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Cost Outcomes for Major Depressive Disorder and Bipolar Disorder Across Professional License Types and Modalities

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ABSTRACT

Cost Outcomes for Major Depressive Disorder and Bipolar Disorder
Across Professional License Types and Modalities

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The purpose of this study was to compare outcomes for patients with Bipolar Disorder or Major Depressive Disorder based on severity of diagnosis. This study also compared psychotherapy providers and therapy modalities on total cost, number of sessions, and dropout. Our data set (N=136,439) came from Cigna, a national health care company. Results showed significant differences by severity of diagnosis. The comparison of providers showed that psychologists had higher costs and session numbers, while the other providers were not significantly different. However, all providers successfully provided low cost treatment on both MDD and BD. There is no support for the idea that one profession is more successful at providing low cost treatment for MDD and BD. Family therapy did significantly better on all outcomes except dropout rate when compared to individual or mixed (individual and family sessions) therapy. It is a low-cost option when treating MDD and BD, regardless of severity.

Keywords: psychotherapy, cost, major depressive disorder, bipolar disorder, providers, modalities

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Major Depressive Disorder (MDD) and Bipolar Disorder (BD) are very common and can be challenging to treat (Cheung & Dewa, 2007; Kessler et al., 2005). MDD ranges from mild, single episodes to severe and recurrent episodes (American Psychiatric Association, 1994, *Diagnostic and Statistical Manual of Mental Disorders*, 4th ed.). BD is less common, but also ranges in severity and chronicity (4th ed.; *DSM-IV;* American Psychiatric Association [APA], 1994). Standard treatment for each disorder can vary based on severity of the presentation (Paris, 2014; Rubio-Valera et al., 2015; Zu et al., 2014), and therefore it is important to consider cost when evaluating modalities or providers for treatment.

Both disorders bring a high cost to society through a decrease in quality of life (Guan, Deng, Cohen, & Chen, 2011), time and money lost for missed work and decreased productivity (Langlieb & Kahn, 2005), and the expense of receiving treatment (Lazar, 2014). The cost of treatment affects what options patients have and whether they seek treatment at all (Han, Hedden, Lipari, Copello, & Kroutil, 2015). Psychotherapy continues to be effective in treating MDD and BP (Lejeune, 2011; Parikh et al., 2015; Weitkamp et al., 2014; West et al., 2014; Zu et al., 2014). Low cost providers of psychotherapy are able to give successful treatment while keeping costs low (Crane & Payne, 2011). How severity affects treatment cost or who provides treatment for more severe disorders remains unknown.

Comparing outcomes for these disorders by severity, provider type, and modality can answer important questions about cost of psychotherapy treatment. A 2013 study by Crane et al. compared providers and modalities in evaluating cost in treating depression. They suggested that, "An analysis of cost, recidivism, and cost-effectiveness by severity would provide more

information as would an examination of the interaction between age categories, gender, and diagnosis. More research is needed to answer questions about the conditions under which therapy is most cost-effective for depression." (Crane et al., 2013, p. 467). This study aims to examine the effects severity of diagnosis has on cost outcomes for MDD and BD.

This study looked at outcomes of the six major psychotherapy providers in their treatment of MDD and BD. The six major groups of providers are Marriage and Family Therapists (MFTs), Medical Doctors and Doctors of Osteopathic Medicine (MDs and DOs), Nurses (RNs), Professional Counselors (LPCs), Psychologists (PSYs), and Social Workers (MSWs). These groups include biomedical providers (MDs and RNs) as well as traditional talk therapy providers (MFTs, LPCs, PSYs and MSWs). These providers may have different outcomes in treating MDD and BD, including different lengths of treatments and costs. Previous studies have found that there are some significant differences in outcomes when comparing these providers (Crane & Payne, 2011; Moore, Hamilton, Crane & Fawcett, 2011). This study will expand existing research to find out if diagnosis severity leads to additional differences.

No known studies have looked at a comparison between these providers on the severity of the diagnosis and cost to treat. This study sought to find if severity of MDD and BD affected outcomes by provider type. We also compared outcomes for the treatment of these disorders by psychotherapy type: family therapy, individual therapy, and mixed therapy (comprising a combination of both family therapy and individual therapy).

Literature Review

The severity criteria for MDD and BD use specific requirements in the DSM. Many people will experience MDD in their lifetime, and even mild forms can greatly affect patients. One major concern is cost. The treatment options for MDD and BD vary in both cost and

outcomes, with family therapy showing particular promise. However, there are many different licensed providers who treat MDD and BD with family therapy and it can be hard to compare these options. Research is starting to show that some providers may have lower cost to treat than others, perhaps even for severe forms of MDD and BD.

MDD and BD Diagnosis

Specific criteria must be met for a diagnosis of MDD or BD, and severity is based on the number of symptoms as well as how much they interfere with functioning. MDD is a very common condition, with BD being less common but they share a similar trajectory of depressive symptoms. Both disorders affect patients and their families, including through the financial burden for treatment.

DSM-IV diagnosis criteria and specifiers. Since a major component of this study involves severity rating, it is important to understand what qualifies as mild, moderate or severe ratings. Major depressive disorder consists of symptoms that indicate a major depressive episode (4th ed.; *DSM-IV*; APA, 1994). Bipolar disorder is having a manic or mixed episode, which could include a depressive episode (4th ed.; *DSM-IV*; APA, 1994). The number of symptoms determines severity. Mild severity has fewer symptoms (the number depending on the type of episode that was most recent) that only mildly interfere with daily functioning or normal functioning but with unusual effort. Moderate severity is for ratings of symptoms that fall between mild and severe. Severe without psychotic features requires having most of the listed symptoms in excess to diagnosing and that are clearly observable or that markedly interfere with functioning. Severe with psychotic features adds to the above with symptoms of delusions or hallucinations that usually are consistent with the depressive themes (4th ed.; *DSM-IV*; APA, 1994). For manic and mixed episodes, a severe diagnosis is for patients who require “almost

continual supervision required to prevent physical harm to self or others," (4th ed.; *DSM-IV*; APA, 1994, p. 379). Psychotherapy providers made the determination of severity and recorded the code with severity specifier in the Cigna data set.

Occurrence rates. Most mental health providers will encounter clients with a diagnosis of MDD or BD. Because of how prevalent they both are, a large portion of money spent on psychotherapy goes into treating depression. Lifetime prevalence of MDD is estimated to be 16.6% to 21.4% and for BD 2.2% to 3.9% (Kessler et al., 2005; Lejeune, 2011; Perala, et al., 2007). Patients who are 30-44 have the highest rates of MDD, whereas BD has higher rates for ages 18-29 (Kessler et al., 2005). Females have higher rates of MDD than males and severe cases are more prevalent than mild or moderate (National Institute of Mental Health, 2013). The number one reason adolescents cited for why they were receiving mental health services was "felt depressed" (56.5%; Han et al., 2015). Depression is a serious and common mental health concern.

Impact. Along with financial consideration, MDD and BD cause other problems for clients that lead to indirect costs. Major depression is associated with decreased physical and mental health outcomes following diagnosis (McCusker et al., 2007). Depression links with couple relational problems, parenting problems, and other severe stressors (Beach & Whisman, 2012). Symptoms from BD can affect the patient's other relationships as well, including marriage, children and occupation. It also leads to significant impairment in functioning and well-being (Zarate, Tohen, Land & Cavanagh, 2000). Onset often happens in the late teens to early twenties, a time already greatly impacted by transitions from moving out of the home, to starting college or a first job, which adds further stressors to an already challenging time of life (Lejeune, 2011). These indirect costs make it more important to have low cost treatment.

Costs and usage. While cost is an issue in treatment, some positive findings justify treatment costs. Adding psychotherapy to the treatment of BD does not necessarily add any cost because of reductions in other expenses (Miklowitz & Scott, 2009). For example, those who participated in group sessions were more likely to attend scheduled outpatient appointments, and therefore didn't need more expensive emergency visits. Even programs that may have a higher cost initially usually are offset by other reductions, like fewer hospital stays and higher work functioning, and often have better results of symptom reduction and relapse rates (Miklowitz & Scott, 2009). The same is true for MDD—psychotherapy treatments are often lower cost than medication treatment even when both have similar outcomes (Sava, Yates, Lupu, Szentagotai & David 2009).

However, high costs can be a barrier to seeking treatment. In a survey of reasons why patients with unmet mental health care needs did not receive mental health services in the past year, "could not afford cost" was cited as the number one reason (45.4% of respondents; Han et al., 2015). Other financial reasons for not receiving treatment included "health insurance did not cover enough treatment" (9.1%) and "health insurance did not cover any treatment" (5.7%; Han et al., 2015). For clients paying out-of-pocket, cost will be a very important factor.

One study showed that around 40% of patients with major depression had not used any mental health services (Cheung & Dewa, 2007). Another reported that only 44.7% of those with any mental illness and 68.5% of those with serious mental illnesses had received treatment (Han et al., 2015). In addition, of those with serious mental illnesses, 46.3% reported an unmet need for mental health care (Han et al., 2015). It appears that cost is a barrier to treatment, and therefore identifying low cost providers could help with filling the unmet mental health care need reported by so many suffering from mental illnesses.

Comparing Severity

Patient outcomes vary by severity so examining them separately is important. Severity can affect key variables in measuring cost, such as dropout rates and number of sessions for more treatment for the same disorder. In addition, some studies show that severity of the disorder can affect what treatment options are recommended (Paris, 2014; Rubio-Valeria et al., 2015) from medications to traditional psychotherapy or alternative methods like shock therapy. There is even disagreement on the nature and causes of MDD between severe ratings of mild or moderate (Paris, 2014) leading to conflict about the best course of treatment for severe MDD. This confusion could make it challenging for those seeking help. Doctors prescribe medication for severe cases, but psychotherapy can also be helpful even for severe depression (Paris, 2014). These findings illustrate why it is important to consider severity to provide clarity for patients.

There is some evidence that the severity of a disorder can affect dropout rates. Johansson and Eklund (2006) revealed a moderate effect between problem severity and helping alliance, which in turn affected dropout rates. For depression, specific interventions make a bigger difference than therapist or client variables (Swift & Greenberg, 2014). When considering why severity or diagnoses might affect dropout, it may be that some clients most in need of treatment drop out of therapy, or that they do not like the treatment offered (Bischoff & Sprenkle, 1993). Having a chronic problem can increase the chance of dropout because they are harder cases to treat (Lazar, 2014). This study may help reveal whether some providers can mitigate higher dropout rates for severe cases.

Treatments

Medications are often the first line of treatment for both MDD and BD. While common, there are some disadvantages to solely relying on medication for most patients. Another option is

psychotherapy, which has been extensively studied with these disorders and has been shown to be effective in many cases. Research on family therapy in particular reveals positive outcomes and is increasingly utilized to treat these disorders, with successful results for symptom reduction and at a low cost to patients.

Limits of medications. Psychotropic drugs are the standard treatment for MDD (Gartlehner et al. 2016; Rubio-Valera et al., 2015). Protocol of prescribing medication for MDD is often based on severity, with fewer prescriptions recommended for mild forms (Rubio-Valera et al., 2015). The consideration of other treatments can be beneficial however, because some research suggests that drug treatments do not necessarily lead to long-term success or remission. Gartlehner et al. (2016) found that patients treated with medication had similar benefits but greater risks than those using psychological, complementary and alternative medicine (CAM) options or exercise interventions.

Many types of treatment can be effective for the various phases of BD including medication, psychoeducation, and therapy (Lejeune, 2011). Particularly with pediatric patients though, medication can have low response rates and tolerance problems (West et al., 2014). Incorporating psychosocial interventions can improve outcomes, and increase effectiveness and overall treatment response better than medications alone for the treatment of BD (Fristad & MacPherson, 2014; Parikh et al., 2015). For families with high impairment, psychosocial treatments can have even greater impact on improving symptoms (Miller et al., 2008). Medication is usually always a part of treatment for BD, but incorporating other methods makes treatment more effective.

Psychotherapy. Psychotherapy is a common treatment for MDD and BD (Lejeune, 2011). Psychotherapy can significantly improve severe depressive symptoms for children and

youth as well (Weitkamp et al., 2014). This is an important point, because "felt depressed" was cited as the number one reason youths aged 12 to 17 sought specialty mental health treatment (Han et al., 2015). Research on treatment effectiveness in this population addresses a key disorder in adolescent mental health problems.

Many clients report a preference for psychotherapy over medication in treating depression, despite the increase in pharmacotherapy treatment (Kuramoto-Crawford, Han, Jacobus-Kantor & Mojtabai, 2015). This difference may be more indicative of what providers are offering as treatment rather than patient choices. Psychoeducation, cognitive-behavioral therapy, family-focused therapy and interpersonal and rhythm therapy are standard treatments beyond medication (Lejeune, 2011). As clients learn treatment is effective, these preferences for psychotherapy may continue to increase.

For moderate to severe MDD, CBT can be effective, even when compared to medication alone (Zu et al., 2014). There is some evidence that psychosocial treatment helps improve BD symptoms in children and adolescents. However, there is not enough research and too small of sample sizes to be definitive (Fristad & MacPherson, 2014). This highlights the need for research on psychotherapy effects with BD.

Family therapy. Family therapy can be more effective than individual treatments for MDD and BD (Carr, 2014a, 2014b; Crane et. al., 2013; Pinsof & Wynne, 1995; Shadish et al., 1995; Stratton, Silver, Nascimento, McDonnell, Powell & Nowotny, 2015). Marital therapy alleviates depression and delays relapse, even when there is also concurrent marital discord (Carr, 2014a). These outcomes are likely a result of increasing family support for the person with depression and decreasing stress and conflict. For BD, patients were three times more likely to remain in remission without relapse when receiving family-focused therapy combined with

pharmacotherapy compared to those receiving crisis management and pharmacotherapy (Miklowitz & Scott, 2009). Further, those who received family-focused therapy had lower remission rates compared to those receiving individual therapy at 1-2 year follow-up (Miklowitz & Scott, 2009). This is probably due to the fact that family therapy has benefits to other family members in addition to the identified patient.

Child- and family-focused cognitive behavioral therapy (CFF-CBT) is more effective for pediatric BD than treatment as usual (West et al., 2014). Family therapy treatment for BD especially helps when there are high levels of impairment. It leads to significantly improved course of illness and number of depressive episodes (Miller et al., 2008). These findings demonstrate the possibility that family therapy is particularly effective when there are severe symptoms.

Cost of family therapy. Total health care use in all areas is highest for patients who receive individual therapy rather than family therapy (Law & Crane, 2000). In a study that used a number of diagnoses, including MDD and BD, patients who received only family therapy required the fewest number of sessions compared to those who received individual or mixed therapy with family and individual treatment (Crane & Payne, 2011). These results are also true for depression specifically (Crane et al., 2013). This study will see if severity affects the cost of family therapy.

Family therapy is affordable because it provides services to more people for the price per session, sometimes referred to as a "multiplier effect" (Fals-Stewart, Yates, & Klostermann, 2005). Therapists work to make changes in the family system so that all members are helped, and the presenting client will return to an environment that has been improved from family therapy. It can reduce the need for expensive social or health services, and can allow family members

return to employment, hold a job, or operate a more profitable business (Fals-Stewart et al., 2005). Since MDD and BD affect the whole family (Beach & Whisman, 2012; Zarate, Jr. et al, 2000) this effect may be very important and can affect cost as well as outcome and long term gains for the patient.

Comparing Providers

The mental health field is expanding, and this means that there are a number of different licenses and practitioner types who provide psychotherapy treatment. Patients have some control over who they choose to see for this treatment, and as they learn more about the varying specialties they seem to indicate some preferences. Research comparing the professions shows that there are some differences between providers, including with cost.

There are few studies conducted that have examined profession and cost of treatment measures previously (Crane & Payne, 2011; Moore et al., 2011). The six types of providers that we will be looking at for this study are nationally regulated with professional organizations. These providers are Marriage and Family Therapists (MFTs), Medical Doctors and Doctors of Osteopathic Medicine (MDs and DOs), Nurses (RNs), Professional Counselors (LPCs), Psychologists (PSYs), and Social Workers (MSWs). They are from programs with accredited training standards and stringent licensing requirements in all 50 US States (Crane et al., 2010). These regulations, standards and requirements established qualifications across the mental health disciplines that make them comparable in delivering mental health treatment. As some have examined the differences among state licensure laws, they found that there is not a lot of difference in the varying professions' "scopes of practice" to provide mental health services (Hartley, Ziller, Lambert, Loux, & Bird, 2002). For this reason, it is appropriate to compare them for the purposes of this study.

Patient choices. Patients diagnosed with depression reported more helpfulness from treatment by specialty mental health providers than general practitioners alone and these findings remained even when accounting for other moderating factors (Kuramoto-Crawford et al., 2015). MFT may be less expensive than services provided by other professionals, such as MDs/DOs and PSY, without sacrificing positive outcomes like low dropout rates (Law, Crane & Berge, 2003). Providers who specialize in family therapy may be preferred over those who do not.

For adolescents with a major depressive episode, 20% reported that they saw or talked to a medical professional, 2.8% reported only using medications, and 16.4% reported using medications and talking to a medical professional (Han et al., 2015). Male adolescents with MDD were most likely to go to psychiatrists for service providers, whereas female adolescents were more likely to go to a social worker or counsellor (Cheung & Dewa, 2007). However, of young adults, men and women were more likely to visit general practitioners for treating MDD (Cheung & Dewa, 2007). What is less known is what influences these choices.

A study on more severe disorders caution that comparing cost in these populations needs to take into account that effective treatment can take longer. This means that long-term goals need to be considered as well as shorter-term goals of reducing total charges (Lazar, 2014). Because chronic and severe disorders are more challenging to treat (Lazar, 2014), identifying which providers are able to reduce costs during this treatment is valuable. There are no known studies indicating which psychotherapy providers are more affordable in treating disorders based on severity.

Differences by profession. While only MFTs and some LPCs are required to specifically study family therapy, other professions practice family therapy. Moore and associates (2011) found significant differences in therapy outcomes for the different professions who practice

family therapy when considering individual and family therapy together. MFTs ranked better than other professions on dropout rates, but they keep patients for more sessions than the other providers. Overall, MFTs are affordable providers for therapy (Crane & Christenson, 2014). What we will find out is how severity may affect these outcomes for MFTs.

Other earlier studies looked into profession comparisons. In the most recent known meta-analysis of 91 studies, Chiles and associates (1999) explained that PSY, MSWs, and MDs did not have significant differences in medical cost offset. They all reduced patient recovery time, which decreased medical care use and cost savings. Another study also established that patients who saw a MFT were just as likely to experience medical utilization reductions as if they saw a MD or MSW. An analysis on age, gender and experience of the therapist did not identify any differences. Therapy reduces medical utilization expenses, but does not demonstrate a difference between those three types of therapists (Crane, Wood, Law & Schaalje 2004). These are just some of the early findings comparing providers.

More recently, a large study considered provider outcomes (Crane & Payne, 2011). When examining number of sessions, the rank of lowest to highest sessions by profession was MDs, RNs, LPCs, MFTs, PSYs, and MSWs. The average was 6.95 sessions across all provider types. The ranking of low cost providers by profession was as follows: LPCs; MFTs, MDs and MSWs (ranked tied with no differences between each other); RNs, and PSYs. They also discovered the highest outcome success with MFTs, who had 86.6% success rate. The most affordable profession was LPCs. MDs and MFTs followed, and MSWs, RNs and PSYs were least affordable. When looking at who provides family therapy, MDs had a rate of 22.3% (N=6,408), MFTs 17.4% (N=35,609), LPCs 17.1% (N=103,730), MSWs 12.5% (N=175,437), PSYs 12.5%

(N= 163,273), and RNs 12% (N=5,192). While there are statistically significant differences in costs by profession, psychotherapy provided by these providers are low cost treatments overall.

Providers differed on outcomes for depression (Crane et al., 2013). Ranking of overall costs from lowest to highest was LPCs, MDs, RNs, MSWs, MFTs and PSYs. LPCs were the most affordable and PSYs were the least. Those researchers also found that family therapy was the most affordable modality. This study will add to previous research by considering the effect severity will have on these outcomes, as well as the results for a diagnosis of BD of differing severity levels.

Current Study

While previous research lays the groundwork to explore cost of treating MDD and BD by comparing providers, there is still a lack in the literature addressing these concerns when it comes to the severity of diagnosis. This study investigated whether different types of providers were effective in providing services for severe diagnosis versus those with mild and moderate severity of MDD and BD. We compared the six major mental health providers—MFTs, MDs and DOs, RNs, LPCs, PSYs, and MSWs—using number of sessions, total cost, and dropout rate. We also compared the differences between biomedical providers (MDs and RNs) and talk therapy providers (MFTs, LPCs, PSYs and MSWs).

Research Questions

1. Does severity of MDD predict cost, number of session, and dropout rate when controlling for provider type, modality, age, gender, and region?
2. Does severity of BD predict cost, number of session, and dropout rate when controlling for provider type, modality, age, gender, and region?

Method

Data for this project comes from Cigna, a national health insurance company. The sample contains patients who received an MDD or BD diagnosis from 2001-2006. We used *DSM-IV* (1994) 4th ed. diagnostic codes for analysis, and these codes include different numbers to indicate severity ratings. Variables used in this paper were chosen based on the data available from Cigna and allow for a cost analysis between the providers and modalities.

Design

This study was a retrospective study and used administrative data from Cigna, a nationwide health care insurance manager in the United States. The Health Insurance Portability and Accountability Act of 1996 (HIPAA) allows the use of un-identifying administrative data for retrospective statistical analysis. These data do not provide unique subscriber or provider information. Records available for each patient include: unique identification number, age, gender, treatment date, state where the visit took place, current procedural terminology code (CPT)—which was either 90806 individual psychotherapy 45-50 minutes or 90847 family psychotherapy—, primary *DSM-IV* (1994) 4th ed. diagnosis, therapist license type, highest degree earned by therapist, dollar amount of claim, and number of sessions or visits per claim (Crane & Payne, 2011). The data were cleaned to eliminate less common provider types, unknown licenses, and secondary licenses. For a full explanation of the original data set and data cleaning procedures, see Crane and Payne (2011).

Sample

The sample (n=136,439) contains individual patients who had received psychotherapy treatment for Major Depressive Disorder or Bipolar Disorder between 2001 and 2006. This information comes from a larger data set. For MDD (n = 128, 688) ages of participants ranged

from 0 to 96 (*M* =37.24, *SD*=14.01), with 3,127 (2.43%) children (0-12), 15,999 (12.43%) teens (13-19), and 109,562 (85.14%) adults. There were 88,939 females (69.11%) and 39,584 males (30.76%), with 165 (0.13%) where gender was not reported. For BD (n = 7,751) ages ranged from 3 to 85 (*M* = 35.83, *SD* = 14.29), with 274 (3.54%) children, 1,041 (13.43%) teens, and 6,436 (83.03%) adults. There were 5,052 (65.18%) females and 2,692 (34.73%) males, with 7 (0.09%) missing values. Participants were from all regions in the United States. No additional demographic data were available.

Diagnoses

Major Depressive Disorder. The *DSM-IV* (1994) 4th ed. diagnostic codes for the mild diagnosis are 296.21 and 296.31. Moderate codes are 296.22 and 296.32. Diagnostic codes for severe without psychotic features are 296.23, and 296.33. Severe with psychotic features are 296.24 and 296.34. In all cases, a moderate diagnosis was the largest group (55.61%) followed by severe without psychotic features (31.84%), mild (10.41%), and severe with psychotic features (2.15%).

Bipolar Disorder. The *DSM-IV* (1994) 4th ed. diagnostic codes for mild BD are 296.01, 296.41, 296.51, and 296.61. Moderate BD codes are 296.02, 296.42, 296.52, and 296.62. Diagnostic codes for severe BD without psychotic features are 296.03, 296.43, 296.53, and 296.63. Severe BD with psychotic features codes are 296.04, 296.44, 296.54, and 296.64. In all cases, a moderate diagnosis was the largest group (45.57%) followed by both severe without psychotic features (31.70%) and severe with psychotic features (13.77%), and smallest was mild cases (8.97%).

Providers

We included six major therapy provider types for this study: Marriage and Family Therapists (MFTs), Medical Doctors (MDs and DOs), Nurses (RNs), Professional Counselors (LPCs), Psychologists, and Social Workers (MSWs). These were selected because of their national recognition as independently licensed health care practitioners (Crane & Payne, 2011). When a claim shows a provider with more than one license type, we used the license type listed as "primary."

Definitions of Variables

Episode of care. Cigna defines an episode of care (EoC) as a continuous series of treatment for one patient. An episode of care ends 90 days after the last insurance claim form is filed. The number of sessions in the first episode of care ranged from 1 to 203 (M= 4.54, SD= 5.668). This study used only the first episode of care for each patient.

Total cost. Total cost is defined as the total dollar amount paid by Cigna for all therapy services during the first episode of care.

Dropout. Dropout is defined as a participant attending only one session of therapy and then not returning for future services (Hamilton, Moore, Crane & Payne, 2011). While defining a specific number of sessions as cutoff for dropout is usually an arbitrary decision (Bischoff & Sprenkle, 1993), this definition is consistent with existing dropout literature (Allgood & Crane, 1991; Johansson & Eklund, 2006; Werner-Wilson & Winter, 2010; Wierzbicki & Pekarik, 1993). A one-session cutoff will likely not overestimate the number of dropouts (Hamilton et al., 2011), although for medical doctors who are more likely to have fewer sessions, it may have some effect.

Family therapy. Family therapy is identified in this study by Current Procedural Terminology (CPT) code 90847, "Family psychotherapy (conjoint psychotherapy) (with patient present)" (American Medical Association, 2006, p. 278).

Individual therapy. Individual therapy was identified in this study by Current Procedural Terminology (CPT) code 90806, "an insight oriented, behavior modifying, and/or supportive treatment in an office or outpatient facility, approximately 25 to 50 minutes face-to-face with the patient" (American Medical Association, 2006, p. 277).

Mixed therapy. In this study mixed therapy is defined as an episode of care including both sessions of family therapy and sessions of individual therapy. This definition does not address the range of possible individual to family therapy ratios. For example, an episode of care would be categorized as mixed if it consisted of 20 individual sessions and one family therapy session, or if it consisted of one individual session and 20 family therapy sessions. Although, this isn't a perfect definition, this modality is incorporated in the study to represent the participant experience that isn't specifically individual or family therapy.

Results

We ran basic descriptive statistics for total cost, total sessions, and dropout rate for the six provider types and the three modalities for all levels of severity. Mean total dollars was $487.88 (SD=$734.14), with a median of $250 (range = $0.48 to $29,905). Mean total sessions was 9.68 (SD=12.85), with a median of 5 (range = 1 to 339). Full descriptive values for MDD are reported in table 1, and for BD in table 2. Data are skewed, but test regressions with log-transformed data did not affect results, thus it was decided to not use log transformations to answer the research questions to aid in interpretation of the results. All regressions were run with gender, age, and region as control variables.

The first question examined severity differences in total cost, number of sessions, and dropout rates for depression. For cost and number of sessions, we ran regressions using MFT as the provider comparison group and family therapy as the modality comparison group.

The full model for cost to treat depression was significant F (16, 120,313) = 433.81, p = 0.00, R^2 = 0.05, All four severity groups showed significant differences. Severe with psychotic features diagnosis had the strongest relationship to depression cost, followed by severe without psychotic features, moderate, and finally mild. For the six professions, only psychologists had higher costs that were significantly different from MFTs (b = 144.44, SE = 7.53). Both individual therapy modality (b = 132.15, SE = 8.14) and mixed therapy modality (b = 455.41, SE = 9.38) were significantly higher on total cost than family therapy modality. Gender, age, and region were also all significant predictors of total cost.

Full results for number of sessions were significant F (16, 120,312) = 441.79, p = 0.00, R^2 = 0.06. Severity and modality again showed the same patterns as cost. Provider type, however, had some differences. MDs (b = -2.58, SE = 0.26) and RNs (b = -0.92, SE = 0.36) had significantly fewer sessions than MFTs. MSWs (b = 0.33, SE = 0.14) and PSYs (b = 1.13, SE = 0.14) had significantly higher session number than MFTs. LPCs were not significantly different.

For dropout rates we ran logistical regressions. The overall model for dropout was significant X^2 = 5928.53, p = 0.00, R^2 = 0.06. Only the diagnosis of severe without psychotic features was significantly different from a mild diagnosis (b = -0.07, SE = 0.03). For provider type, again only RNs and PSYs were significantly different from MFTs. RNs were slightly higher (b = 0.13, SE = 0.08) and PSYs were slightly lower (b = -0.17, SE = 0.03). Both individual and mixed modalities had significantly lower dropout rates than family therapy.

Gender, age, and region were significant, except for the Western region. Results of the regressions for MDD are in table 3.

The second question considered cost, number of sessions, and dropout rates for BD. This again looked at severity groups, provider type and modality, while controlling for gender, age, and region.

The results for total cost model was significant F (16, 7163) = 30.86, p = 0.00, R^2 = 0.06. Both severe with psychotic features (b = 92.24, SE = 38.96) and severe without psychotic features (b = 78.67, SE = 34.22) had significantly higher costs than mild or moderate diagnoses. Only PSYs were significantly higher on cost than MFTs (b = 202.58, SE = 38.57). Individual (b = 111.17, SE = 19.21) and mixed (b = 483.32, SE = 42.51) modalities were significantly higher on cost than family therapy modality. Gender, age, and region were all significant as well.

Results for session number showed the overall model was significant F (16, 7163) = 33.82, p = 0.00, R^2 = 0.07. Again, both severe diagnoses were significantly different with higher session numbers. MDs had significantly lower session numbers (b = -2.07, SE = 0.96) and PSYs had significantly higher session numbers (b = 2.25, SE = 0.70) than MFTs. Individual (b = 2.49, SE = 0.67) and mixed (b = 10.36, SE = 0.77) modalities had significantly higher session numbers than family therapy. Gender, age, and region were significant, except for the South and West regions.

Results of the logistic regression for dropout had X^2 = 527.83, p = 0.00, R^2 = 0.09. Severe without psychotic features was significantly lower dropout rates than the other diagnoses (b = -0.36, SE = 0.13). MDs had a higher dropout rate than all other provider types (b = 1.31, SE = 0.18). Modality differences again had significantly lower dropout rates than family therapy.

Gender was significant, while age and region were not, with the exception of the South and West being significant. All results from the regressions for BD are found in table 4.

Discussion

This is the first known study to examine the effect that diagnosis severity had on cost outcomes by provider types and modalities for MDD and BD. While there are many providers who treat MDD and BD, patient choice is affected by cost to treat. Research already shows that family therapy and MFTs are effective at improving symptoms for MDD and BD. The results of this study show that they are also affordable options for patients seeking treatment, whether they suffer from mild, moderate or severe diagnoses.

For MDD total cost and number of sessions, results varied by severity. The more severe a case the higher the cost and number of session it takes to treat. Only psychologists were significantly higher on both variables. Average total cost for psychologists was $579.34, compared to $451.72 for marriage and family therapists, a savings of $127.62 for an episode of care—which can lead to substantial savings across multiple cases. Number of sessions showed several differences between the providers. Medical doctors and registered nurses had the lowest number of session, followed by marriage and family therapists and counselors, and social workers and psychologists with the highest number of sessions. The average session numbers ranged from 6.38 (medical doctors) to 10.39 (psychologists). As each session will vary in cost depending on the provider, these values directly affect total cost as well. For example, psychologists have a higher average number of sessions, and therefore total cost will also be higher. They may also be charging more per session, further inflating their total cost in comparison to the other providers.

Depression rated as severe without psychotic features (14.13%) had significantly lower dropout rates compared to mild (14.29%). This is likely because those with severe depression receive treatment at higher rates (Han et al., 2015). Medical doctors have the highest dropout rate (30.76%). This seems to fit with the nature of medical treatment, where they may only see a patient once to write a prescription and then that patient may not return for follow up appointments. Thus, the measure of dropout may not be accurately capturing the unique structure of medical providers compared to those who exclusively do psychotherapy. Interestingly, psychologists had the lowest dropout rate (12.66%), while the others were in the middle with no significant differences. So, although psychologists have more sessions and higher cost, they may be better than other providers at retaining clients.

Comparing severity for BD reveals a split. For cost and number of session, both forms of severe ratings are different from mild and moderate. Severe with psychotic features had an average cost of $586.71 and average session number of 11.46, compared to mild at $473.46 for cost and 9.35 for session number. Psychologists again had the higher rates of cost ($664.82) and number of session (11.91). All other providers were statistically not significantly different from each other, except MDs had significantly lower number of session than the others (6.66). The only significant difference for dropout was MDs had higher rates as with MDD (38.52%). Given the nature of medical care, it is possible that these results are showing the medication bias that medical doctors may be turning to in treating MDD (Paris, 2014), where after receiving a prescription patients may not feel the need to return for more sessions.

Results seem to indicate that all the professions can provide psychotherapy treatment for MDD and BD in an affordable way and with few sessions (Crane & Payne, 2011). The idea that one profession over another is more affordable at providing treatment for MDD and BD is not

supported from these results. This means that when patients and insurance companies consider what providers to visit or cover for treatment, there is no need to exclude certain types because of cost concerns.

The comparison between modalities is much more straightforward. Family therapy is significantly cheaper and requires significantly fewer sessions than both individual and mixed modalities. Mixed therapy had the highest cost and total sessions. The range for total cost for MDD was $250.82 for family therapy to $752.29 for mixed therapy. Average sessions have a similar disparity ranging from 5.09 for family therapy to 15.32 for mixed therapy sessions. For BD, cost ranged from $292.79 to $848.25, and sessions from 5.49 to 17.14. These larger ranges for modality suggests a much stronger association with modality type and outcomes than when comparing provider types. This is compatible with other literature that explains why the "multiplier effect" of family therapy leads to reduced cost by treating multiple family members at once and preventing the need for care outside of the now functioning family unit (Fals-Stewart et al., 2005).

Only on the measure of dropout does family therapy have higher rates at 24.94% for MDD and 29.50% for BD. This could be because having more than one person to schedule with can make it harder to continue, or it can be challenging for multiple people to form an alliance with the same therapist, which is an important factor that reduces dropout (Bischoff & Sprenkle, 1993). Individual therapy had better dropout rates than family (15.52% for MDD and 15.34% for BD). Mixed therapy cannot be evaluated on dropout rate in the same way since the definition of mixed therapy requires one individual session and one family session, whereas dropout is defined as not returning after one session only.

As cost to treat has been cited as a barrier to seeking treatment (Han et al., 2015), these results indicate that family therapy is a low-cost option when treating MDD and BD, regardless of the severity. This is similar to results in other studies for different disorders (Crane & Payne, 2011). This study adds to the literature on family therapy and further confirms the superior affordability of this modality over other options.

Clinical Implications

Psychotherapy clinicians generally rely on an influx of patients to maintain their professions. They frequently must balance offering low enough fees to attract patients while still maintaining an income to support themselves and their business or employer. While psychotherapy is still a growing field, there may be misconceptions as to which kinds of providers are able to effectively and affordably treat MDD and BD. The results of this study show that most of the major provider types can treat all severities of these disorders. There were very few differences in cost, session number, and dropout when comparing provider types. This means that some clinicians, such as MFTs, who are less often thought of as treating severe mental conditions like MDD and BD, can also provide low-cost and effective treatment for severe disorders.

Clinicians who provide family therapy may particularly find this study helpful in supporting the systemic approach to treatment. Not only can family therapy more effectively treat MDD and BD (Carr, 2014a, 2014b; Crane et. al., 2013; Pinsof & Wynne, 1995; Shadish et al., 1995; Stratton, et al., 2015), but it can also provide that treatment as a lowest cost option and for the fewest sessions of all the modalities.

Limitations

This study adds support to the literature on cost outcomes. However, there are some limitations to this study. The data used in this analysis is retrospective in nature. While it allows for real world comparison, patients were not randomly assigned and therefore we were limited in what we could controls we could use. The low rates of explained variance in this study indicate that there are many other factors influencing cost, dropout, and number of treatment sessions. It is unknown what therapy theories or methods providers used which could be affecting outcomes, as some models are designed to be brief or allow for better alliance with the therapist.

There are many limitations to the way dropout was measured. There are no reasons given about dropout rates, and therefore evaluating high dropout rates as negative may not be completely accurate. This is a particular limitation for medical doctors, who are more likely to have patients attend one session to receive medication prescriptions and then who may not return for more care. Our data doesn't allow us to know if patients were satisfied with these shorter episodes of care or not.

We also do not know the client's satisfaction with treatment or outcomes in reduction in symptoms. While lower cost and session number seem like positive results, if patients do not get better in their experience with MDD or BD it may not be effective treatment. The higher cost and session number associated with psychologists could be explained by these other kinds of factors not analyzed in this study. We were not able to measure how much each provider charges per hour, a value that may greatly explain some of the variance. Conversely the low session numbers but high dropout rates for medical doctors are likely due to factors we are not able to gather from the data available.

In regards to family or mixed therapy, information is not provided on which members of the family attended therapy sessions with the identified patient. It is possible that there are differences between marital versus family therapy but both types were included in the family therapy code. While many people who are experiencing MDD or BD concurrently take medications, there is not information in this data set on medication usage. While research shows that psychotherapy can be more effective than medication (Miller et al., 2008), we do not know what impact medication use may have had on symptom improvement, and thus reducing the need for continued treatment. This could affect cost, session number, and even dropout rates.

Future Research

Cost is an important outcome that affects insurance companies and patients. However, future studies could look at follow up outcomes to see if reduced cost holds true in the long term. Some studies indicate that spending more at the onset leads to lower cost in the long term for certain methods of treatment (Miklowitz & Scott, 2009).

Future research could focus on finding out what other factors affect the measures of cost, session number and dropout rates. Analysis including information on what methods and models are used by providers could be beneficial. While there has been disagreement in the literature on how to measure dropout (Allgood & Crane, 1991; Johansson & Eklund, 2006; Werner-Wilson & Winter, 2010; Wierzbicki & Pekarik, 1993), further study can continue to refine definitions to account for the many facets of this variable.

Outcome researchers could include measures of cost, session number and dropout to combine the effects these two important aspects have on each other. Continuing the comparison between provider types and modalities would add clarity to this topic. It may also be useful to look at marital therapy as a separate modality. Also, when studying disorders like MDD and BD

that often are simultaneously treated with psychotherapy and mediation, it could improve the results to measure medication use along with psychotherapy treatment.

Future research could look into answering why family therapy is more affordable. Research could examine whether family therapy does well on other outcomes, such as measurements of MDD or BD improvement in symptom severity and diagnosis. A qualitative approach to the study of dropout and return to care could explain reasons for these rates by modality and provider type.

Conclusions

This study sought to compare MDD and BD cost outcomes by severity. Cost and session numbers were different based on severity for MDD and only for severe levels in BD. Dropout was only different for severe disorders without psychotic features. The differences between providers on the measured outcomes showed some significant differences, but many were within a close range to each other. PSYs were higher on cost and session number, and MDs were lower on cost and session number, but higher on dropout. Results showed that MFTs are able to provide psychotherapy treatment for all severity levels of MDD and BD with low cost, session number, and dropout rate. Family therapy modality had the best results on almost all measures. This provides reason for patients, providers, and insurance companies to consider MFTs and family therapy when treating MDD or BD.

References

American Medical Association. (2006). *Current procedural terminology*. Chicago, IL: American Medical Association.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Beach, S.R.H. & Whisman, M.A. (2012). Affective disorders. *Journal of Marital and Family Therapy, 38*(1), 201-219. doi: 10.1111/j.1752-0606.2011.00243.x

Bischoff, R. J., & Sprenkle, D. H. (1993). Dropping out of marriage and family therapy: A critical review of research. *Family Process*, *32*(3), 353–375. http://doi.org/10.1111/j.1545-5300.1993.00353

Carr, A. (2014a). The evidence base for couple therapy, family therapy and systemic interventions for adult-focused problems. *Journal of Family Therapy*, *36*(2), 158–194. http://doi.org/10.1111/1467-6427.12033

Carr, A. (2014b). The evidence base for family therapy and systemic interventions for child-focused problems. *Journal of Family Therapy*, *36*(2), 107–157. http://doi.org/10.1111/1467-6427.12032

Cheung A.H. & Dewa, C.S. (2007). Mental health service use among adolescents and young adults with major depressive disorder and suicidality. *Canadian Journal of Psychiatry, 52*(4), 228-232.

Chiles, J. A., Lambert, M. J., & Hatch, A. L. (1999). The impact of psychological interventions on medical cost offset: A meta-analytic review. *Clinical Psychology: Science and Practice*, *6*(2), 204–220. http://doi.org/10.1093/clipsy.6.2.204

Crane, D. R., & Christenson, J. (2014). A summary report of cost-effectiveness: Recognizing the value of family therapy in health care. In J. Hodgson, A. Lamson, T. Mendenhall, D. R. Crane, J. Hodgson, A. Lamson, … D. R. Crane (Eds.), *Medical family therapy: Advanced applications.* (pp. 419–436). Cham, Switzerland: Springer International Publishing. doi: 10.1007/978-3-319-03482-9_22

Crane, D.R., Christenson, J.D., Dobbs, S.M., Schaalje, B., Moore, A.M., Pedal, F.F.C., . . . & Marshall, E.S. (2013). Costs of treating depression with individual versus family therapy. *Journal of Marital and Family Therapy, 39*(4), 457-469. doi: 10.1111/j.1752-0606.2012.00326.x

Crane, D. R., & Payne, S. H. (2011). Individual versus family psychotherapy in managed care: Comparing the costs of treatment by the mental health professions. *Journal of Marital and Family Therapy 37*(3), 273-289. doi: 10.1111/j.1752-0606.2009.00170.x

Crane, D. R., Shaw, A. L., Christenson, J. D., Larson, J. H., Harper, J. M., & Feinauer, L. L. (2010). Comparison of the family therapy educational and experience requirements for licensure or certification in six mental health disciplines. *American Journal of Family Therapy, 38*(5), 357–373. http://doi.org/10.1080/01926187.2010.513895

Crane, D. R., Wood, N. D., Law, D. D., & Schaalje, B. (2004). The relationship between therapist characteristics and decreased medical utilization: An exploratory study. *Contemporary Family Therapy: An International Journal*, *26*(1), 61–69. http://doi.org/10.1023/B:COFT.0000016912.25239.52

Fals-Stewart, W., Yates, B. T., & Klostermann, K. (2005). Assessing the costs, benefits, cost-benefit ratio, and cost-effectiveness of marital and family treatments: Why we should and how we can. *Journal of Family Psychology*, *19*(1), 28–39. http://doi.org/10.1037/0893-3200.19.1.28

Fristad, M.A., & MacPherson, H.A. (2014). Evidence-based psychosocial treatments for child and adolescent bipolar spectrum disorders. *Journal of Clinical Child & Adolescent Psychology, 43*(3), 339-355. DOI: 10.1080/15374416.2013.822309

Gartlehner, G., Gaynes, B.N., Amick, H.R., Asher, G.N., Morgan, L.C., Coker-Schwimmer, E. . . & Lohr, K.N. (2016). Comparative benefits and harms of antidepressants, psychological, complementary, and exercise treatments for major depression: An evidence report for a clinical practice guideline from the American College of Physicians. *Annals of Internal Medicine, 164*(5), 331-341. doi: 10.7326/M 15-1813

Guan, B., Deng, Y., Cohen, P., & Chen, H. (2011). Relative impact of Axis I mental disorders on quality of life among adults in the community. *Journal of Affective Disorders*, *131*(1–3), 293–298. http://doi.org/10.1016/j.jad.2011.01.010

Han, B., Hedden, S. L., Lipari, R., Copello, E. A. P., & Kroutil, L. A. (2015). *Receipt of services for behavioral health problems: Results from the 2014 national survey on drug use and health*. Retrieved from http://www.samhsa.gov/data/sites/default/files/NSDUH-DR-FRR3-2014/NSDUH-DR-FRR3-2014/NSDUH-DR-FRR3-2014.htm

Hartley, D., Ziller, E. C., Lambert, D., Loux, S. L., & Bird, D. C. (2002). *State licensure laws and the mental health professions: Implications for the rural mental health workforce.* Portland, ME: Univ. of Southern Maine, Edmund S. Muskie School of Public Service, Maine Rural Health Research Center.

Johansson, H., & Eklund, M. (2006). Helping alliance and early dropout from psychiatric out-patient care. *Social Psychiatry & Psychiatric Epidemiology*, *41*(2), 140–147. http://doi.org/10.1007/s00127-005-0009-z

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the national comorbidity survey replication. *Archives of General Psychiatry*, 62(6), 593–602. http://doi.org/10.1001/archpsyc.62.6.593

Kuramoto-Crawford, S.J., Han, B., Jacobus-Kantor, L., & Mojtabai, R. (2015). Differences in patients' perceived helpfulness of depression treatment provided by general medical providers and specialty mental health providers. *General Hospital Psychiatry, 37*(4), 340-346. DOI: http://dx.doi.org/10.1016/j.genhosppsych.2015.04.006

Langlieb, A. M., & Kahn, J. P. (2005). How much does quality mental health care profit employers? *Journal of Occupational and Environmental Medicine*, *47*(11), 1099–1109. http://doi.org/10.1097/01.jom.0000177124.60460.25

Law, D. D., & Crane, D. R. (2000). The influence of marital and family therapy on health care utilization in a health-maintenance organization. *Journal of Marital & Family Therapy*, *26*(3), 281–291. http://doi.org/10.1111/j.1752-0606.2000.tb00298.x

Law, D. D., Crane, D. R., & Berge, J. M. (2003). The influence of individual, marital, and family therapy on high utilizers of health care. *Journal of Marital & Family Therapy*, *29*(3), 353–363. http://doi.org/10.1111/j.1752-0606.2003.tb01212.x

Lazar, S. G. (2014). The cost-effectiveness of psychotherapy for the major psychiatric diagnoses. *Psychodynamic Psychiatry*, *42*(3), 423–457. http://doi.org/10.1521/pdps.2014.42.3.423

Lejeune, S.M.W. (2011). Special considerations in the treatment of college students with bipolar disorder. *Journal of American College Health, 59*(7), 666-669.

McCusker, J., Cole, M., Ciampi, A., Latimer, E., Windholz, S., & Belzile, E. (2007). Major depression in older medical inpatients predicts poor physical and mental health status over 12 months. *General Hospital Psychiatry, 29*(4), 340-348. http://dx.doi.org/10.1016/j.genhosppsych.2007.03.007

Miklowitz, D.J. & Scott J. (2009). Psychosocial treatments for bipolar disorder: Cost-effectiveness, mediating mechanisms and future directions. *Bipolar Disorder,11*(2), 110-122.

Miller, I.W., Keitner, G.I., Ryan, C.E., Uebelacker, L.A., Johnson, S.L., & Solomon, D.A. (2008). Family treatment for bipolar disorder: Family impairment by treatment interactions. *Journal of Clinical Psychiatry, 69* (5), 732-740.

Moore, A. M., Hamilton, S., Crane, D. R., & Fawcett, D. (2011). The influence of professional license type on the outcome of family therapy. *American Journal of Family Therapy*, *39*(2), 149–161. http://doi.org/10.1080/01926187.2010.530186

National Institute of Mental Health. (2013). *Statistics*. Retrieved from http://www.nimh.nih.gov/health/statistics/index.shtml

Parikh, S.V., Hawke, L.D., Velyvis, V., Zaretsky, A., Beaulieu, S., Patelis-Siotis, I. . . Cervantes, P. (2015). Combined treatment impact of optimal psychotherapy and medication in bipolar disorder. *Bipolar Disorder, 17*, 86-96. doi: 10.1111/bdi.12233

Paris, J. (2014). The mistreatment of major depressive disorder. *Canadian Journal of Psychiatry, 59*(3). 148-151.

Perala, J., Suvisaari, J., Saarni, S.I., Kuoppasalmi, K., Isometsa, E., Pirkola, S. . . Lonnqvist, J. (2007). Lifetime prevalence of psychotic and bipolar I disorder in the general population. *Archives of General Psychology, 64*, 19-28.

Pinsof, W. M., & Wynne, L. C. (1995). The effectiveness and efficacy of marital and family therapy: Introduction to the special issue. *Journal of Marital & Family Therapy*, *21*, 341–343. http://doi.org/10.1111/j.1752-0606.1995.tb00169.x

Rubio-Valera, M., Beneitez, I., Penarrubia-Maria, M.T., Luciano, J.V., Mendive, J.M., McCrone, P.. . . Serrano-Bianco, A. (2015). Cost-effectiveness for active monitoring versus antidepressants for major depression in primary health care: A 12-month non-randomized controlled trial (INFAP study). *BMC Psychiatry, 15*(63), 1-9. doi: 10.1186/s12888-015-0448-3

Sava, F., Yates, B., Lupu, V., Szentagotai, A., & David, D. (2009). Cost-effectiveness and cost-utility of cognitive therapy, rational emotive behavior therapy and fluoxetine (Prozac) in treating depression: A randomized clinical trial. *Journal of Clinical Psychology, 65*(1), 36-52. doi: 10.1002/jclp.20550

Shadish, W. R. J., Ragsdale, K., & Glaser, R. R. (1995). The efficacy and effectiveness of marital and family therapy: A perspective from meta-analysis. *Journal of Marital & Family Therapy*, *21*, 345–360. http://doi.org/10.1111/j.1752-0606.1995.tb00170.x

Stratton, P., Silver, E., Nascimento, N., McDonnell, L., Powell, G. & Nowotny, E. (2015). Couple and family therapy outcomes research in the previous decade: What does the evidence tell us? *Contemporary Family Therapy, 37*, 1-12. doi: 10.1007/s10591-014-9314-6

Swift, J. K., & Greenberg, R. P. (2014). A treatment by disorder meta-analysis of dropout from psychotherapy. *Journal of Psychotherapy Integration*, *24*(3), 193–207. http://doi.org/10.1037/a0037512

Weitkamp, K., Daniels, J.K., Hofmann, H., Timmermann, H., Romer, G., & Wiegand-Grefe, S. (2014). Psychoanalytic psychotherapy for children and adolescents depression. *Psychotherapy, 51*(1), 138-147. doi:10.1037/a0034178

West, A.E., Weinstein, S.M., Peters, A.T., Katz, A.C., Henry, D.B., Cruz, R.A., & Pavuluri, M.N. (2014). Child- and family-focused cognitive-behavioral therapy for pediatric bipolar disorder: A randomized clinical trial. *Journal of the American Academy of Child and Adolescent Psychiatry, 53*(11), 1168-1178. doi: 10.1016/j.jaac.2014.08.013

Zarate Jr., C. A., Tohen, M., Land, M., & Cavanagh, S. (2000). Functional impairment and cognition in bipolar disorder. *Psychiatric Quarterly*, *71*(4), 309–329. http://doi.org/10.1023/A:1004632206684

Zu, S., Xiang, Y., Liu, J., Zhang, L., Wang, G., Ma, X., . . Li, Z. (2014). A comparison of cognitive-behavioral therapy, antidepressants, their combination and standard treatment for Chinese patients with moderate-severe major depressive disorders. *Journal of Affective Disorders, 152*, 262-267. http://dx.doi.org/10.1016/j.jad.2013.09.022

Table 1

Descriptive Statistics [Mean (SD)] by Modality, Profession and Severity for MDD

	Avg Sessions	Avg Cost	Dropout
Indiv. (N=103,301)	9.01 (12.29)[b]	$457.56 ($715.27)[b]	15.52%[a]
Family (N=7,886)	5.09 (6.58)	$250.82 (350.29)	24.94%
Mixed (N=17,501)	15.32 (15.50)[b]	$752.29 ($846.77)[b]	N/A
MDs (N=2,799)	6.38 (10.07)[a]	$423.58 (668.69)	30.76%[b]
RNs (N=1,275)	8.65 (11.34)[a]	$465.86 ($641.54)	15.68%
PSYs (N=34,727)	10.39 (13.47)[b]	$579.34 ($804.57)[b]	12.66%[a]
LPCs (N=24,698)	8.53 (11.22)	$389.03 (581.52)	14.79%
MSWs (N=45,664)	9.64 (12.66)[b]	$444.65 ($648.60)	13.69%
MFTs (N=11,383)	9.47 (12.34)	$451.72 ($643.45)	13.95%
Mild (N=13,395)	9.00 (11.81)	$454.50 ($660.94)	14.29%
Moderate (N=71,560)	9.48 (12.43)[b]	$477.30 ($716.82)[b]	13.87%
Severe (N=40,969)	10.03 (13.52)[b]	$506.32 ($762.68)[b]	14.19%[a]
Severe w/(N=2,764)	10.22 (13.18)[b]	$514.84 ($769.89)[b]	15.30%
Total (N = 128,688)	**9.63 (12.75)**	**$484.98 ($727.59)**	**14.04%**

[a] indicates a value significantly lower than the control groups (Family therapy, MFT and mild)

[b] indicates a value significantly higher than the control groups (Family therapy, MFT and mild)

Table 2

Descriptive Statistics [Mean (SD)] by Modality, Profession and Severity for BD

	Avg Sessions	Avg Cost	Dropout
Indiv. (N=6.061)	9.76 (13.44)[b]	$497.57 ($779.03)[b]	15.34%[a]
Family (N=529)	5.49 (9.64)	$292.79 ($545.50)	29.50%
Mixed (N=1.161)	17.14 (18.88)[b]	$848.25 ($1099.38)[b]	N/A
MDs (N=405)	6.66 (12.13)[a]	$399.80 ($663.32)	38.52%[b]
RNs (N=60)	9.02 (12.40)	$451.90 (637.11)	16.67%
PSYs (N=1,913)	11.91 (16.22)[b]	$664.82 ($996.42)[b]	11.76%[a]
LPCs (N=1,610)	9.18 (11.00)	$428.42 (590.13)	13.60%
MSWs (N=2,667)	11.01 (15.05)	$510.35 ($743.63)	12.60%
MFTs (N=531)	10.03 (13.62)	$481.22 ($786.33)	12.99%
Mild (N=695)	9.35 (11.45)	$473.46 (640.72)	16.12%
Moderate (N=3,532)	10.29 (13.89)	$517.11 ($764.03)	14.69%
Severe (N=2,457)	10.94 (14.99)[b]	$559.20 ($875.19)[b]	12.54%[a]
Severe w/ (N=1,067)	11.46 (16.75)[b]	$586.71 (1,040.91)[b]	14.15%
Total (N=7,751)	**10.57 (14.48)**	**$542.29 ($850.43)**	**14.06%**

[a] indicates a value significantly lower than the control groups (Family therapy, MFT, mild)

[b] indicates a value significantly higher than the control groups (Family therapy, MFT, mild)

Table 3

Regression results for MDD, unstandardized coefficients with standard errors in parentheses

	(1) cost	(2) Sessions	(3) dropout
DP-Moderate	30.85***	0.58***	-0.05
	(6.53)	(0.12)	(0.03)
DP-Severe w/out	67.53***	1.28***	-0.07*
	(6.91)	(0.13)	(0.03)
DP-Severe w/Psych.	79.59***	1.55***	-0.03
	(14.54)	(0.26)	(0.06)
LPC	-3.70	-0.12	-0.06
	(8.07)	(0.15)	(0.04)
MD	-1.69	-2.58***	0.89***
	(14.46)	(0.26)	(0.05)
RN	22.72	-0.92*	0.13
	(20.03)	(0.36)	(0.08)
MSW	10.32	0.33*	-0.06
	(7.47)	(0.14)	(0.03)
PSY	144.44***	1.13***	-0.17***
	(7.53)	(0.14)	(0.03)
IT	132.15***	2.87***	-0.46***
	(8.14)	(0.15)	(0.03)
MT	455.41***	9.55***	-4.22***
	(9.38)	(0.17)	(0.12)
Constant	91.69***	1.45***	-0.81***
	(13.71)	(0.25)	(0.06)
Observations	120330	120329	120330

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4

Regressions results for BD, unstandardized coefficients with standard errors in parentheses

	(1) cost	(2) Sessions	(3) dropout
BP-Moderate	37.03	0.83	-0.13
	(33.04)	(0.60)	(0.12)
BP-Severe w/out	78.67*	1.53*	-0.36**
	(34.22)	(0.62)	(0.13)
BP-Severe w/Psych.	92.24*	1.93**	-0.25
	(38.96)	(0.70)	(0.15)
LPC	6.01	0.10	0.00
	(39.93)	(0.72)	(0.16)
MD	-32.61	-2.07*	1.31***
	(52.97)	(0.96)	(0.18)
RN	13.87	-0.24	0.26
	(105.20)	(1.90)	(0.38)
MSW	42.91	1.29	-0.01
	(38.01)	(0.69)	(0.15)
PSY	202.58***	2.25**	-0.11
	(38.57)	(0.70)	(0.15)
IT	111.17**	2.49***	-0.51***
	(37.14)	(0.67)	(0.11)
MT	483.32***	10.36***	-4.43***
	(42.51)	(0.77)	(0.51)
Constant	48.34	0.09	-0.89***
	(65.54)	(1.18)	(0.24)
Observations	7180	7180	7180

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$