CLIENT COMPLIANCE: CAN COMMUNITY MENTAL

HEALTH OUTCOMES BE PREDICTED?

by

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ABSTRACT

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The purpose of this thesis project was to gain predictive insight into client behaviors that may affect treatment outcomes. This thesis uses data originally collected for a dissemination trial of Cognitive Behavioral therapy being introduced into Texas' community mental health system. Clients that attend scheduled therapy sessions and complete assigned homework to a higher degree are demonstrating better compliance with their treatment. It was hypothesized that those behaviors while factoring in symptom severity and amount of therapy would predict final treatment outcomes as measured by a decrease in symptoms. Multiple regression analysis of 85 participants all diagnosed with Major Depression Disorder was conducted. Results indicate that attendance and homework were not contributing factors in the prediction of treatment outcomes.

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CHAPTER 1

INTRODUCTION

1.1 Community Mental Health

Every year millions of people seek help from their community mental health centers (CMHC). In the era following deinstitutionalization, CMHC serve as the main means of treatment for the most vulnerable and economically deprived people in our society. Management and implementation of CMHC are the mandated responsibility of the States. In this time of national economic hardship, mental health budgets are being cut. Most importantly citizens should be provided with proven treatments.

States and organizations are searching evidence-based practices to improve their quality of care and to justify their economic expenditures (Crismon, 1999). Lopez and Basco (2005) showed encouraging evidence that it is possible to implement evidence-based cognitive-behavioral therapy into an existing community mental health system. The community setting contains complexities that are not easily studied in clinical research. Clients in CMHC are often treatment resistant, chronic, and suffer from multiple. They are also more likely to have low socioeconomic status, lack private insurance, and lack employment (Lopez & Basco, 2005). CMHC clinicians' turnover rates are often high due to stress, low pay, and inexperience (Lopez & Basco, 2005; Onyett, Pillinger & Muijen, 1997).

With limited time and money, CMHC need to be effective and efficient in their care. Factors may exist within clients' behavior that can predict successful outcomes to treatment. For example, a client completing their homework and attending their scheduled appointments is showing commitment which may improve the outcome of their treatment (Addis & Jacobson, 2000; Howard, Kopta, Krause & Orlinsky, 1986). The knowledge of these client behaviors could enable clinicians to better understand their clients, customize treatment, and improve outcomes.

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The present study analyzed CMHC clinicians' data on outcomes from the treatment of major depressive disorder using cognitive behavior therapy. The goal was to determine the role of clients compliance behaviors in patient outcome.

<u>1.2 Major Depressive Disorder</u>

An estimated 6.7% of Americans are currently diagnosed with major depressive disorder (MDD) in the United States (Kessler, Chiu, Demler, Merikangas, & Walters, 2005). In a life-time about 16.5% of all Americans will have experienced MDD (Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005). MDD is not simply feeling "blue" or "down," it is a debilitating, life altering mental illness. As many as 15% of people diagnosed with severe MDD, over their lifetime, will commit suicide (American Psychiatric Association [*DSM-IV-TR*], 2000). With nearly 20 million people currently suffering and tens of millions more who will suffer, MDD represents a serious health concern in our society.

The Diagnostic and Statistical Manual of Mental Disorders (*DSM-TR-IV)* classifies MDD as a mood disorder with at least a single two-week episode of either depressed mood or loss of interest in daily activities. Physical symptoms include: change eating habits, change in sleep patterns, decreased sex drive, body pains, headaches and reduction in energy levels. Mental symptoms include worthlessness, hopelessness, self-depreciation, self-blame, guilt, pessimism and thoughts of suicide. Emotional symptoms include sadness, downcast, suffering, anxiety and irritability. Behavioral symptoms include slowed activity, withdrawal from usual activities, excessive sleeping, crying, passivity, decreased social behaviors and suicide attempts (*DSM-TR-IV*, 2000; National Institute of Mental Health, 2011).

The causes of MDD and other types of depression are not well understood. Studies indicate biological and social risk factors. Some researchers believe that depression is the result of unbalanced neurotransmitters: Serotonin, norepinephrine and dopamine (Sadock, 2007). Hasin and associates (2005) found being female, middle-aged, Native American, separated or divorced, widowed; and having low income significantly increased the rates of

MDD diagnosis. Being a woman alone increases the lifetime likelihood of depression by 70% (Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005). Being Hispanic, African American or Asian, however, reduced the risk (Hasin et al., 2005). African Americans are 40% less likely to have depression in their lifetime compared to Caucasians (Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005). Despite risk and protective factors, everyone regardless of background can suffer from MDD.

MDD is a treatable disorder. The most common form of treatment is medications. Antidepressants adjust brain neurotransmitters that effect mood states. The major categories of antidepressants are selective serotonin reuptake inhibitors, tricyclics, and monoamine oxidase inhibitors (Sands & Gellis, 2011). Another common treatment is psychotherapy. Cognitive-behavioral therapy (CBT) is a leading psychotherapy in the treatment of MDD (Dobson, 1989).

<center>1.3 Cognitive Behavioral Therapy</center>

CBT was developed by Aaron Beck and his colleagues at the University of Pennsylvania (Beck, Rush, Shaw & Emery, 1979). CBT theorizes that depression is caused, in part, by maladaptive and erroneous thought processes (Sands & Gellis, 2011). When depressed, people continually think of themselves, their futures, and their environments in negative and inaccurate ways. These thoughts are often automatic and not subject to logic, but can become controlled by the client. The major goal of CBT is restructuring negative thoughts to be more adaptive (Beck et al., 1979). CBT employs several strategies and practices, such as behavioral and thought monitoring, logic testing, evaluating thoughts from other perspectives, and homework assignments to reinforce therapy lessons outside of sessions (Beck, & Weishaar, 2008).

CBT is an evidence-based psychotherapy because studies have demonstrated the efficacy of CBT in the treatment of depression (Dobson, 1989; Gloaguen, Cottraux, Cucherat, & Blackburn 1998). CBT also appears to lower the risk of depressive relapse compared to other treatments (Bockting, et al., 2005; Vittengl, Clark, Dunn, & Jarrett, 2007). CBT is a collaboration

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between the therapist and the client (Beck, & Weishaar, 2008). Therapists are responsible for being versed in the theories and techniques of CBT. Clients are trained in CBT by therapists and have other responsibilities during therapy.

<div align="center">1.4 Client Compliance Factors</div>

Clients are the driving force of change in psychotherapies such as CBT. They have unique responsibilities during the therapeutic process. The "perfect" client attends every meeting as scheduled and finishes all homework assigned. Unfortunately, few perfect clients exist. In reality, most clients vary on a continuum between adhering to their responsibilities and failing to cooperate.

1.4.1 Attendance

CBT is a structured therapy that often follows a protocol that outlines the number of sessions and what takes place in each session. The CBT feasibility study by Lopez and Basco (2010), whose data will be used for this study, consisted of a 20 session treatment protocol. Attending therapy sessions is the most basic and measureable responsibility of clients. Without attendance, no therapy occurs.   The literature on attendance adherence for psychotherapy divides into three categories: Overall duration, dosage, or "good enough".   Overall duration deals with the amount of time a client is in treatment as measured in months or years. Dosage literature involves how often a client receives treatment such as once a week visits. New research is investigating whether clients stop treatment when they feel it has been "good enough" and will be of no further benefit.   One study found that 75% of clients that completed 26 sessions had better outcomes than those who had less (Howard, Kopta, Krause & Orlinsky, 1986).   More therapy does not necessarily mean better outcomes (Andrade, Lambert, & Bickman, 2000). Reardon, Cukrowicz, Reeves, and Joiner (2002) found that participants with therapy schedules that involved a dense treatment dose, meaning more sessions in a shorter span of time had better outcomes. Specifically, for patients attending 11 or fewer sessions, the more months they spent in treatment, the poorer the outcome. On the other hand, clients who

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stop attending sessions cannot be assumed to have failed treatment. Stiles, Connell, Barkham, and Mellor-Clark (2008) found that clients who simply stopped treatment believed that more sessions were unnecessary due to positive gains. This type of early drop out is related to the phenomenon known as "sudden gains" (Tang, DeRubeis, Hollon, Amsterdam, & Shelton, 2007). Researchers have found that about 40% of cognitive therapy patients experience over half their symptom reduction between one set of sessions (Hardy et al., 2005; Tang & DeRubeis, 1999).

1.4.2 Homework

Any activity performed by the client outside the therapist's office intended to have a positive effect is thought of as homework (Neimeyer, Kazantizis, Kassler, Baker, & Fletcher, 2008). Homework better allows clients to practice and apply lessons learned in a therapeutic setting into their real-world environment. Studies have shown that higher homework adherence may enhance treatment outcomes of CBT (Addis & Jacobson, 2000; Burns & Spangler, 2000; Kazantzis & Dattilio, 2007; Neimeyer et al. 2008; Rees, McEvory, & Nathan, 2005). Other studies have shown homework to have no appreciable relationship to outcomes (Harmon, Nelson, & Hayes, 1980; Kazdin & Mascitell, 1982; Neimeyer & Felixas, 1990). The medical model views adherence to treatment through the measurement of medication compliance. CBT homework is more complex but can be thought of in a similar manner, in that the client is getting a dose of a technique instead of a medication. A client who completes more of their assigned homework could be considered more in compliance with treatment and thus more responsible.

<u>1.5 Purpose of Study</u>

This study intended to answer questions about the role client responsibility has in the overall outcome of psychotherapy. To what degree does client responsibility in treatment affect the outcome of that treatment? Answers to these questions may yield information that could lead to better designed treatment plans.

The hypotheses are based on the clinician assigning a therapy session and/or homework assignment after which the client completes or does not complete those tasks. The

first hypothesis was that clients with a higher degree of attendance as scheduled would have better treatment outcomes. The second hypothesis was that clients with higher homework compliance as assigned would have better outcomes. The third hypothesis was the conjunction of higher attendance as scheduled and higher homework compliance would yield the best treatment outcomes.

CHAPTER 2

METHOD

2.1 Data Collection

This study employed a quantitative design using secondary data analysis. Primary data was collected from 2006 to 2009 by Dr. Molly Lopez and Dr. Monica Basco. The initial study also, known as EXPECT, was to determine the viability of CBT being disseminated to the Texas public mental health system in community settings. Clients, therapists, and community mental health (CMH) centers agreed to participate in the study. Attendance and homework compliance data were collected and reported by the therapists or CMH staff. Client depression severity was assessed using the Quick Inventory of Depressive Symptomatology (QIDS), a self-report measure. Data collection took place between 2006 and 2009.

2.2 Variables

Client compliance was defined as the measurable behaviors during the therapeutic process that are under the control of the client. Two variables of client compliance were analyzed: Attendance and homework compliance.

2.2.1 Attendance

Attendance had two levels: On-time or no-show. An appointment that was attended as scheduled was rated as on-time. An appointment that was scheduled but did not take place and did not have prior cancelation was rated as no-show.

2.2.2 Homework

Homework adherence is the degree to which clients completed assigned homework as determined by the therapist. Three levels to compliance were determined: Complete, partial,

and not-complete. Complete assignments are rated as 100% finished. Partial assignments are rated 50% finished. Not-complete assignments were not attempted by the client or 0% finished.

2.2.3 Client Mood

The third and fourth variables to be studied were client self-reporting of their level of depression, at baseline and end of treatment, as measured by a standardized scale. Measuring depression levels was the basis to determine whether or not treatment was successful.

2.2.4 Total Sessions

The fifth variable was total number of sessions. It was measured by the number of therapy sessions attended. Participants with fewer sessions overall were exposed to less opportunities for both attendance and homework.

<u>2.3 Participants</u>

The study used clients diagnosed with MDD and psychotherapists who had participated in a larger study of CBT training and supervision in Texas' CMH centers. Client inclusion criteria included: 1) diagnosis of MDD; 2) no current psychotic symptoms; 3) depressive symptoms not due to a general medical condition; 4) not already engaged in psychotherapy at the time of study entry, and 5) did not achieve remission from medication alone. A total of 88 clients participated in the initial study and 85 were used for the current study.

Participant demographics (Table 1.1) showed that participants were primarily female, Caucasian, some college education and divorced. These demographics are similar to a national survey that found women, Caucasians, and people with marital disruption to be most likely to suffer from major depression (Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005).

Table 1.1 Participant Demographics

AGE (mean)	42.76 years old (*SD* = 13.07)
GENDER (female)	85%
ETHNICITY	

Table 1.1 – continued

Caucasian	51%
Hispanic/Latino	40%
African American	8%
Asian	< 1%
EDUCATION	
1st-12th grade	29%
H.S. diploma/ GED	26%
Some College	39%
College Graduate	<5%
MARITAL STATUS	
Divorced	39%
Never Married	26%
Married	18%
Separated	15%
Widowed	2%

Approximately 44% reported previous psychiatric hospitalizations. The mean age of first depressive episode was 19.24 years (SD = 12.46), younger than the national average of 32 years (Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005). In addition to psychotherapy, clients were prescribed psychiatric medications for MDD and were monitored by a clinic psychiatrist.

<div align="center">2.4 Therapists and Locations</div>

The therapists in the proposed study were Master's degree level clinical social workers and licensed professional counselors. Experience level showed great variability ranging from one to 25 years (M = 9.78, SD = 8.15). Participants and therapists were dispersed across

Texas. All were generally in the areas around Hill Country Community MHMR (San Marcos), Lubbock Regional MHMR (Lubbock), MHMR of Tarrant County (Ft. Worth), and Texas Panhandle MHMR (Amarillo).

2.5 Instrumentation

This study used the Quick Inventory of Depressive Symptomatology (Self- Report; QIDS-SR). The QIDS-SR (Rush et al., 2003a) is a 16-item measure of depression severity used in all Texas CMH centers. Each item is scored 0-3. The self-report version of the QIDS-SR measures nine dimensions of depression: Mood, energy, sleep, weight/appetite, interest in pleasurable activities, concentration/decision making, self-outlook, psychomotor changes, and suicidal ideation (Trivedi et al., 2004). In domains assessed by multiple measures, the highest item score is taken. The QIDS-SR has high internal consistency with Cronbach's α = 0.86 (Rush et al., 2003a). Clients completed the QIDS-SR before each therapy session. Total scores can range from 0 to 27, with 27 representing the highest level of depressive symptoms. A score ranging from 0-5 is considered no depression. Clinical categories for scores ranging from 6-10, 11-15, 16-20, and 21-27 are considered mild, moderate, severe, and very severe (University of Pittsburgh Epidemiology Data Center, 2011).

2.6 Treatment Outcomes

Participants had a first session QIDS score (n = 85) ranging from 10 to 26 with a mean score of 18.32 (SD = 3.87). Fourth session scores (n = 66) ranged from 1 to 23 with a mean score of 13.18 (SD = 3.87). Final QIDS scores for the last session attended by the participant ranged from 0 to 25 with a mean score of 11.76 (SD = 6.6). To view the data in clinical terms a Kendall's tau-b test was performed to examine the correlation between the five categories of severity (none, mild, moderate, severe, very severe) from first to last session QIDS scores. Kendall's tau measures correlation and strength of the relationship between variables. First session and last session QIDS score showed that there was a significant correlation, $\tau^b \approx 5.180$, $p < .001$ of moderate 0.4 strength. A t-test was performed to determine if the change in first and

last QID scores was greater than zero. Last session scores showed significant improvement over first session scores $t(79) = 9.77$, p < .001.

<div align="center">2.7 Data Analysis Plan</div>

Data analysis utilized multiple regression analysis. This type of analysis determines what percentage of variance the predictive variables have on the dependent variable. There were four predictive independent variables: Attendance adherence score, homework adherence score, baseline QIDS, and total number of sessions attended. The dependent variable was the QIDS scores at the last session.

2.7.1 Attendance and Homework

For analysis, attendance adherence score was derived from the ratio of no-show to total number of missed sessions. Not all missed sessions are the result of client behavior. The clinician may reschedule sessions which do not constitute a no-show.

A homework adherence score was obtained. The score was derived from the ratio of completed assignments to total number of assignments. Attendance and homework scores are not available for all participants. When such data is missing, it is reflected in an adjusted sample size.

2.7.2 QIDS and Total Sessions

Baseline (first session) and last session QIDS data were numbers between 0 – 27 collected per participant. When data was missing from an individual QIDS surveys, such as sleep questions left blank, that missing data was replaced with the average rating from the other domains within that particular QIDS survey. Additionally, each participant received a count of the total number of sessions that they attended.

2.7.3 Hypotheses

For the first hypothesis, the predictive independent variables were baseline QIDS, attendance adherence score, and total number of sessions. The hypothesis proposed that higher attendance scores will predict better treatment outcomes. The second hypothesis used

the predictive independent variables of baseline QIDS, homework adherence score and total number of sessions. It is proposed that higher homework adherence, will predict better treatment outcomes. The third hypothesis used the predictive independent variables of baseline QIDS, attendance adherence score, homework adherence score and total number of sessions. Higher attendance scores in conjunction with higher homework scores and the other variables will predict the best treatment outcomes.

Table 2.1 Hypotheses

H1:	Treatment outcome = Baseline QIDS + Attendance + Number of Sessions
H2:	Treatment outcome = Baseline QIDS + Homework + Number of Sessions
H3:	Treatment outcome = Baseline QIDS + Attendance + Homework + Number of Sessions

CHAPTER 3

RESULTS

3.1 Predicting Outcome from Attendance

For the first hypothesis a multiple regression analysis (N = 75) was used to test if baseline session QIDS (M = 18.32, SD = 3.86), attendance adherence score (M = .41, SD = .37) and total number of sessions (M = 11.89, SD = 6.71) significantly predicted participants' final QIDS ratings (M = 11.76, SD = 6.35). All variables were entered simultaneously. The results of the regression indicated that the variables explained 27% of the variance (R^2 = .30, $F(3,71)$= 10.14, p<.001). It was found that first session QIDS significantly predicted last session QIDS scores (β = .438, p<.001), as did total number of sessions (β = -.35, p<.05). Attendance was insignificant (β = .000, p<.999)

3.2 Predicting Outcome from Homework

For the second hypothesis a multiple regression analysis (N = 74) was used to test if baseline session QIDS (M = 18.12, SD = 3.93), homework adherence score (M = .48, SD = .31) and total number of sessions (M = 12.43, SD = 6.54) significantly predicted participants' final QIDS ratings (M = 11.76, SD = 6.35). All variables were entered simultaneously. The results of the regression indicated that the variables explained 23% of the variance (R^2 = .265, $F(3,70)$ = 8.41, p<.001). First session QIDS significantly predicted last session QIDS scores (β = .406, p<.001), as did total number of sessions (β = -.324, p<.002). Homework was insignificant (β = -.163, p<.118)

3.3 Predicting Outcome from Attendance and Homework

For the third hypothesis a multiple regression analysis (N = 70) was used to test if baseline session QIDS (M = 18.21, SD=3.86), attendance adherence score (M = .4, SD = .37), homework adherence score (M = .456, SD = .29) and total number of sessions (M = 12.47,

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SD=6.54) significantly predicted participants' final QIDS ratings (M=11.26, SD=6.23). All variables were entered simultaneously. The results of the regression indicated that the variables explained 22% of the variance (R^2=.265, $F(4,65)$=5.871, $p<.001$). It was found that first session QIDS significantly predicted last session QIDS scores (β = .428, $p<.001$), as did total number of sessions (β = -.282, $p<.029$).

<div align="center">3.4 Post hoc Analyses</div>

A variety of post hoc analyses were done to better understand why attendance and homework were not significant predictive factors. A broader discussion for the rationale behind each post hoc can be found in Chapter 4. Each hypothesis was retested with stepwise regression with a $p<.05$ criteria for variable inclusion and a $p<.10$ criteria for variable exclusion. All independent and dependent variables were kept the same. A stepwise regression of the first hypothesis indicated that baseline QIDS scores alone explained 17% of the variance ($R^2 =$ .181, $F(1,73) = 16.079$, $p<.001$). When the variable "total completed sessions", was added to the equation, 28% of the variance was explained ($R^2 = .300$, $F(1,72) = 12.276$, $p<.001$). Attendance score failed inclusion criteria.

A stepwise regression of the second hypothesis indicated that baseline QID scores alone explained 13% of the variance ($R^2 = .144$, $F(1,72) = 12.091$, $p<.001$). When total completed sessions was added to the equation, 22% of the variance was explained ($R^2 = .239$, $F(1,71) = 8.850$, $p<.004$). Homework score failed inclusion criteria.

A stepwise regression of the third hypothesis indicated that baseline QIDS scores alone explained 15% of the variance ($R^2 = .160$, $F(1,68) = 12.976$, $p<.001$). When total completed sessions was added to the equation, 22% of the variance was explained ($R^2 = .244$, $F(1,67) = 7.463$, $p<.008$). Attendance and homework scores failed inclusion criteria.

3.4.1 Percent Change as Dependent Variable

Each hypothesis was retested using multiple regressions with percent change as the dependent variable. Percent change was a means to standardize treatment outcomes while

factoring in participant difference. All independent variables were kept the same. For the first hypothesis a multiple regression analysis (N = 75) was used to test if baseline session QIDS (M = 18.32, SD = 3.86), attendance adherence score (M = .41, SD = .37) and total number of sessions (M = 11.89, SD = 6.71) significantly predicted participants' QIDS percent change score (M = .36, SD = .32). All variables were entered simultaneously.   The results of the regression indicated that the variables explained 10% of the variance (R^2 = .140, F(3,71) = 3.87, p<.013). Total number of sessions significantly predicted QIDS percent change score (β = .350, p<.008). For the second hypothesis a multiple regression analysis (N = 74) tested if baseline session QIDS (M = 18.12, SD = 3.93), homework adherence score (M = .48, SD = .31) and total number of sessions (M = 12.43, SD = 6.54) significantly predicted participants' QIDS percent change score (M = .38, SD = .33). All variables were entered simultaneously.   The results of the regression indicated that the variables explained 9% of the variance (R^2 = .129, F(3,70) = 3.45, p<.021). The total number of sessions significantly predicted QIDS percent change score (β = .334, p<.004). For the third hypothesis a multiple regression analysis (N=70) was used to test if baseline session QIDS (M = 18.21, SD = 3.86), attendance adherence score (M = .40, SD = .37), homework adherence score (M = .46, SD = .30) and total number of sessions (M = 12.47, SD = 6.54) significantly predicted participants' QIDS percent change score (M = .38, SD = .32). All variables were entered simultaneously.   The results of the regression indicated that the variables explained 7% of the variance (R^2 = .123, F(4,65) = 2.28, p<.070). The total number of sessions significantly predicted QIDS percent change score (β = .278, p<.048).

3.4.2 Exploring Independent Variables

Each hypothesis was retested using stepwise regression with a p<.05 criteria for variable inclusion and a p<.10 criteria for variable exclusion. The original dependent variable of last session QIDS score was used. Attendance score was redefined as the ratio of no-show over total number of attempted sessions. Attempted sessions were defined as the total number of scheduled session, this included sessions the participant attended and agreed to attend.

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Homework adherence score was redefined the ratio of completed and partial assignments over total number of assignments. A stepwise regression analysis (N = 74) was used to test if baseline session QIDS (M = 18.12, SD = 3.93), new attendance adherence score (M = .15, SD = .164), new homework adherence score (M = .82, SD = .23) and total number of sessions (M = 12.43, SD = 6.54) significantly predicted participants' last session QIDS score (M = 11.11, SD = 6.34). The stepwise regression indicated that baseline QIDS scores alone explained 13% of the variance (R^2 = .144, F(1,72) = 12.091, p<.001). When new attendance adherence score was added to the equation, 23% of the variance was explained (R^2 = .246, F(1,71) = 9.624, p<.003). First session QIDS significantly predicted last session QIDS scores (β = .379, p<.001), as did new attendance score (β = 320 p<.003). New homework score and total completed sessions failed inclusion criteria.

CHAPTER 4

DISCUSSION

4.1 Treatment Outcome

Participants in this study, on average, experienced an overall one-third drop in their self-reported depressive symptoms. Only 6 out of the 85 participants reported increased levels of depressive. Improvement is the ultimate goal of seeking treatment. Placing the QIDS score into clinical categories helps to illustrate the improvement. At first session measurement 64 participants had QIDS scores in the severe and very severe categories. Only one participant was defined as mild. At last session's measurements 27 participants were severe or very severe. The results of this study reflect that clients of Texas CMHC were being helped by their treatment (Figure 4.1).
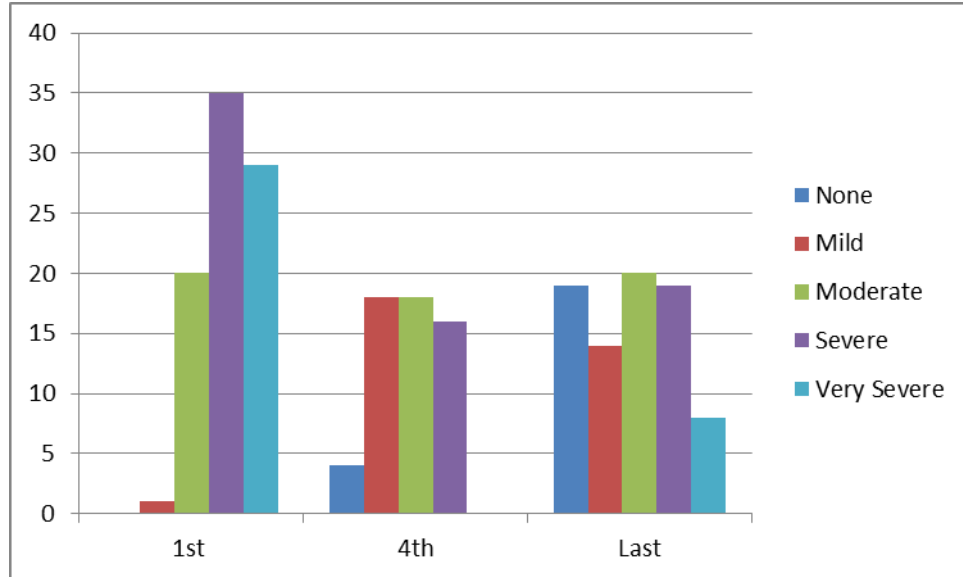

Figure 4.1 Severity by Session

4.2 Hypotheses Predicting Outcome

As all three original hypotheses were set up, two variables, first session QIDS and number of completed sessions, accounted for all predictive variance. Attendance adherence score alone, homework adherence score alone and both in conjunction, provided no meaningful information. Looking at attendance in the particular way of this study, to the best of my knowledge, has not been done by other researchers. The homework findings of this study are similar to other research that found no effect on outcome (Harmon, Nelson, & Hayes, 1980; Kazdin & Mascitell, 1982; Neimeyer & Felixas, 1990). It should be noted that attending therapy more often allows for more homework opportunities which in turn affects homework scores. The predictive variance that first session QIDS has on last sessions QIDS may be the result of both being numbers belonging to the same scale. Stepwise regression showed that over half the variance was the result of last sessions QIDS. The literature on therapy visits is clear, more therapy is better than less (Andrade, Lambert, & Bickman, 2000; Howard, Kopta, Krause & Orlinsky, 1986).

4.3 Post hoc Analyses

Upon initial findings that attendance score and homework score were not predictive, post hoc analyses were conducted to gain further insight. The underlining definitions for attendance and homework are arbitrary and inconsistent across research. Researchers tend to choose a variety of ways to look at each topic (Wierzbicki & Pekarik 1993). The original definition of attendance score was number of no-show appointments over total number of missed appoints. A more encompassing definition was used of number of no-shows over total number of attempted visits. The use of attempts captures a fuller understanding of the participant. For example, a participant no shows to five sessions; these are the only missed appointments over the course of treatment and they complete the full 20 session protocol. The original attendance score would rate them as 1, the highest level of no-shows possible. The new definition would score them as 0.2, a less severe score. Under this new definition

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attendance scores continued to fail as a predictive variable. Homework adherence score was also redefined. The original definition was a ratio of fully (100%) completed homework over number of assignments. A new definition included all attempted homework, full adherence and partial adherence over total assignments. This is the broadest definition of homework the dataset allowed for since fully, partial and none were the only measures. Despite this broader definition of homework, it still did not provide predictive value.

To address the high correlation between first and last QIDS scores, percent change in QIDS score was used as a new dependent variable. QIDS is a subjective measure; one participant's self-reported depression of 20 may be perceived by another participant as a rating 10. A participant starting treatment at 20 and ending at 10, drops 10 points or fifty percent. A different participant starting at 14 and ending at 7 has a smaller drop in raw score but the same percentage. Percent change factored in these individual differences between participants. Under this new variable, first sessions QIDS was no longer a significant factor in predicting treatment outcomes in all three hypotheses. Attendance and homework adherence scores remained insignificant as well. The regression packages for the first and second hypotheses remained significant with total number of sessions accounting for all predictive values. The third hypothesis regression package was nearly significant (p<.07).

4.4 Strength and Limitations

The data collected for this study comes from CMH practitioners. This is advantageous in that any knowledge gleamed from the findings directly relates back to the setting from which they came. Use of field data increased the likelihood of human error. There were multiple individuals responsible for data collection and transmission. During the course of the primary CBT dissemination study, therapists received ongoing training, supervision, and monitoring. It is possible under these conditions that therapists were abnormally vigilant in their duties. This could have affected rates of homework assignments, as homework for patients is important

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factor in CBT training and practice. Given this training environment, caution should be taken in generalizing these results into community mental health at large.

4.5 Implications

This study has shown at a basic level that community mental health outcomes can be predicted using total number of sessions attended. However this is of very little practical significance. The number of attending sessions is only discovered in hindsight. Had attendance and homework scores been valuable, they would have provided actionable information. For example, if missed appointments was a factor in outcome; strategies aimed to increase clients showing up to therapy would have been further justified in addition to the finding that more therapy is better than less. If homework had been shown to improve treatment, more homework and better follow-up on assignments may have been successful. This study does not add credence to such actions. Most importantly, despite these findings participants did benefit from CBT focused therapy. At the very least the act of attending therapy did measurably improve participant's depression.

4.6 Future Directions

Not completing homework can provide meaningful information. The behavior of not completing homework may prove clinically useful. Exploring why a client does not complete a particular assignment may provide insight into underlying issues. For example, a client that does not complete an assignment involving thoughts and emotions pertaining to their childhood could be showing distress in that area. Expanding data collection surrounding homework to include topic and type of assignment may be useful in determining reasons for and against adherence.

A similar expansion into attendance could also be beneficial. Clients have reasons for not showing up to treatment. These reasons could be practical such as lack of transportation or they could be clinically important such as increased stress following a previous session.

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The phenomenon of sudden gains is an interesting subject. A client that quits treatment early because they feel better is not the same as a client that quits because they are hopeless. In this context, the idea of "early" drop out is coming from the therapist. From the clients' perspective, if they are better by the fourth session, they are quitting on time. Participants in this study did drop in overall QIDS scores by the fourth session as shown earlier in Figure 4.1. The beginning sessions of the CBT protocol involved teaching the theory behind CBT to the participants. These early education sessions may be providing the most impact over the course of treatment. Client expectations for their new therapy are at their highest in the beginning. These expectations may diminish as therapy continues and expected benefits may not materialize. To test for a sudden gain effect, a stepwise regression of the variables in the original third hypothesis was performed. Last session QIDS scores were replaced with fourth session QIDS scores as the dependent variable. All independent variables remained the same. The results showed that homework adherence scores were a significant predictive factor. This approach of picking the QIDS measure from an early session is different from the literature that implores a complex equation to determine sudden gains as a function of symptom reduction (Tang & DeRubeis, 1999). It is possible that early homework compliance may be contributing to early reduction in QIDS score which in turn may precipitate early withdrawal from treatment. This finding may warrant further investigation using the more rigorous Tang and DeRubeis' method.

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