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The Effectiveness of Behavioral Therapy versus Medicines When Treating Trichotillomania

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Abstract

Trichotillomania (TTM), or obsessive hair pulling with noticeable hair loss, is a psychological disorder that impairs psychosocial functioning and most sufferers experience higher levels of anxiety, depression, and report having a low quality of life and self-esteem. The purpose of this review is to analyze the effectiveness of Pharmaceuticals compared to Behavioral Therapies for treating Trichotillomania. Research suggests that both Pharmaceuticals and Behavioral Therapies work at reducing symptoms associated with the disorder, but forms of Behavioral Therapy (Dialectical Behavioral Therapy, Cognitive Behavioral Therapy, Acceptance and Commitment Therapy and Habit Reversal Training) appear to be more effective when compared to drugs. However, more research needs to be done to find out the effectiveness in the long-term because TTM is a disorder where relapsing is common.

Keywords: Trichotillomania, hair pulling, behavioral therapies, pharmaceuticals

Introduction

Trichotillomania (TTM), or obsessive hair pulling with noticeable hair loss, is one of the most underrepresented and misunderstood disorders (Woods, Flessner, Franklin, Keuthen, Goodwin, Stein, Walther, & Trichotillomania Learning Center-Scientific Advisory Board, 2006). It can occur in any region of the body that has hair and the majority of the time it presents itself in response to stressful situations. Most who are diagnosed with trichotillomania report feeling distressed prior to pulling and feeling a sense of relief while pulling; however, Tolin, Franklin, Diefenbach, Anderson, and Meunier (2007) report how some patients with this disorder do not have these symptoms and pull their

hair automatically without thinking. This makes it hard to diagnose because the criteria for diagnosis in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) states that patients experience feelings of distress prior to pulling and relief during (p. 129). In the past, the DSM has labeled trichotillomania as an Impulse Control Disorder (ICD), but recently the DSMV has classified it as a Body-Focused Repetitive Behavior Disorder (BFRB). Although the classification of trichotillomania has changed in the DSMV, the reclassification still does not provide any insight for how to effectively treat the symptoms associated with this disorder.

Some of the symptoms of TTM are impaired psychosocial functioning and most sufferers experience higher levels of anxiety, depression, and report having a lower quality of life and self-esteem compared to patients without TTM (Diefenbach, Tolin, Hannan, Crocetto, & Worhunsky, 2005). Diefenbach et al. (2005) also note that patients with TTM exhibit similar levels of depression and anxiety as seen in patients diagnosed with mood disorders (p. 875). In addition to psychological consequences, Woods et al. (2006) report that:

> TTM can produce a variety of physical consequences, including hair loss, scalp irritation, follicle damage, structural changes in regrown hair, dental problems (from hair mouthing), and carpal tunnel syndrome. Those who ingest the hair are susceptible to trichobezoars. Although rare, these blockages may lead to vomiting, weight loss, and possibly death (p. 1878).

In addition to the medical conditions TTM can have, Woods, et al. (2006) discuss how TTM symptoms interfere with sufferers' social lives, their occupational and academic performance, and their self-esteem (p. 1882-3). Sufferers with severe TTM symptoms report feeling that their depression and anxiety is directly attributed to their disorder (p. 1884). Because of the harsh symptoms associated with this disorder it is important to find an effective treatment for TTM, but TTM is a disorder that is not easily treated.

It is difficult to successfully treat TTM because many with the disorder are unlikely to seek treatment because of embarrassment and the desire to conceal their disorder (Woods et al. 2006). Not only is TTM hard to treat, Tolin et al. (2007) discuss how there has not been much research on effective treatments for TTM and how the prevalence of the disorder is unknown (p. 130). According to Dia (2008), not only is TTM largely underrepresented; many health care providers do not have the resources or the referral information for patients who suffer from the disorder (p. 155). Additionally, De (2008) discusses how to date the Food and Drug Administration (FDA) has not approved a specific drug to help treat symptoms of TTM (p. 31). Because there are no known effective treatments for this disorder, researchers have been studying the effectiveness of different drugs along with forms of behavioral therapy.

Research suggests that both

pharmaceuticals and behavioral therapies work at reducing the symptoms associated with TTM, but that behavioral therapies are more efficacious for treating the disorder (Tolin et al. 2007, p. 130) Michael (2004) discusses how using behavioral, biological, and cognitive approaches and analyzing the context for which the disorder exists is the best way to treat TTM (p. 172). Although there is a general consensus of the effectiveness of behavioral therapies in comparison to pharmaceuticals for the treatment of TTM, there is limited amounts of literature directly comparing the two treatments; and the literature that do compare the two lack a control group, do not have a large enough sample size to base their claims and do not provide long-term follow-up results. This paper analyzes the strengths and weaknesses of research on the effectiveness of behavioral therapies compared to pharmaceuticals for the treatment of TTM. Behavioral therapies had more success in treating the disorder, but more research needs to be done to assess the long-term effectiveness because TTM is a disorder where relapsing is very common.

Behavioral Therapy compared to Pharmaceuticals for Treating TTM

Behavioral Therapy and Fluoxetine Hydrochloride

Behavioral therapies and pharmaceuticals have had contradictory results in past literature. In a study conducted by Van, Hoogduin, Keijsers, Hellenbrand, and Hendriks (2003), the authors examined the effectiveness of Behavioral Therapy (BT) and fluoxetine hydrochloride, a Selective-Serotonin Reuptake Inhibitor (SSRI), in comparison to a waiting-list (WL) control group for treating TTM. The sample consisted of 40 participants (14 were assigned to behavioral therapy, 11 were assigned to Fluoxetine Hydrochloride, and 15 were in the control group) (p. 518). The results were that BT was most effective when treating TTM compared to the drug and WL control group in the short term (p. 520). Although Van et al. directly compared BT to a drug and included a control group in their study; there are still a number of limitations within the literature. Some of these limitations are that Van et al. did not include long-term follow-up results to assess treatment gains and did not have a large enough sample size to accurately make generalizations about the population. Future research should analyze the long-term effectiveness of behavioral therapy within a large sample.

Behavioral Therapy and Selective-Serotonin Reuptake Inhibitors (SSRIs)

Pharmaceuticals have not been promising for treating TTM and BT has also yielded sparse results. In a study conducted by McGuire, Ung, Selles, Rahman, Lewin, Murphy & Storch (2014), researchers conducted a meta-analysis of treatment effects for behavioral therapy and SSRIs for treating TTM. McGuire et al. selected 7 BT and 6 SSRI trials to compare for treating TTM (p. 78). The results were that SSRIs had

a moderate treatment effect on TTM when compared to a control group, and that BT was significantly more effective compared to control conditions (p. 78). Although the study suggests that BT is most effective compared to both a pharmaceutical and a control group; the study still has several limitations within the research. Among the limitations are that the study was not long enough to assess the long-term effects of BT for treating TTM. In addition, the study contained a small sample size and did not directly compare BT with a pharmaceutical and a control group within one study. The study compared literature on treatment with SSRIs that had a control group to literature on BT with a control group. In order to accurately assess which treatment is most effective, it is necessary that all treatments be compared at the same time and that the duration of the experiment is long enough to determine its effectiveness in the future.

Pharmaceuticals for Treating TTM

Haloperidol: a Neuroleptic

Pharmaceuticals have yielded sparse results for treatment efficacy of TTM in past literature. In a study conducted by Van, Manicini, Oakman, and Farvolden (1999), the authors assessed the effectiveness of haloperidol; which is a neuroleptic drug used to treat Gilles de la Tourette's Syndrome (TS). The study contained 9 patients diagnosed with TTM; 6 received haloperidol in conjunction with SSRI medications they were already taking and 3 only took haloperidol (p. 222). The results of the study were that 8 out of the 9 patients experienced some reduction of symptoms and 7 patients had complete or near complete cessation of hair-pulling (p. 222). Although these findings show that haloperidol is effective for treating TTM in the short term and the literature suggest using haloperidol in conjunction with SSRIs to increase effectiveness of SSRIs, it is important to consider the limitations within the study. The research lacked a control group to compare the effectiveness of the drug and the sample was far too small to accurately make generalizations. It is also important for future research to compare all possible therapies for TTM to be able to find one that yields sufficient results. Also, because TTM is a disorder with a high prevalence of relapse, it is important that future research include long-term follow-up results to show whether the drug is effective for treating the disorder in the long-term.

Pimozide: a Neuroleptic

Pharmaceuticals have not significantly treated TTM in past literature. In a study by Stein and Hollander (1992), the researchers used Pimozide, which is also a drug commonly used to treat TS. The study included 7 patients (6 female and 1 male) diagnosed with TTM. The patients first received SSRIs and if they showed no symptom improvement they were given a low-dose of Pimozide in conjunction with an SSRI to increase efficacy (p. 124). The results were that 4 out of 7 patients had a moderate to severe improvement

in symptoms while taking both the SSRI and the neuroleptic and 6 out of 7 had a minimal response to treatment with SSRIs alone; however, 3 of those patients relapsed and 1 patient did not respond to either of the drugs (p. 124-5). While this study provides insight to the effectiveness of using SSRIs in conjunction with neuroleptics for treating TTM, it is important to note the limitations of the study. The study lacked a control group and the sample was too small to be able to make generalizations about the efficacy of the drug. Also, in order to be able to accurately find a treatment that is effective, it is important to compare all treatments in one study. More research needs to be done on the effectiveness of pharmaceuticals compared to behavioral therapies with a control group. In addition, it is important to include follow-up results to be able to determine if the treatment is efficacious in the future.

Comparison between Clomipramine and Desipramine

SSRIs have not been effective for treating TTM in past research. In a study conducted by Swedo, Leonard, Rapoport, Lenane, Goldberger, and Cheslow (1989), researchers examined the effectiveness of two SSRIs to treat13 females with severe symptoms of TTM. Participants were initially put into a single-blind placebo phase and then randomly given either Clomipramine or Desipramine for a period of 5 weeks and then they were given the other drug for the last 5 weeks of the study (p. 497). The results were that Clomipramine was more effective than Desipramine for treating TTM symptoms (p. 497). This finding is useful for future research aimed at improving efficacy of pharmaceuticals for the disorder. Although it is useful to know which SSRI is most effective for treatment; like all studies, there were limitations within the research. Not only did the study have a small sample size, it also did not have a control group to generalize their results. It is vital that future literature examine the effectiveness of pharmaceuticals to behavioral therapies. It is not enough to say that one treatment is superior to another because in order to find an effective treatment one must compare all possible treatments. It is important for literature to compare the effectiveness of Clomipramine to behavioral therapies and include a control group. Additionally, because the prevalence of TTM symptoms fluctuates, more research is needed to determine the effectiveness of the drug in the future.

Citalopram: an SSRI

Pharmaceuticals have not been successful at treating TTM in past literature. In a study by Stein, Bouwer and Maud (1997), the researchers examined the efficacy of the SSRI Citalopram for the treatment of TTM. The study included 14 individuals (13 females and 1 male) with TTM; however, one person dropped out of the study which left 13 completers (p. 234). After 12 weeks of treatment, 5 patients were rated as much improved, 4 as minimally improved, and 4 had no change (p. 235). These results are consistent with past research which

suggests the use of SSRIs do not have a significant effect on TTM symptoms. Although the drug helped in a portion of the sample, it is important to discuss the limitations within the study. Among the limitations are that the literature did not have a large enough sample size to generalize their findings and did not compare the effectiveness of pharmaceuticals with behavioral therapies with a control group. In order to find the best treatment for the disorder it is necessary to compare all forms of treatment in one study to accurately find a reliable treatment. Also, because relapse is common in TTM, it is necessary for future literature to examine the effectiveness of pharmaceuticals in the long-term.

N-Acetylcysteine: a Glutamate Modulator

Pharmaceuticals have not provided sufficient results for treating TTM. In a study conducted by Bloch, Panza, Grant, Pittenger, and Leckman (2013), the authors examined the effectiveness of N-Acetylcysteine compared to a placebo for the treatment of TTM. The drug is an amino acid normally used to treat compulsive behavior. The study consisted of 39 children and adolescents with TTM (p. 231). The results were that all children experienced a moderate clinical improvement, but the drug failed to be more effective than the placebo (p. 234). In the treatment group, 25% were classified as responders, whereas in the placebo group 21% were classified as responders (p. 235). This suggests that the drug is ineffective for treating TTM; however, it is still important to discuss the limitations present in the study. Some of the limitations were that although the study contained a control group, the sample size was far too small to generalize the results. Also, the literature did not compare the drug to behavioral therapy and it did not examine the long-term efficacy of the drug. It is important for future literature to compare the drug to behavioral therapies and include a control group, because when finding an effective treatment for a disorder it is vital to compare all possible treatments in one study to be able to find one that works. It is also important that future literature increase their sample sizes and to increase the duration of treatment to assess the long-term effectiveness of the treatment.

Contrary to these results, in a study by Grant, Odlaug, and Kim (2009), researchers examined the effectiveness of N-Acetylcysteine compared to a control group for the treatment of TTM in 50 patients (45 female, 5 male) (p. 757). The results were that the treatment group exhibited a significant improvement on the severity of symptoms compared to the control group. In the treatment group, 11 out of the 22 completers had a clinically significant change; whereas in the control group, 1 out of 22 completers experienced a clinically significant change (p. 761). Although these results suggest that N-Acetylcysteine was effective for a portion of the sample, it is important to note the limitations within the literature. Among these limitations is that the study had a total of 6 drop-outs (p. 759) and it did not have a large enough sample size to be able to base their claims. In

addition, although the study included a control group, it did not compare the drug to behavioral therapies. In order to find the best suitable treatment it is important to compare the different therapies in one study to accurately find one that works. Also, it is vital that future literature examine the effectiveness of the drug in the long-run because TTM is a disorder where relapsing is very common.

Naltrexone: an Opioid Antagonist

Drugs have not provided relief for TTM sufferers. In a study by De (2008), the author examined the efficacy of Naltrexone for treating childhood-onset TTM in 14 patients (9 girls and 5 boys) (p. 30). Naltrexone is an Opioid Antagonist, used to treat urge-related disorders, like kleptomania (compulsive stealing) (p. 31). After 10 months, 8 of the children showed improvement in TTM symptoms and 3 reported complete cessation of hair pulling. In total, 78.57% of patients responded to treatment (p. 32). This information is useful for future research because unlike past studies, it suggests that pharmaceuticals that suppress urges are most efficacious for treating TTM. Although research can benefit from the current findings; like all research, there are limitations. The following study lacked a control group and did not have a large enough sample to make generalizations of the efficacy of the drug. In addition to having a small sample size, the present study did not include long-term follow-up results. The frequency of relapse is very common among TTM patients, so it is suggested that future research include long-term results. In addition, because the literature suggests that Opioid Antagonists are effective for treating TTM, it is important that future research looking for effective pharmaceuticals to treat the disorder compare the drug to behavioral therapies and include a control group to see how it stands in comparison.

Numbing Cream for treating TTM

Because the effectiveness of pharmaceuticals has not been promising, Dia (2008) took a unique approach to improve symptoms of the disorder. In a case study of a girl named Carol with TTM, Dia used a combination of Cognitive Behavioral Therapy (CBT) and a numbing cream (lanacane) to treat her disorder. Dia chose a numbing cream because Carol described the sensation prior to pulling as an "itch" (p. 157). Carol was instructed to use the numbing cream only on her eyebrows and not on her eyelashes because Dia was not sure if it was safe to have near her eye (p. 157). The results were that CBT had moderate success in reducing hair pulling from both her eyelashes and eyebrows, but the use of the numbing cream resulted in complete cessation of hair pulling from her eyebrows. At 4 month follow-up, Carol reported rarely using the numbing cream because she was able to maintain treatment gains (p. 157). This suggests that using numbing cream may be effective for treating TTM in certain pulling sites, but not for eyelashes; however, it is important to note that this was a case study and although the treatment yielded promising results, it may not be effective for others. More research is needed to test the effects

of numbing cream with a larger sample size and see how it stands in comparison to behavioral therapies and a control group. In addition, it is necessary to test the long-term effects of the numbing cream for treating the disorder because even with treatment, many TTM patients relapse.

Behavioral Therapies for treating TTM

Cognitive Behavioral Therapy

Forms of behavioral therapies have yielded promising results for treating TTM. In a study conducted by Tolin, Franklin, Diefenbach, Anderson and Meunier (2007), researchers first examined the psychopathologies of 46 adults and children with TTM, and in the second study they chose 22 patients from the previous study to enroll in an open-trial of CBT (p. 129). Out of the 22 patients enrolled in CBT, only 14 completed treatment and the data were lost for 2 patients (p. 138). The results were that at the end of active treatment only 2 responders were classified as "excellent responders," and at the end of the relapse prevention phase the number increased to 7 "excellent responders" (p. 139). However, at both 3 and 6 month follow-ups the TTM symptoms of treatment responders returned, but those classified as "excellent responders," maintained their treatment gains at both follow-ups. This suggests that "the strength of initial treatment response may be an important predictor of maintenance of gains after treatment withdrawal" (p. 140). Although the literature provides insight for how to increase the effectiveness of therapies, it still falls prey to limitations. Among these limitations are that the literature did not include a control group and that it did not compare CBT to a pharmaceutical. It is vital to compare all possible treatments to find which works best for treating TTM. Also, the study had a high drop-rate and a very small sample size; it only had 14 completers and of the completers it had data for only 12 patients. In order to be able to generalize the results there needs to be a larger sample size. More research is needed to examine the effectiveness of CBT for treating TTM in comparison to a pharmaceutical with a control group and to include long-term follow-up results.

Behavioral Therapy with components of Habit Reversal Training

BT has been shown to effectively treat TTM in the short-term. In a case study by Michael (2004), the author used Behavioral Therapy with components of Habit Reversal Training (HRT) to treat the TTM of a girl named Lisa. Lisa took pictures of her scalp during the baseline phase of treatment so that throughout the course of treatment she could use the photos both as positive and negative reinforcement. She put the photos in prominent areas of her home where pulling occurred. To help prevent pulling she was trained in alternate adaptive behaviors like keeping her hands occupied by playing with beads (p. 176). The results were that Lisa's hair pulling reduced by 70% and the average number of hairs pulled also decreased (p. 177).

Although BT with components of HRT resulted in a significant reduction of pulling, Lisa did not experience complete cessation of hair pulling. At follow-up, she continued to pull the same amount of hairs that she did right after the end of treatment (p. 179). Although the treatment was effective for reducing symptoms of TTM, it is important to note that this was a case study and that the results may not hold true for a larger sample. More research needs to be done to assess the effectiveness in a larger sample and over a longer span of time. In addition, future research should compare the effectiveness of HRT to pharmaceuticals and include a control group to see which is most effective. Also, because patients with TTM are prone to relapsing it is best to look at the effectiveness of therapies in the long-term.

BTs have had promising results in past research. In a study conducted by Keijsers,Van, Hoogduin, Klaassen, Hendriks, and Tanis-Jacobs (2006), authors were interested in the long-term effectiveness of BT for treating TTM. Keijsers et al. (2006) examined 3 month and 2 year follow-up data on the treatment of BT for 28 participants (p. 362). They found that patients maintained treatment gains at 3 month follow-up, but at 2 year follow-up there was a renewed increase of symptoms (p. 365). Additionally, they found that higher levels of pre-treatment depression predicted more severe symptoms of TTM and patients that had complete cessation of hair pulling scored less on the Massachusetts General Hospital Hair Pulling Scale (MGH-HPS); indicating a reduction of symptoms in comparison to those who still pulled 1 or 2 hairs at post-treatment (p. 365). Also, the authors found that gain maintenance of BT is moderately significant and that providing education on relapse-prevention does not increase effectiveness of BT (p. 367). The current findings provide insight to the effectiveness of BT in the long-run and suggest that patients who experience complete cessation of hair-pulling are more likely to maintain treatment gains in the future. More research should be done to see if the duration of treatment is long enough for patients to have complete cessation of hair pulling increases maintenance gains. Although the following experiment provided helpful suggestions for future research, there are still a number of limitations. The literature did not have a sufficient sample size to generalize the results and the study lacked a control group. There is a need for more research to assess the effectiveness of BT compared to pharmaceuticals over time to see which treatment is most effective for TTM.

Simplified Habit Reversal Training and Adjunct Treatment

BTs have yielded promising results in past literature. In a case study by Romaniuk, Miltenberger, and Deaver (2003), the authors used Simplified Habit Reversal Training (SHR) to treat the TTM of a young boy named Allan. SHR reduced the amount of pulling that Allan did, but because he still pulled a significant amount of hair the authors

included adjunct procedures with SHR. The adjunct procedures included wearing band aids and splints on his fingers and wearing glasses to prevent ease of pulling. In addition, Allan was to talk himself down when he felt the urge to pull his hair and he had to make progress goals to encourage him to do better each week of treatment. The results were that Allan had a reduction of time spent pulling or manipulating his hair by 92% and the gains were maintained at 18 month follow-up. The results are beneficial for future research because it suggests that HRT is not effective on its own for treating children and adjunct procedures should be incorporated to increase effectiveness. It also suggests that the duration of treatment last until the patient achieves goal of symptom reduction. Although the literature gives helpful tips for future research; it is a case study and it is unclear whether the results would hold true for a larger sample size. In addition, the research did not have a control group. More research should be done to assess the effectiveness of HRT in comparison to a pharmaceutical and with a control group. It is suggested that future research have a larger sample size to be able to generalize results.

Acceptance and Commitment Therapy and Habit Reversal Therapy

BTs have been more successful at treating TTM symptoms. In a study by Crosby, Dehlin, Mitchell, and Twohig (2012), researchers were interested in seeing if ACT in conjunction with HRT would be effective for treating TTM in 5 patients (p. 596). The ACT entailed accepting the urges that patients had for pulling and understanding that they were just urges and could be controlled; e.g. when patients felt the urge to pull they were to understand that the urge was just a thought and that they could change the thought to avoid pulling (p. 599). The results were that ACT in conjunction with HRT resulted in an 88.87% reduction of TTM symptoms among all 5 participants; however, at 3 month follow-up, 2 lost half of treatment gains and 1 reverted back to pre-treatment levels of TTM, leaving only 2 treatment responders (p. 603). These results are consistent with the finding that there is a high prevalence of relapse in TTM. Although the results were not promising, it is unclear if the results would be similar in a larger sample. More research needs to be done on the effectiveness of ACT with HRT in a larger sample for a longer period of time to see if that would make a difference on the results. In addition, as previously mentioned it is vital to compare all possible therapies when finding an effective treatment for TTM.

Dialectical Behavioral Therapy-Enhanced Habit Reversal Training

BT has been a sufficient treatment for TTM in past literature. In a study conducted by Keuthen, Rothbaum, Welch, Taylor, Falkenstein, Heekin, Jordan and Jenike (2010), researchers used DBT-enhanced CBT for treating 10 females with TTM (p. 955). The therapy targeted "affectively driven pulling and emphasize[d] relapse prevention" (p. 953).

The results were that at post-treatment, 8 out of 10 females were classified as full responders and patients experienced a significant improvement in emotional regulation (p. 956). At 3 month follow-up, those classified as full responders maintained treatment gains and the 2 patients who did not respond to treatment at post-treatment were classified as partial responders (p. 957). The results suggest that DBT-enhanced CBT is effective for reducing TTM symptoms; however, there are still a number of limitations within the literature that hinder the results. The literature did not have a large enough sample size to generalize the results and it lacked a control group. More research should be done to examine the effectiveness of DBT-enhanced CBT compared to pharmaceuticals and with a control group.

In a follow-up study by Keuthen, Rothbaum, Falkenstein, Meunier, Timpano, Jenike, and Welch (2011), the authors reported that at 3 month follow-up, 7 patients were classified as full responders and 1 as a partial responder; and that follow-up data was unavailable for 1 respondent (p. 311). At 6 month follow-up, the number of full responders fell to 5 and the number of partial responders increased to 4 (p. 312). These results are consistent with previous research that treatment gains decrease over time. More research is needed to determine if the length of therapy increases treatment gains and it is necessary for future research to include long-term follow-up data to assess the effectiveness of therapies over time.

Behavioral Therapy compared to Supportive Therapy

Past literature suggests that BT is most effective for treating TTM, and in a study by Diefenbach, Tolin, Hannan, Maltby and Crocetto (2006), researchers compared BT to Supportive Therapy (ST) among 24 participants with TTM (p. 354). Half of the participants were randomly assigned to BT and the other half to ST (p. 354). BT included psychoeducation (information about TTM) and incorporated ways to reduce behaviors associated with TTM (p. 356). The ST was less structured than the BT group and the participants were able to discuss problems associated with their disorder in a group setting without BT techniques (p. 357). The results were that BT was more effective than ST for treating TTM. There were significant improvements from intake to post treatment in BT, but there were no significant improvements seen in ST; however, at 1, 3 and 6 month follow-ups, there was a trend towards symptoms of TTM worsening (p. 358). These results are consistent with past findings that TTM relapse is very common, which is why it is critical that more research be done to find an effective treatment for the disorder. Because BT was more efficient than ST, it is suggested that future literature compare BT with a pharmaceutical and a control group to assess the effectiveness. In addition, it is necessary to examine treatments in the long-term to see how effective they are

over time at treating the disorder.

Conclusion

Research suggests that both treatments work at reducing symptoms associated with the disorder, but forms of behavioral therapy (Dialectical Behavioral Therapy, Cognitive Behavioral Therapy, Acceptance and Commitment Therapy and Habit Reversal Training) appear to be more effective when compared to drugs. However, it is crucial to find out the effectiveness in the long-term because TTM is a disorder where relapsing is common. Keijsers et al. (2006) suggest that in order to assess the long-term effectiveness of behavioral therapy [or a pharmaceutical], that the duration of treatment should be long enough for the patient to have complete cessation of hair-pulling (p. 367). This warrants further investigation because most patients being treated for TTM experience a significant reduction of hair-pulling, but are not fully abstinent.

It is important for future research to include long-term follow-up results on the effectiveness of treating TTM and that the researchers have a large enough sample size to base their claims. In addition, it is important to directly compare the effectiveness of behavioral therapies to pharmaceuticals with a control group to accurately assess the effectiveness. It is crucial that future literature analyze the effectiveness of group therapy versus individual therapy and key aspects that may contribute to individual's susceptibility of relapsing. Also, it is important that psychologists and clinicians become better educated on the disorder to effectively treat the symptoms associated with it.

References

Bloch, M. H., Panza, K. E., Grant, J. E., Pittenger, C., & Leckman, J. F. (January 01, 2013). N-Acetylcysteine in the treatment of pediatric trichotillomania: a randomized, double-blind, placebo-controlled add-on trial. *Journal of the American Academy of Child and Adolescent Psychiatry*, 52, 3, 231-40. doi: 10.1016/j.jaac.2012.12.020

Crosby, J. M., Dehlin, J. P., Mitchell, P. R., & Twohig, M. P. (November 01, 2012). Acceptance and Commitment Therapy and Habit Reversal Training for the Treatment of Trichotillomania. *Cognitive and Behavioral Practice*, 19, 4, 595-605. doi: 10.1016/j.cbpra.2012.02.002

De, S. A. (January 01, 2008). An open-label pilot study of naltrexone in childhood-onset trichotillomania. *Journal of Child and Adolescent Psychopharmacology*, 18, 1, 30-3. doi: 10.1089/cap.2006.0111

Dia, D. A. (May 01, 2008). " I Can't Stop Pulling My Hair!" Using Numbing Cream as an Adjunct Treatment for Trichotillomania. *Health & Social Work*, 33, 2. doi: 10.1093/hsw/33.2.155

Diefenbach, G. J., Tolin, D. F., Hannan, S., Crocetto, J., & Worhunsky, P. (July 01, 2005). Trichotillomania: impact on psychosocial functioning and quality of life. *Behaviour Research and Therapy*, 43, 7, 869-884. doi: 10.1016/j.brat.2004.06.010

Diefenbach, G., Tolin, D., Hannan, S., Maltby, N., & Crocetto, J. (December 01, 2006). Group Treatment for Trichotillomania: Behavior Therapy Versus Supportive Therapy. *Behavior Therapy*, 37, 4, 353-363. doi: 10.1016/j.beth.2006.01.006

Grant, J. E. Odlaug, B. L., & Kim, S. W. (January 01, 2009). N-acetylcysteine, a glutamate modulator, in the treatment of trichotillomania: a double-blind, placebo-controlled study. *Archives of General Psychiatry*, 66, 7, 756-63. doi: 10.1001/archgenpsychiatry.2009.60

Keijsers, G. P. J., Van, M. A., Hoogduin, C. A. L, Klaassen, B. N. W., Hendriks, M. J., & Tanis-Jacobs, J. (March 01, 2006). Behavioural treatment of trichotillomania: Two-year follow-up results. *Behaviour Research and Therapy*, 44, 3, 359-370. doi: 10.1016/j.brat.2005.03.004

Keuthen, N. J., Rothbaum, B. O., Falkenstein, M. J., Meunier, S., Timpano, K. R., Jenike, M. A., & Welch, S. S. (April 01, 2011). DBT-enhanced habit reversal treatment for trichotillomania: 3-and-6-month follow- up results. *Depression Anxiety*, 28, 4, 310-313. doi: 10.1002/da.20778

Keuthen, N. J., Rothbaum, B. O., Welch, S. S., Taylor, C., Falkenstein, M., Heekin, M. Jordan, C. A., Jenike, M. A. (January 01, 2010). Pilot trial of dialectical behavior therapy-enhanced habit reversal for trichotillomania. *Depression and Anxiety*, 27, 10, 953-9. doi:10.1002/da.20732

McGuire, J. F., Ung, D., Selles, R. R., Rahman, O., Lewin, A. B., Murphy, T. K., & Storch, E. A. (January 01, 2014). Treating trichotillomania: A meta-analysis of treatment effects and moderators for behavior therapy and serotonin reuptake inhibitors. *Journal of Psychiatric Research*, 58, 76-83. doi: 10.1016/j.jpsychires.2014.07.015

Michael, K. D. (April 01, 2004). Behavioral Treatment of Trichotillomania: A Case Study. *Clinical Case Studies*, 3, 2, 171-182. doi: 10.1177/1534650103259642

Romaniuk, C., Miltenberger, R., & Deaver, C. (January 01, 2003). Long-Term Maintenance Following Habit Reversal and Adjunct Treatment for Trichotillomania. *Child & Family Behavior Therapy*, 25, 2, 45-50. doi: 10.1300/J019v25n02_04

Stein, D. J., & Hollander, E. (January 01, 1992). Low-dose pimozide augmentation of serotonin reuptake blockers in the treatment of trichotillomania. *The Journal of Clinical Psychiatry*, 53, 4, 123-6. doi: 10.1016/0006-3223(92)90462-9

Stein, D. J., Bouwer, C., & Maud, C. M. (January 01, 1997). Use of the selective serotonin reuptake inhibitor citalopram in treatment of trichotillomania. *European Archives of Psychiatry and Clinical Neuroscience*, 247, 4, 234-6. doi: 10.1007/BF02900220

Swedo, S. E., Leonard, H. L., Rapoport, J. L., Lenane, M. C., Goldberger, E. L., & Cheslow, D. L. (January 01, 1989). A double-blind comparison of clomipramine and desipramine in the treatment of trichotillomania (hair pulling). *The New England Journal of Medicine*, 321, 8, 497-501. doi: 10.1056/NEJM198908243210803

Tolin, D. F., Franklin, M. E., Diefenbach, G. J., Anderson, E., & Meunier, S. A. (November 01, 2007). Pediatric Trichotillomania: Descriptive Psychopathology and an Open Trial of *Cognitive Behavioral Therapy*. Cognitive Behaviour Therapy, 36, 3, 129-144. doi:.1080/16506070701223230

Van, M. A., Hoogduin, K. A., Keijsers, G. P., Hellenbrand, I., & Hendriks, G.J. (January 01,2003). Treatment of trichotillomania with behavioral therapy of fluoxetine: a randomized, waiting-list controlled study. *Archives of General Psychiatry*, 60, 5, 517-22. doi: 10.1001/archpsyc.60.5.517

Van, A. M., Manicini, C., Oakman, J. M., & Farvolden, P. (January 01, 1999). The potential role of haloperidol in the treatment of trichotillomania. *Journal of Affective Disorders*, 56, 2-3. doi: 10.1016/S0165-0327(99)00019-1

Woods, D. W., Flessner, C. A., Franklin, M. E., Keuthen, N. J., Goodwin, R. D., Stein, D. J., Walther, M. R.,... Trichotillomania Learning Center-Scientific Advisory Board. (January 01, 2006). The Trichotillomania Impact Project (TIP): exploring phenomenology, functional impairment, and treatment utilization. *The Journal of Clinical Psychiatry, 67, 12, 1877-88. doi: 10.4088/jcp.v67n1207*

Marissa Diaz is a native of Merced and has lived in the city all 24 years of her life. She is the second-to-youngest of 4 children and will be the first in her family to graduate college. Marissa transferred to UC Merced from Merced Junior College in fall 2013 and she is a psychology major who currently works part-time for In-Home Supportive Services. In her spare time she enjoys reading up on the current topics regarding trichotillomania. As a fellow sufferer of the disorder for over 10 years of her life, she hopes to go into clinical psychology with an emphasis on B.F.R.B. Disorders- body focused repetitive behavior disorders- to help other sufferers of trichotillomania and similar disorders find effective ways to cope with their disorders. She will be graduating in fall 2015 and hopes to attend grad school at UC Davis in fall 2016.