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Methadone Dosage Levels and Borderline Personality Disorder

Submitted by Daniel Monserud

May, 2013

MSW Clinical Research Paper

The Clinical Research Project is a graduation requirement for MSW students at St. Catherine University/University of St. Thomas School of Social Work in St. Paul, Minnesota and is conducted within a nine-month time frame to demonstrate facility with basic social research methods. Students must independently conceptualize a research problem, formulate a research design that is approved by a research committee and the university Institutional Review Board, implement the project, and publicly present their findings. This project is neither a Master's thesis nor a dissertation.

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Abstract

Objectives: Methadone is the most commonly prescribed medication treatment in the United States for the treatment of opioid dependence. Past research has found that people diagnosed with personality disorders require a higher level of methadone to satisfy their feelings of distress, emptiness and need to feel special. The researcher hypothesized that participants diagnosed with Borderline Personality Disorder would receive a higher level of methadone dose in milligrams than their other mentally disordered colleagues. *Methods:* This study examines the influence of Borderline Personality Disorder, gender, age and Major Depressive Disorder has on the dosage levels of 184 clients who both receive methadone at a large metropolitan methadone clinic in the twin city area of Minnesota and have participated in mental health services offered by the same clinic. *Results:* Results of the research indicate lower methadone dosage levels in participants with BPD and methadone dosage levels compared to methadone dosage levels of other mental disordered participants. *Conclusion:* The presence of BPD appears to be unrelated to methadone dosage levels.

Keywords: Methadone, Borderline Personality Disorder, Major Depressive Disorder, opioid dependence

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Introduction

Recent research has demonstrated that a high rate of patients in a methadone maintenance treatment (MMT) program met criteria for an Axis II diagnosis. Borderline Personality Disorder (BPD) is one of the highest reported Axis II diagnosis that MMT participants are diagnosed with by clinicians in a therapeutic environment (Darke, Williamson, & Teeson, 2005). This study will attempt to find a relationship with the Axis II diagnosis of BPD with a higher prescribed dose of Methadone. This will be compared to people with an Axis I Opiate Dependence Disorder (ODD) diagnosis that has a different Axis I or II diagnoses of mental illness as described in the DSM IV-TR, 2000 (American Psychological Association (APA, 2000).

Opioid Dependence Disorder

Opiate Dependence Disorder on Agonist Therapy is as an Axis I disorder listed as 304.00 (APA, 2000). This disorder is described in the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition Text Revised (DSM IV-TR) as individuals who:

Have significant levels of tolerance and will experience withdrawal on abrupt discontinuation of opioid substances.

Opioid Dependence includes signs and symptoms that reflect compulsive, prolonged self-administration of opioid substances that are used for no legitimate medical purpose or, if a general medical condition is present that requires opioid treatment, that are used in doses that are greatly in an excess of the amount needed for pain relief. Persons with Opioid Dependence tend to develop such regular patterns of compulsive drug use that daily activities are typically planned around obtaining and administering opioids (APA, 2000 p. 270).

MMT is the primary way that people who are addicted to opiates seek relief from their dependence on opiates in the U.S. MMT alleviates cravings for opiates such as heroin, morphine, Perkaset and Oxycodone and withdrawal symptoms such as profuse sweating, feelings of restlessness, sleepiness, stomach pains, body aches, anxiety, clumsiness and skin sensitivity in opiate addicts for up to twenty-four hours (Haertzen, Meketon, & Hooks, 1970). MMT accomplishes this by acting as an agonist that mimics opiates by attaching to the receptors in the brain that opiates target when ingested (Lundgren, Schilling, & Peloquin, 2005).

MMT in the U.S. is a highly regulated treatment modality that requires both a prescription from a physician and regular counseling with a licensed

alcohol and drug counselor. Initially MMT requires that a person receiving methadone show up to a licensed clinic daily to receive their prescribed dose of methadone from a licensed nurse. Over time these meetings can become spread out to weekly visits to the clinic to receive take home doses of methadone and monthly visits with counselors but for the first ninety days a patient must show up to the clinic daily. This process can be cumbersome and require a commitment to MMT that people who lack the time, transportation or childcare required to meet these rules may not be able to follow through with the program (Ross, Teeson, Darke, Lynskey, Ritter & Cooke, 2005).

Co-morbidity of a mental health disorder is high in people who are diagnosed with a substance abuse disorder (SUD). It is also common to find cluster B personality disorders in people who have been diagnosed with a substance abuse disorder (Murray, McHugh, Behar, Pratt & Otto., 2008). The Axis II diagnosis of BPD requires that a person exhibit some symptoms that are directly linked with substance abuse. These include distress intolerance, drug seeking behaviors, impulsivity and anxiety. These symptoms can be linked with the need for someone to seek a higher dose of methadone from a physician and is the foundation for this study (Murray et al., 2008).

It is important for physicians, nurses, alcohol, drug counselors and mental health therapists to be aware of the potential link between BPD and higher

methadone dose prescriptions so that these specific patients are not overprescribed and subsequently abuse methadone to treat or relieve their mental health related symptoms when they participate in an MMT.

Literature Review

In 2003 there were over 180,000 admissions into treatment programs in the U.S. for opiate dependent injection drug users and this number has increased by 18% since 1992 (Corsi, Kwiatkowski, & Booth, 2007). Injection drug use is the second largest exposure group for people diagnosed with Auto Immune Deficiency Syndrome (AIDS) in the U.S. (Corsi, et al., 2007). Minimal research exists on the demographics of people participating in MMT. In a study that examined the psychological differences presented among 900 African American and Caucasian users of MMT in the Philadelphia area some demographic data was identified (Platt, Steer, Ranieri, & Metzger, 1989). This study found that 74.2% of participants were male and 25.8% of patients were female. The mean age of the participants was 31.77 years and the mean dose of methadone each participant received daily was 48.27 mg (Platt et al., 1989). These demographic data points will be among some of the information explored in this examination of relationship between MMT, Axis I mental disorders and BPD in the twin city area of Minnesota.

MMT is currently the most widely accepted form of treatment for opiate addiction in the U.S., England and Australia with the U.S. having the most federally regulated program of MMT (Ross, et al., 2005). MMT is also considered the “gold standard” among treatment modalities related to opiate addiction because it treats the physical symptoms of withdrawal and the mental mindset of addiction (Reimer, Verthein, Karow, Schafer, Nabor & Haasen, 2011). Methadone is a synthetic form of opiate which provides relief from craving and withdrawal symptoms of people addicted to opiates. The proper methadone dose can provide this relief for a 24 hour period. This type of freedom from cravings and withdrawal gives the person in recovery the opportunity to obtain employment, housing and healthcare (Mistral & Hollingworth, 2001). The alleviation of cravings and withdrawal symptoms also allows the MMT patient the opportunity to live a more stable life by removing the need to share needles, commit crimes to pay for drugs and enhancing the opportunity to care for dependent children (Lundgren et al., 2005). MMT patients are less likely to remain homeless and have more stable relationships than opiate addicted homeless people who do not receive MMT (Royse et al., 2000).

Borderline Personality Disorder

BPD is an Axis II diagnosis listed as 301.83 in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM IV-

TR). The DSM IV-TR describes the behaviors of a person with BPD as having “A pervasive pattern of instability of personal relationships, self-image, affects, and marked impulsivity, beginning by early adulthood and present in a variety of contexts, as indicated by five (or more) of the following:

- (1) Frantic efforts to avoid real or imagined abandonment.
- (2) A pattern of unstable and intense interpersonal relationships characterized by alternating between extremes of idealization and devaluation.
- (3) Identity disturbance: markedly and persistently unstable self-image or sense of self.
- (4) Impulsivity in at least two areas that are potentially self-damaging (e.g., spending, sex, substance abuse, reckless driving, binge eating).
- (5) Recurrent suicidal behavior, gestures, or threats, or self-mutilating behavior.
- (6) Affective instability due to a marked reactivity of mood (e.g., intense episodic dysphoria, irritability, or anxiety usually lasting a few hours and only rarely more than few days)

- (7) Chronic feelings of emptiness
- (8) Inappropriate, intense anger or difficulty controlling anger (e.g., frequent displays of temper, constant anger, recurrent physical fights)
- (9) Transient, stress-related paranoid ideation or severe dissociative symptoms (APA, 2000, p.710)

Co-morbidity with a Substance Use Disorder (SUD) and a lifetime mental illness is estimated to be 51% by the National Comorbidity Survey (2007). This makes screening for mental illness in people with SUD an important part of substance abuse counseling (Brooks, Malfait, Brooke, Gallagher, & Penn, 2007).

Substance Use Disorder includes both Substance Dependence Disorder and Substance Abuse Disorder. These disorders fall under the umbrella of Substance Related Disorders and do not include Substance Induced Disorders (APA, 2000). Criteria for Substance Dependence Disorder include:

A maladaptive pattern of substance use, leading to clinically significant impairment or distress, as manifested by three (or more) of the following, occurring at any time in the same 12-month period:

- (1) Tolerance

- (2) Withdrawal
- (3) The substance is often taken in larger amounts or over a longer period than was intended
- (4) There is a persistent desire or unsuccessful efforts to cut down or control substance use
- (5) A great deal of time is spent in activities necessary to obtain the substance, use the substance or recover from its effects
- (6) Important social, occupational, or recreational activities are given up or reduced because of substance use
- (7) The substance use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance (p. 197)

Substance Abuse Disorder

Substance Abuse Disorder (SAD) has a different set of criteria than SUD and is meant to be a more serious disorder. Criteria for meeting a diagnosis of SAD include:

- A. A maladaptive pattern of substance use leading to clinically significant impairment or distress, as manifested by one (or

more) of the following, occurring within a twelve month period:

- (1) Recurrent substance use resulting in a failure to fulfill major role obligations at work, school, or home
 - (2) Recurrent substance use in situations in which it is physically hazardous
 - (3) Recurrent substance-related legal problems
 - (4) Continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance
- B. The symptoms have never met the criteria for Substance Dependence for this class of substance (APA, 2000, p. 199)

The rate of MMT patients with BPD is alarmingly high. While the prevalence of BPD in the general population is estimated to be 2%, as many as 65% of MMT patients diagnosed with an Axis I diagnosis of SUD exhibit the criteria that merits an Axis II diagnosis of BPD (Darke, et al., 2007). This is attributed to the common opiate addicted behaviors and feelings that are included in the SUD diagnosis. These include feelings of impulsivity, emptiness, identity disturbance, lack of anger control, intense and frequent mood changes and self-injurious behavior (Darke et al., 2007). These symptoms should be alleviated by the use of methadone given in a proper dosage level. It is important to determine

if the rates of BPD prevalence occur in the Twin City metropolitan clinic where this current research took place so that dosing policy may be more informed locally.

The singular predictor of having BPD is that of having poly-substance use. In their study of poly-substance users Darke, Torok, McKetin, Kaye and Ross. (2011) found that the acquisition of BPD was strongly correlated to elevated levels of poly drug use and at a younger age. Also found that heroin users exhibited elevated signs of depression, hostility and paranoia (Darke et al., 2011). This finding is concurred by Darke and colleagues when they performed a 36 month study of heroin addicts in Australia they found an increase of BPD symptoms in a longitudinal study that lasted 36 months and gave researchers time to make an accurate diagnosis of BPD. The symptoms that Darke and colleagues found included higher rates of suicide attempts, overdose, needle sharing among users and a diagnosis of major depression (Darke, Ross, Williamson, Mills, Havard, & Teeson., 2007). Darke and colleagues' research implies that heroin use is associated with a variety of mental health diagnoses and should be considered when completing a mental health diagnostic assessment with patients. Ross et al. (2005) also reported a higher level of risk-taking behaviors in people who were diagnosed with both SUD and BPD. These behaviors include chronic suicide attempts, recent suicide attempts, lifetime overdose, poly-substance abuse, depression and needle sharing. These elevated acts of harm led Ross (2005) to

advise that all heroin users entering treatment should be screened for BPD (Ross et al., 2005).

These symptoms are highlighted in Feske, Tarter, Kirisci and Pilkonis's (2006) study of 232 women with BPD and SUD. In their study of women with both a SUD and BPD diagnosis, they found that women were at a greater risk of participating in such severe activities that put their lives at risk. These activities included participation in the sex trade, higher number of sexual partners, more frequent and severe drug overdoses, needle sharing, higher rates of suicide attempts and poorer responses to treatment for their chemical addictions (Feske, et al., 2006). Darke et al. (2005) reported that an estimated 8 to 10 percent of people diagnosed with BPD commit suicide (Darke et al, 2005). These factors make screening for BPD in women with a SUD diagnosis an important part of the assessment process.

The use of Methadone in treating opiate addictions is not an exact science. Doctors who prescribe methadone dosage amounts rely heavily on the clients' self-report of symptomology to determine what dose is the proper one for someone seeking relief from opiate withdrawal and cravings (Murray et al., 2008). A person who is diagnosed with ODD and BPD is likely to have lower stress tolerance and report more physical distress and psychological cravings to a

physician in charge of determining what should be their proper dose (Murray et al., 2008).

The use of blood tests to determine whether a client is being under-prescribed or over-prescribed methadone is a relatively new process in the MMT field. One article related to anxiety and methadone dosage levels in MMT participants in Israel indicates that that patients who receive a dose above 100 milligram are more likely to abstain from opiate use thus they test for methadone efficacy at or above 100 milligrams (Sciff, Levit, Schori, & Lowental, 2011).

Multiple stigmas exist when it comes to seeking help with a SUD and BPD diagnosis. Despite its popularity as a treatment modality for opiate addiction, MMT is still perceived by the public as a negative treatment process for people who have been addicted to opiates. Combined with the stigma related to mental illness, it is hard for those who have a co-morbid diagnosis of SUD and BPD to seek treatment for their illness (Connor & Rosen, 2008). These barriers have been identified as major factors in a person with ODD who is diagnosed with BPD from seeing a mental health worker on a regular basis (Mistral & Hollingworth, 2001).

In a 12 month study of heroin users with a BPD diagnosis and those without BPD, Darke, et al. (2005) found that while seeking treatment those participants who were diagnosed with BPD experienced a decline in drug use

similar to those without BPD yet those participants with BPD still engaged in a higher level of risk taking behaviors than participants with a SUD diagnosis but no BPD diagnosis (Darke, et al., 2005).

Thus it is important to the social work field to determine whether clients who receive both mental health counseling services combined with MMT are receiving a therapeutic dose of methadone and not being overprescribed a dosing level because of elevated self-reported distress levels. This research study will attempt to ascertain whether clients who are diagnosed with BPD do in fact receive a higher dose of methadone in comparison with other clients who receive mental health counseling and participate in MMT.

Theoretical Framework

The theory that informs this study is the idea that specific behaviors including distress intolerance, drug seeking behaviors and feelings of emptiness in a person diagnosed with BPD will affect the dosage level of methadone that a person participating in MMT will receive from the prescribing physician (Murray et al., 2008).

Clinicians and physicians in an MMT program rely heavily on the self-report of the effect of methadone in the reduction of cravings and withdrawal symptoms. In this study patients were observed by a nurse at time of dosing and

required to have blood work performed to assess for the efficacy of the patients current dose before a higher dose was prescribed. There is very little in the way of consistency when it comes to determining what dosage amount should be considered the baseline determining when testing should occur for participants in an MMT program. This inconsistency is seen in the process that MMT programs in Israel, where a dosage amount of 100 milligrams is considered a baseline for efficacy (Schiff et al., 2011) or Australia where any dose over 120 mg is considered a high dose (Bryne, 1999). In this study any dosage level above 150 mg will be considered a high dosage level and patients may be denied the higher dose if their blood work shows that their current dose is medically effective.

People diagnosed with BPD have demonstrated a higher amount of distress intolerance, a history of drug seeking behavior, impulsivity and sensation seeking behavior (Murray et al., 2008). These symptoms can combine to promote distress intolerance which causes a person in MMT with BPD to ask for a higher dose of methadone to relieve the distress they are feeling whether it is real or imagined.

Methods

The data used for this study was procured by the author from clients' medical files and mental health case notes. Permission to use this data was given

by the client when they were completing the intake process at the clinic. Client files and notes were examined solely for data to be used in this study. Clients' age, gender and methadone dosing levels were recorded from their medical files while the clients' mental illness diagnosis was gleaned from their mental diagnostic assessment. This information was transcribed to a measurement instrument which recorded the clients' age, gender, methadone dose and mental illness diagnosis.

All participants in this study received a mental health diagnostic assessment between January of 2010 and February of 2013 by a licensed independent clinical social worker or by one of six clinicians under their supervision. These clinicians included Licensed Marital and Family Therapists (LMFT) and interns in in the LMFT and Masters Social Work (MSW) fields. No client who had been diagnosed with a mental illness by the researcher was included in this study. Each participant in this study was receiving methadone from a licensed clinic in an urban city in the Twin Cities area of St. Paul and Minneapolis, Minnesota and had received at a minimum a diagnostic mental health screening in a separate part of the same clinic.

All patients at the clinic are tested for methadone efficacy before they can receive a dose higher than 150 milligrams. This standard of blood testing is a relatively recent change to MMT that is not reflected in the literature. It is

important to note that each clinic has a different standard for testing patients for methadone efficacy. This effort to ensure a therapeutic dosing level is achieved removes the opportunity for someone to receive a dose higher than 150 milligrams without proving that they are metabolizing the methadone at a higher rate than most patients. This does not preclude incidents of higher reports of distress by participants and them achieving a higher dosing level but it does cap the amount of methadone they receive at 150. They subjected to testing to ensure that their dose was not at a therapeutic level before it is increased.

Study Purpose and Design

The location of the data for the participants in this study is situated in a large urban methadone clinic in Minnesota. This is a quantitative study. The data used in this secondary analysis of methadone patients was procured with written agency approval. Patient files were examined by the author for age, gender, diagnostic assignment of mental disorders and dosage level of methadone in milligrams for each participant and recorded on a separate data collection form (Appendix A).

The purpose of this study is to determine if having an Axis II diagnosis of Borderline Personality Disorder has a relationship with a higher methadone dose level than that of patients with other Axis I and Axis II diagnoses. Other variables

to examined include age, gender, current methadone dose levels and Axis I or Axis II DSM – IV TR diagnoses. The data that was collected will be subjected to analysis by SPSS 19. SPSS 19 is a statistical analytic computer program that will process the data and give descriptive information such as mean age, mean methadone dose, number of male and female participants as well as provide information as to what the mean methadone dose for the most common co-morbid diagnoses that were identified.

The question this study will attempt to answer is: Do participants in an urban MMT program with an Axis II diagnosis of BPD receive a higher methadone dose level than other clients who have a different mental illness diagnosis? The hypothesis for this study is that participants diagnosed with BPD will have received a higher daily methadone dose than other mentally ill clients. The null hypothesis is that study participants with an Axis II diagnosis of BPD do not receive a higher daily methadone dose than participants without a diagnosis of BPD.

Measures for Protection of Human Subjects

No one but the author of this study played an active role in the examination of patient files selected for this study. Patients were selected for the study if they participated in the mental health program at the clinic and had been given an Axis I and/or Axis II diagnosis between January of 2010 and February of

2013. No patient records were printed or recorded with their name affixed. All data collected was that of patients over the age of eighteen and active participants in a methadone maintenance program and had received a mental health diagnosis. Each patient must have been given a co-morbid diagnosis by a Licensed Independent Clinical Social Worker (LICSW) or one of six clinicians under their purview. Each patient in the study also had given permission to have their data used for research purposes as part of their intake into the MMT program. This written permission document can be found in Appendix B. Approval for this study was granted by the Institutional Review Board of St. Catherine's University.

Assumptions and Limitations

This study was conducted at a methadone clinic which offers mental health services to participants who desire them. It is assumed that all diagnoses were correctly assigned to each client in the study. It is assumed that each patient entering or participating in MMT has a SUD or SAD diagnosis. Also assumed is that each methadone dose given to a participant in this study was a therapeutic dose and thus the participant was not given too high or too low a dose for their particular medical needs. It is also assumed that patients in the MMT and mental health therapy programs at the clinic represent similar MMT patients who have been diagnosed with a mental disorder as described in the DSM IV-TR.

Limitations to this study include the fact that all patients at the methadone clinic have not received a mental illness diagnosis thus, the study excludes clients who may have an undisclosed diagnosis. In addition, no methadone patients without a mental illness participated in this study. This implies that there are participants in MMT at the clinic that have a legitimate mental illness but either has gone undiagnosed or the participants seek therapeutic services from therapists outside of the clinic that is in this study. The number of patients diagnosed with BPD in this study was smaller than the literature review has indicated the norm for mentally ill clients who participate in MMT. Only seven patients in this study were diagnosed with BPD. This could be due to the length of time patients' symptoms have to be presented to the therapist before a diagnosis of BPD is assigned to the patient. No rule outs of BPD in the diagnostic assessments were considered in this study. This may have played a role in the number of patients who were identified as having BPD.

The behaviors of patients with a diagnosis of BPD can be disruptive in the clinic and in the therapeutic setting. These behaviors could affect the way physicians and nurses treat patients with BPD. A patient whose feelings and actions related to distress can cause a physician or nurse to treat this client differently. Blaming the symptoms of BPD for feelings of distress, physical anxiety and requests for a higher dose will cause a physician or nurse to refuse to raise a dosage level in patients diagnosed with BPD.

No methadone patients without a mental illness diagnosis participated in this study. This implies that there are participants in MMT at the clinic that have a legitimate mental illness but either has gone undiagnosed or the participants seek therapeutic services from therapists outside of the clinic that is in the study.

Findings

The researcher examined and recorded client data from the clinical case files of 184 patients who were participants in both the MMT and mental health clinic services of an urban methadone clinic in Minnesota. All participants had received a mental illness diagnosis as described in the Diagnostic and Statistical Manual Text Revised 4th edition by an LICSW or a mental health professional under their purview and were participating in the MMT program. Participants' age, gender and dosage level was found in a computer program entitled Methasoft. Participants mental illness diagnosis was found in an on-line software program entitled Procentive. Each participant's age, gender, mental illness diagnosis and methadone dosage level were entered on a data instrument that is found in Appendix A and then transcribed into a statistical analysis program entitled SPSS 19. This program analyzed the data and gave the researcher both descriptive statistics which were then placed into tables for easier dissemination.

Descriptive Statistics

The first descriptive statistic that was examined was gender. Of the 184 participants in the study 104 were female and 80 were male. This finding demonstrates that 56 percent of the study sample is female and 44 percent of the study sample was male. The mean age of participants in this study was found to be 34 years of age. The age range for participants in this study is 50 years, with a minimum age of 19 years and a maximum age of 69 years. These are all found in Table 1.

Dosage Variable is the ratio level variable was operationally defined as the current methadone dose in milligrams that a participant was receiving at the time the data was collected. The minimum dose that a participant received was 5 milligrams and the maximum dose a participant received was 320 milligrams. The mean dose in milligrams for all participants is 121.7446 milligrams with a standard deviation of 48.30442 milligrams

Table 1.

Description of the Sample

	n	%
Gender		
Male	80	43.5
Female	104	56.5
Age		
18-20	5	2.7
21-30	80	43.5
31-40	44	23.9
41-50	36	19.6
51-60	14	7.6
61-70	5	2.7

Results

The second variable was methadone dosage level per day in milligrams. It was operationalized by recording the amount of methadone the client received per day at the time of this study and transcribed from the data instrument used in this study. A Levene's Test for equality of Variances shows that the mean

methadone dose level for females was 121.3750. The mean methadone dose for males was 122.2250 milligrams. When compared to each other in a single tailed T-Test they produce a p value of .906 which is greater than .05 thus indicating that gender does not play a statistically significant role in methadone dosing levels received from clients at the clinic.

As seen in Table 2, seven participants in the study were diagnosed with Borderline Personality Disorder. The Levene's Test for Equality of Variance stated that the mean dosage level of methadone for these seven participants was 120.7143 milligrams and the mean dose of methadone for the other 177 participants was 121.7853 milligrams. When the means were compared to one another they produced a p value of .954 which is greater than .05 thus indicating that Borderline Personality Disorder does not play a statistically significant role in the amount of methadone a client receives from the clinic. This finding caused the researcher to fail to reject the null hypothesis. Borderline Personality Disorder does not play a role in the amount of methadone a client received.

Table 2.

Dosage levels by diagnosis

Diagnosis	n	Dosage (μ)	%
*BPD	7	120.7143	3.8
MDD	92	126.5326	50.0
GAD	33	132.1627	17.9
PTSD	12	121.8125	6.5
Adjustment Disorder	26	113.2608	14.1
Dysthymic Disorder	8	138.7500	4.3
Bipolar I	6	123.8888	3.3
ADHD	4	107.5000	2.2
OCD	1	150.0000	.5
Panic with and w/o Agoraphobia	1	190.0000	.5
Drug Induced Mood Disorder	1	200.0000	.5

*Axis II diagnosis

The next comparison that was made was the diagnosis of Major Depressive Disorder (MDD) and all other disorders. The first variable that was operationalized was (MDD). MDD is a nominal variable. It was operationalized from the data recording instrument as MDD mild, moderate or severe. A participant either had been diagnosed with some level of MDD or they had not been diagnosed with some level of MDD. The second variable that was operationalized was methadone dosage level. Methadone dosage level is a ratio level variable that was operationalize by recording the amount of methadone in milligrams that a participant received daily from the clinic.

The next research question for this study is: *Do methadone dosage levels in participants with MDD differ from those not diagnosed with MDD?* The hypothesis for this question is that participants with MDD will have received a different dose of methadone than those who were not diagnosed with MDD. The null hypothesis for this question is that participants in this study that have MDD diagnosis will not receive a different methadone dose level in milligrams than those participants without an MDD diagnosis.

The study found that ninety-two participants were diagnosed with some level of Major Depressive Disorder and ninety-two participants were not diagnosed with MDD. The mean level of methadone given to those diagnosed with MDD was 126.5326 milligrams with a standard deviation of 54.26177

milligrams and those with no MDD received 116.9565 milligrams with a standard deviation of 41.25022 milligrams. The mean level of methadone dose given to those with a diagnosis of MDD was ten milligrams higher than those with a diagnosis of MDD.

The results of an independent samples shows T-test of the mean levels of methadone each participant received daily found that there was a difference in the amount of methadone a participant received depending on whether or not their diagnosis was MDD. The Levene's test of equality of variance is .005. This is significant because it is less than .05. Therefore the p-value for this t-test is .180 which indicates there is no statistical difference between methadone dose levels of participants diagnosed with MDD and those participants not diagnosed with MDD. As a result we must fail to reject the null hypothesis that participants in this study that have a MDD diagnosis will not receive a different methadone dose level in milligrams than those participants without an MDD diagnosis.

The next variable that was analyzed was the client's age. The second variable that was used was methadone dose levels. This was operationalized as was previously explained.

The next research question that was examined through use of this correlation was: *What is the relationship between age and methadone dose levels?* The hypothesis for this question is that there will be a relationship between age

and methadone dose levels of participants. The null hypothesis is that there will not be a relationship between age and methadone dosage levels.

The researcher found the mean methadone dose levels for all participants in the study, and the mean age of participants in the study. The mean methadone dose level was 121 milligrams and the mean age was 34 years. The calculated correlation ($r = .251$, $p < .05$) indicating a weak and positive correlation. This indicates that when age increases methadone dose levels increases slightly. This is a weak correlation because the participants' responses are not consistent with a line of best fit.

The last variables that should be considered are patient's identified mean methadone dose and their diagnoses of Dysthymic Disorder, Generalized Anxiety Disorder, Posttraumatic Stress Disorder and Adjustment Disorder as well as mental disorders that were identified in the study but did not have enough respondents to be considered significant.

Dysthymic Disorder is a disorder that is identified in the DSM IV-TR as chronically depressed mood for most of day for more days than not for at least two years. (APA, 2000 p.376). The eight patients with a diagnosis of Dysthymic Disorder reported the largest mean of all diagnosis with at least four participants. These patients reported a mean of more than 138 milligrams. This elevated mean may indicate that patients report feelings of withdrawal related to depression over

a longer period of time to physicians and nurses thus elevating the dosage level to a point still under the 150 milligram threshold but still the highest in this study.

Generalized Anxiety Disorder (GAD) is a disorder that is identified in the DSM IV-TR as having the essential feature of, “excessive anxiety and worry, occurring more days than not for a period of at least six months, about a number of events or activities. The individual finds it difficult to control the worry (APA, 2000 p.472). Thirty-three patients in the study had received a diagnosis of GAD. This was the second most identified diagnosis in the study after MDD.

Patients with a diagnosis of GAD reported a mean methadone dosage level of over 132 milligrams. This elevated level of methadone dose could be related to the patients’ report of worry that the dose was not holding them the full twenty-four hours, anxiety related to symptoms of withdrawal or the increased metabolism associated with excessive anxiety and worry.

Posttraumatic Stress Disorder (PTSD) is a disorder that is identified in the DSM IV-TR as having the development of characteristic symptoms following exposure to an extreme traumatic stressor that involves actual or threatened death, serious injury or threat to the physical integrity of a person or the witnessing of a life taking or threatening event to another(APA, 2000 p.463). PTSD was identified in twelve of the studies participants. Participants diagnosed with PTSD reported a mean methadone dosage level of 121 milligrams. This amount of

methadone dose is the same as the mean for all the participants in the study. This indicates that PTSD symptoms play no significant role in the amount of methadone they received daily in comparison with other participants in this study.

The lowest reported mean dose for all diagnosis with more than four identified participants belongs to patients diagnosed with Adjustment Disorder with Mixed Anxiety and Depressed Mood. Adjustment Disorders are associated in the DSM IV-TR as, “a psychological response to an identifiable stressor or stressors that results in the development clinically significant emotional or behavioral symptoms”(APA, 2000 p.679). The reported mean dosage level of the twenty-six participants with an Adjustment Disorder with Mixed Anxiety and Depressed Mood was 113 milligrams. This mean dosage level is a full eight milligrams lower than the mean of all participants indicating that participants with Adjustment Disorder with Mixed Anxiety and Depressed Mood experience symptoms that are transitory in nature and do not require a patient to seek more methadone to alleviate these symptoms.

The lowest mean dose reported for a diagnosis was patients diagnosed with Attention Deficit/Hyperactivity Disorder (ADHD). Four patients with ADHD reported a mean methadone dosage level of 107 milligrams.

Other mental illness diagnosis and methadone dosage levels identified in the study were Bipolar I (6 participants) 123 milligrams, Drug Induced Mood

Disorder (1 participant) 200 milligrams, Obsessive Compulsive Disorder (1 participant) 150 milligrams and Panic Disorder With and Without Agoraphobia (1 participant) 190 milligrams

Discussion

The failure to reject the null hypothesis that methadone dosage levels do not increase in clients diagnosed with BPD is not consistent with previous studies. This may be due to increased knowledge in the medical field about how methadone is metabolized in each person regardless of the physical or emotional distress they report to the physicians and nursing staff at the clinic that participated in this study. The participants in this study were tested for methadone metabolization after reaching a level of 150 milligrams. This is a threshold that is determined by physicians who supervise the administration of methadone to patients. Different physicians have different ideas about at what level of methadone the client receives before he/she should be tested for the efficacy of the methadone. The threshold at the clinic in this study was 150 milligrams. This manner of testing may play a role in negating the influence of self-report in clients as they seek a higher methadone dose to alleviate distress.

The mean methadone dose for all participants in the study was 121 milligrams. This level of dosage is consistent with the dosage level of participants who were not diagnosed with BPD who also report a mean dosage level of 121

milligrams. Those participants diagnosed with BPD reported a mean dosage level that was one milligram lower at 120 milligrams. This lower mean dose of methadone among participants with BPD in comparison with the other mentally disordered participants in this study is substantially below the level of 150 milligrams at which they would be tested for dose efficacy. This data suggests that the physicians and nursing staff at the clinic are properly operating the methadone delivery system to its patients.

When gender was considered as a variable, a weak correlation ($r=.009$) was identified between males and females and their respective mean methadone dosage levels. Men in fact received only one (121) milligrams more as a population than women (120) milligrams. This is significant in that it demonstrates that the clinic does not give higher doses to men or women based on their gender. It also may indicate that men metabolize at a faster rate than their female counterparts in this study.

The mean age of the participants in this study was 34 years of age. This is consistent with previous research that has identified the mean age of participants in a MMT program in Philadelphia to be almost 31 years of age (Platt, et al., 1989). What the findings in this study did reveal related to age was a weak correlation between age of participant and a higher methadone dosage level.

In this study methadone dosage levels increased as participants grew older. This was identified as a positive yet weak correlation ($r = .251$) between advancing age and higher methadone dosing levels. This correlation could be related to tolerance level increasing with age though time spent in MMT was not measured. The ambiguity of these results could be seen as a reason for more research into what causes increased dosage levels of methadone.

In this study the most reported mental illness diagnosis among the 184 participants was MDD. MDD and its three subtypes (mild, moderate and severe) accounted for 50% of study participants. Study participants with a diagnosis of MDD demonstrated a mean methadone dose level of 116 milligrams. Study participants who were diagnosed with MDD had a mean methadone dosage level of over 126 milligrams. This data states that there is a relationship with MDD and a higher methadone dosage level. The number of participants diagnosed with MDD is worth discussing because of its high level of report at this clinic. When fifty percent (50%) or more of participants in a study are given the same diagnosis it may be worth future investigation as to how the diagnostic process is followed at the clinic. Also worth future investigation may be the fact that the mean dosage level for patients diagnosed with Generalized Anxiety Disorder was found to be over 132 milligrams in 33 of the participants in this study.

Conclusion

The method used to define a therapeutic methadone dose in patients poses a challenge to how providers think about dosing levels. No longer are the nurses and the physicians solely responsible for raising and lowering a dosage level based solely on patient self-report. The patients at the large urban methadone clinic in which this study was conducted were tested for dose efficacy by means of a simple blood test when they dose they requested was above 150 milligrams. This test, which measures the length of time that methadone is at a therapeutic level in the bloodstream, ensures that patient report of distress, history of drug seeking behavior and intolerance of withdrawal are addressed when the patient's dose reaches 150 milligrams or they show signs of overdose such as drowsiness.

The mean methadone dose level of all mental health clients in this study was identified as 121 milligrams. When the mean methadone dose levels of all patients were compared by age, gender and MDD the only significant relationships with a higher dose of methadone were age and presence of MDD.

When age is correlated with methadone levels it shows a slight rise in dosage levels as patients get older. This correlation is not a strong one but is notable due to the fact that it was an identifiable correlation to a higher dose of methadone ($r=.251$). This correlation of older participants receiving a higher dose

of methadone is worthy of future study to determine if it remains a correlation when the population of patients at the clinic as a whole is surveyed.

MDD was the highest reported mental disorder in participants in this study. Participants with a diagnosis of MDD reported a mean dose of 126 milligrams. While other diagnoses were not examined it is important to note that participants with a reported a mean dosage level of methadone that was nearly 10 milligrams higher than the mean dose for participants that did not have a diagnosis of MDD and 5 milligrams higher than the overall mean dose for all participants.

Implications for Social Work

Previous research and studies have found that people diagnosed with BPD and participated in MMT have received a higher dosage level of methadone than that of patients with a different diagnosis. This study of 184 patients in a large urban methadone clinic in Minnesota has found that it is not necessarily so anymore. The seven patients who were diagnosed with BPD showed a milligram lower level of methadone than those patients who were diagnosed with something other than BPD. This fact caused the researcher to fail to reject the null hypothesis of this study and acknowledge that the factors associated with a diagnosis of BPD do not play a role in patients receiving a higher dose of

methadone. The failure to reject the null hypothesis puts the treatment for BPD largely on the therapist and client. The client cannot expect to get complete relief from their feelings of distress, emptiness and anxiety by increasing their dosage level of methadone beyond what is therapeutically necessary. This is the crux of why it is important to the social work profession in the MMT field. In the future social workers will not be able to only suggest dose increases for MMT patients with BPD. They will have to consider alternative methods of treatment to their patients as they seek to help them resolve the sometimes difficult symptomologies related to BPD such as psychotherapy and counseling to address distress.

Working with clients diagnosed with BPD can be challenging and frustrating to social workers. Social workers in the MMT field must challenge their feelings of counter-transference when working with clients who feel dis-regulated and are seeking higher methadone dosage levels to assuage their feelings of distress. Seeking help from the medical team is one answer to this issue. Having a client who is feeling in distress and seeking a higher methadone dose see a nurse or physician for blood work to confirm whether the dose they are receiving is at a therapeutic level is one answer to this problem. Advocating for this type of test and the constant work of teaching clients with BPD how to self-regulate and self-soothe are the major challenges to therapists working with clients with BPD and participating in an MMT program.

Important for future studies of MMT will be what effect does age play in the methadone dosage levels of patients of MMT. This study found a weak correlation between age and methadone dosage levels of MMT patients receiving mental health services. This data could imply that many patients need higher doses of methadone as they age. Also worth consideration are the high mean doses given to patients diagnosed with Generalized Anxiety Disorder and Dysthymic Disorder. These are phenomena that would require further research.

In the end, mental health therapists, licensed alcohol and drug counselors, nurses, physicians and their patients must work together to ensure that each patient is receiving the proper treatment for the mental illness, methadone dose and on-going sobriety support as they continue to improve their lives. This is not an easy charge. Quality communication including case notes, treatment plans and case consultation will need to be in place to ensure that the patient's needs are being best served by medical staff, the addiction focused counseling team and the mental health counseling staff.

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Appendix A

Measurement Instrument

Gender: M F

Age _____

Methadone Dose _____

DSM IV-TR Co-Morbid diagnosis Axis I _____

Axis II _____

Appendix B

The confidentiality of all alcohol and drug abuse patient records maintained by this program is protected by federal laws and regulations.----- will not disclose any information about any patient, except under the following exceptions:

- Internal program communications
- Communications that do not disclose the identity of the patient
- Proper written consent has been provided by the patient
- Communications during medical emergencies
- Court-ordered disclosures
- Communication with law enforcement officials regarding crimes committed by patients on clinic premises or against clinic employees
- Communication in conjunction with research, audit, or evaluation
- Reporting of suspected child abuse and neglect
- Qualified service organization agreement (QSOA)

Violations of the federal law and regulations by a program are a crime. Suspected violations may be reported either at the program or against any person who works for the program or about any threat to commit such a crime.

----- is required by federal law to provide patient's with a copy of the policy outlined above. A copy of this policy is contained in the patient orientation booklet. Signature on this form indicates understanding of the confidentiality provided by you by the center. (For details, see 42 CFR, Part 2)

PATIENT'S CONFIDENTIALITY POLICY

State and federal law protects records and the fact that patients are enrolled in our program. Patients will receive further information in this regard on other forms throughout the intake process. The purpose of this notice is to inform you of ----- expectations for the confidentiality of you and Patients. We expect you to respect the confidentiality of patients you know or meet while you are working at this treatment at our center. In other words, what you see here and what you hear here in regards to patients, must stay here. Do not violate another person's confidentiality by disclosing their information in or out of -----.

Signature of Client

Date

Signature of Witness

Date