. D. (2008). Patient satisfaction and sustained outcomes of drug abuse treatment. *Journal of Health Psychology*, 13(3), 388-400.

Figure 1.

The Health Belief Model



Janz, N. K., & Becker, M. H. (1984). The health belief model: A decade later. *Health Education Quarterly*, 11(1), 1-47

Figure 2.

The Generalized Self-Efficacy Scale (GSE)

1. I can always manage to solve difficult problems if I try hard enough.
2. If someone opposes me, I can find the means and ways to get what I want.
3. It is easy for me to stick to my aims and accomplish my goals.
4. I am confident that I could deal efficiently with unexpected events.
5. Thanks to my resourcefulness, I know how to handle unforeseen circumstances.
6. I can solve most problems, if I invest the necessary effort.
7. I can remain calm when facing difficulty because I can rely on my coping abilities.
8. When I am confronted with a problem, I usually find several solutions.
9. If I am in trouble, I can usually think of a solution.
10. I can usually handle whatever comes my way.
Responses: 1=Not true at all 2= Hardly true 3=Moderately true 4= Exactly true

English version by Schwarzer, R. & Jerusalem, M. (1995).Generalized self-efficacy scale. In J. Weinman, S. Wright & M. Johnston (Eds.) *Measures in Health Psychology: A Users Portfolio* (pp 35-37). Windsor, U.K.: NFER-NELSON

Additional questions added by investigator relating to opiate dependence:

11. If I ran into old friends who offered me pills or heroin, I could resist using.
12. I can stay away from people I used to use drugs with, and I feel strong.
13. If I was in a situation where people were using drugs, I would have the strength to leave.
14. I feel that I can cope with stress in ways other than using drugs.

Responses: 1=Not true at all 2= Hardly true 3=Moderately true 4= Exactly true.

Table 1.

Mean GSE Scores

	Gender	Mean	N	Std. Deviation
Pre GSE (General)	Females	25.86	14	4.276
	Males	26.36	14	5.652
	Combined	26.11	28	4.924
Pre GSE (Specific)	Females	7.07	14	3.245
	Males	8.50	14	3.391
	Combined	7.79	28	3.337
Pre GSE (Total)	Females	32.93	14	4.358
	Males	34.86	14	8.047
	Combined	33.89	28	6.425
Post GSE (General)	Females	30.43	14	2.243
	Males	31.07	14	5.166
	Combined	30.75	28	3.922
Post GSE (Specific)	Females	12.71	14	2.758
	Males	13.79	14	3.118
	Combined	13.25	28	2.939
Post GSE (Total)	Females	43.14	14	3.780
	Males	44.86	14	7.695
	Combined	44.00	28	6.012

Table 2**.**

Comparison of Pre- and Post-treatment GSE Scores

	t	df	Sig. (2tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Post-Pre GSE score (general)	5.730	27	.000	5.107	3.28	6.94
Post-Pre GSE score (specific)	7.163	27	.000	5.286	3.77	6.80
Post-Pre GSE score (total)	7.928	27	.000	10.107	7.49	12.72