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**Is Acupuncture an Effective Adjunct Therapy in Improving Quality of Life Outcomes of Women, 18-25 years old, with Clinically Diagnosed Disordered Eating?**

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A SELECTIVE EVIDENCE BASED MEDICINE REVIEW

In Partial Fulfillment of the Requirements For

The Degree of Master of Science

In

Health Sciences – Physician Assistant

Department of Physician Assistant Studies  
Philadelphia College of Osteopathic Medicine  
Philadelphia, Pennsylvania

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## ABSTRACT

**OBJECTIVE:** The objective of this EBM is to determine whether or not acupuncture can be used as an adjunct therapy in improving quality of life outcomes in women, 18-25 years old, with a clinically diagnosed eating disorder.

**STUDY DESIGN:** Systemic review of one randomized cross-over pilot study published in 2010, one randomized controlled trial published in 2013, and one pilot randomized controlled trial published in 2014, all published in the English language

**DATA SOURCES:** Data sources for this review were articles published in peer-reviewed journals using PubMed Database.

**OUTCOMES MEASURED:** The outcomes measured include patient response to treatment and improvements of anxiety and overall quality of life by using the self-scored State Trait Anxiety Inventory and Eating Disorder Quality of Life Scale.

**RESULTS:** The study by Fogarty et al. showed clinically significant improvement ( $p=0.0557$ ) in EDQoL Psychological scores in patients receiving acupuncture, in addition to clinically significant improvement in STAI State ( $p=0.0172$ ) and STAI Trait ( $p=0.0920$ ) scores. The second study by Fogarty et al. showed similar improvements in patient receiving acupuncture, in addition to improved feelings of empathy and the therapeutic relationship. The final study by Smith et al. showed clinically significant ( $p=0.02$ ) improvement in EDQoL Psychological scores in patients receiving acupuncture.

**CONCLUSIONS:** The results of these trials were all promising, but further research is warranted to assess the benefits of using acupuncture as adjunct therapy in eating disorders.

**KEY WORDS:** Anorexia nervosa; Acupuncture.

## INTRODUCTION

Eating disorders are mental illnesses which occur all over the world, particularly in industrialized countries.<sup>1</sup> These disorders mainly effect women in their early teenage years to young adulthood.<sup>2</sup> Approximately 20 million women and 10 million men suffer from eating disorders at some time during their life in the United States.<sup>3</sup> Only 1 of 10 people with eating disorders will seek treatment.<sup>1</sup> Disordered eating has a frequently relapsing and recurring course throughout a patient's lifetime.<sup>3,4</sup> Treatment costs can total \$119,200 per patient.<sup>3</sup> However, only approximately \$28 million per year is allotted for federally funded research.<sup>1</sup> The etiology of eating disorders is unknown, but is thought to be influenced by both genetic and environmental factors.<sup>1</sup> Anorexia nervosa has the highest mortality rate when compared to any other psychiatric disorder.<sup>3</sup>

Disordered eating can be categorized into anorexia nervosa, bulimia nervosa, and eating disorder not otherwise specified.<sup>1</sup> A person is considered to have anorexia nervosa when they are less than 85% of his or her expected weight.<sup>1</sup> Bulimia nervosa is characterized by episodes of binge-eating, which is eating a large amount of food in a single sitting and feeling out of control while doing so, followed by attempts to counteract the bingeing episodes by either laxative use, over exercising, self-induced vomiting, etc.<sup>1</sup>

Signs and symptoms of anorexia can include extreme weight loss, fatigue, lanugo, constipation, absence of menstruation, dizziness/fainting, dehydration, and cold intolerance. Patients with bulimia nervosa can exhibit weight fluctuations, decayed teeth, lesions on their fingers, electrolyte imbalances, eating in secrecy, and enlarged parotid glands. The diagnosis of both of these disorders is clinically made by using the most current DSM-5 criteria.<sup>1</sup> Patients

may not meet full criteria for eating disorders, but may still exhibit signs of unhealthy eating habits.<sup>1</sup>

Treatment of eating disorders has frequently been a multidisciplinary approach incorporating the expertise of nutritionists, therapists, social workers, and medical doctors.<sup>4</sup> The most important initial step in treating anorexia nervosa is re-nutrition, followed by family therapy or cognitive behavioral therapy (CBT).<sup>1</sup> CBT, a therapy that examines a patient's thoughts and feelings in order to make changes in their behavior, can also be utilized in the treatment of bulimia nervosa.<sup>1</sup> In life threatening situations, hospitalization is required in order to provide adequate nutrition and hydration.<sup>5</sup> Pharmacotherapy plays little role in the treatment and recovery of patients with eating disorders, but may be utilized if patients have other coexisting psychiatric disorders. Many treatment centers are beginning to use holistic therapies as adjuncts to traditional treatment.<sup>2</sup> Goals of treatment include restoring a patient's weight to a normal range, reducing abnormal eating behaviors, and managing co-morbidities.<sup>5</sup>

Acupuncture is a commonly used complementary and alternative therapy (CAM) that may benefit patients with other psychiatric illnesses.<sup>2</sup> During acupuncture, needles are inserted at tissue level into specific body points to impact flow of qi (vital energy).<sup>4</sup> These needles remain in the tissue for a minimum of 20 minutes.<sup>4</sup> The efficacy of using acupuncture, in addition to traditional treatment methods, as an alternative to aid in improving quality of life outcomes is not entirely clear.

## **OBJECTIVE**

The objective of this EBM is to determine whether or not acupuncture can be used as an adjunct therapy in improving quality of life outcomes in women, 18-25 years old, with a clinically diagnosed eating disorder.

## METHODS

The studies selected during the construction of this EBM review include one randomized cross-over study<sup>2</sup>, one randomized controlled trial<sup>4</sup>, and one pilot randomized controlled trial<sup>5</sup>. The population studied in the trials include women with clinically diagnosed eating disorders between 18-25 years of age. The intervention in each study included the administration of acupuncture; Fogarty et al. performed 10 sessions of acupuncture in a maximum of 13 weeks using an average of 11 needles per session, whereas Smith et al. and Fogarty, Harris et al. used acupuncture twice weekly for the first three weeks followed by weekly treatment for three weeks<sup>5,4</sup>. The outcome measured that is of interest to this EBM review is anxiety levels and psychological improvements by using the Eating Disorder Quality of Life Scale (EDQoL) and State Trait Anxiety Inventory (STAI) scores.

PubMed and Cochrane databases were used to research the three selected studies. Keywords used in this search included “anorexia nervosa” and “acupuncture”. All articles were published in peer reviewed journals in English and were selected based on their significance and application, as well as based on criteria that the outcomes measured were patient oriented outcomes (POEMS). The same inclusion and exclusion criteria were used for all three of the articles. Inclusion criteria included studies with women participants, patients over 15 years of age, patients who were medically stable with clinically diagnosed eating disorders. Exclusion criteria included studies with male patients, medically unstable individuals, patients already receiving acupuncture, and patients not within the given age range. **Table 1** demonstrates the demographics of the studies included in the EBM review. The statistics used were p-value and confidence interval (CI).

**Table 1:** Demographics and Characteristics of included studies

Study	Type	#Pts	Age (yrs)	Inclusion Criteria	Exclusion Criteria	W/D	Interventions
Fogarty <sup>2</sup> (2010)	Randomized cross-over pilot	10	23.7 ± 9.6 years	- over 17 years who received diagnosis of either anorexia nervosa or bulimia nervosa	-males -no diagnosis of AN or BN from psychologist	1	-continuation of participants eating disorder treatment supplemented by acupuncture
Fogarty <sup>4</sup> (2013)	Randomized controlled trial	26	>15 years old	-age greater than 15 yrs -female with diagnosis of eating disorder medically stable	- males - medically unstable currently receiving acupuncture or acupressure -unable to attend sessions -substance dependence, psychosis, or bipolar disorder	6	-participants either received acupuncture or acupressure
Smith <sup>5</sup> (2014)	Pilot randomized control trial	26	>15 years old	-age >15 years old -medically stable -inpatients at hospital	-currently receiving acupuncture, acupressure, or massage therapy -unable to attend study sessions -serious medical comorbidity -substance dependence, psychosis, or bipolar disorder	6	-participants received either acupuncture or acupressure

\*AN= Anorexia Nervosa, BN=Bulimia

## OUTCOMES MEASURED

Outcomes measured were those of patient-oriented outcomes (POEMS). Each article measured anxiety levels and psychological improvements based on score on the STAI and

EDQoL questionnaires respectively. STAI questionnaire measures participant's current anxiety level (State) and general anxiety level (Trait).<sup>2</sup> EDQoL psychological domain covers aspects of how the eating disorder makes the person "feel". These questionnaires were filled out by patients at baseline and either 6 weeks following completion of the acupuncture treatment<sup>4,5</sup> or at the end of the first and second phase of treatment<sup>2</sup>.

## RESULTS

Three articles were chosen that compared the use of acupuncture therapy as adjunct treatment in women between the ages of 18-25 years of age with a clinically diagnosed eating disorder. Men, women who were medically unstable, women not between the ages of 18-25 years old, and participants who were already receiving acupuncture treatment were excluded from the studies.<sup>2,4,5</sup>

The study by Fogarty et al.<sup>2</sup> recruited women over the age of 17 years old with either anorexia nervosa or bulimia nervosa to participate. Nine participants were recruited from a private eating disorder treatment facility in Melbourne, Australia.<sup>2</sup> Two participants with BN and three participants with AN were randomly selected for the first phase of the acupuncture treatment. Two participants with BN and two participants with AN were randomly selected for treatment as usual (TAU), which incorporated current best practice medical management.<sup>2</sup> One participant was lost to drop-out due to "feeling overwhelmed with the treatment".<sup>2</sup> A two-week "wash-out period" was completed between phases, but participants continued to receive TAU.<sup>2</sup> P-values of 0.05-0.1 were considered weakly significant and between 0.01-0.05 considered strongly significant for this study. These values were used due to the small sample size in the study.<sup>2</sup> Participants receiving acupuncture, in addition to TAU, showed strongly significant psychological improvement ( $p=0.0557$ ) in the EDQoL psychological score. STAI scores for the

same group were also strongly significant ( $p=0.0172$ ) for State and weakly significant ( $p=0.0920$ ) for Trait. **Table 2** demonstrates the mean STAI score at baseline and end of treatment reported in the study done by Fogarty et al.<sup>2</sup> EDQoL scores can be seen in **Table 3**.

The second study by Fogarty et al.<sup>4</sup> randomized 26 participants at an inpatient eating disorder program at a private medical facility in Sydney, Australia.<sup>4</sup> Participants would receive either acupuncture or acupressure, in addition to TAU, twice weekly for the first three weeks, followed by weekly sessions for three weeks.<sup>4</sup> Three participants from each group were lost to drop-out due to “logistics” and “health issues”.<sup>4</sup> Acupuncture or acupressure was applied bilaterally after groups underwent a traditional Chinese medicine (TCM) diagnosis, which lasted 60 minutes for the initial diagnosis and 45-60 minutes for subsequent diagnosis. An average of 11 needles, retained for 20 minutes, were used for acupuncture.<sup>4</sup> During acupressure, direct pressure was held for 3 minutes at a 90 degree angle to the skin, followed by a 10 minute Swedish massage on the back and shoulders.<sup>4</sup> Statistical significance of STAI-State score ( $p=0.017$ ) comparing the groups was shown.<sup>4</sup> In addition, statistically significant improvement in quality of life measured by EDQoL ( $p=0.007$ ) was found.<sup>4</sup> Participants also received a Consultation and Relational Empathy (CARE) questionnaire, which consisted of 10 items scored from 1 to 5, to evaluate the quality of care in the therapeutic relationship between participant and practitioner.<sup>4</sup> There appeared to be no difference in mean CARE score from the acupuncture group compared to the acupressure group.

The final study by Smith et al.<sup>5</sup> recruited 26 participants from an inpatient private hospital in Sydney, Australia. Participants either received acupuncture or acupressure with light massage, in addition to TAU, twice weekly for three weeks, followed by weekly for three weeks.<sup>5</sup> Of the participants receiving acupuncture, three were lost to drop-out due to:

“depression”, “moved overseas”, or “work commitments”.<sup>5</sup> Of the participants receiving acupuncture, three were lost to drop-out due to: “holidays” or “disliked being touched”.<sup>5</sup> Participants also underwent an initial TCM diagnosis, which took 60-90 minutes, and other subsequent diagnosis over 45-60 minutes.<sup>5</sup> An average of 11 needles were used and retained for a minimum of 20 minutes.<sup>5</sup> Acupuncture points were held for 3 minutes at 90 degree angle from the surface of the skin followed by a 10 minute Swedish massage.<sup>5</sup> EDQoL psychological scores for the acupuncture group showed significant improvement with 95% CI 1.5-9.7 and p-value of 0.02.<sup>5</sup> **Table 3** demonstrates the mean scores of the EDQoL Psychological domain for the acupuncture group compared with the control (acupuncture) group. STAI scores were not reported for this study.

**Table 2:** Mean STAI Score at the Beginning and End of Treatment<sup>2</sup>

Study Group	Mean STAI score at beginning of treatment (SD)	Mean STAI score at end of treatment (SD)	p-value
Acupuncture with TAU (State)	47 (5.3)	37.6 (5.9)	0.0172
Acupuncture with TAU (Trait)	52.9 (5.2)	45.2 (5.2)	0.0920
TAU (State)	42.7 (6.7)	46.3 (5.8)	0.0172
TAU (Trait)	51.1 (5.9)	50.1 (5.9)	0.0920

TAU= Treatment as Usual

**Table 3:** EDQoL Psychological Mean Scores at Baseline and End of Treatment

Study	Acupuncture with TAU baseline (SD)	Acupuncture with TAU end of treatment (SD)	Control at baseline (SD)	Control at End of Treatment (SD)	p-value
Fogarty <sup>2</sup>	22.3 (1.9)	16.6 (3.1)	19.2 (3.1)	19.3 (3.3)	0.0557
Smith <sup>5</sup>	25.5 (3.8)	19.8 (6.5)	25.1 (5.4)	20.2 (7.8)	0.02

## DISCUSSION

Eating disorders affect both males and females of all socioeconomic statuses and ethnicities.<sup>1</sup> Anorexia nervosa has the highest mortality rate when compared to all other psychiatric disorders.<sup>3</sup> Many patients have a relapsing and recurring course of the disease throughout their lifetime.<sup>1,3</sup> Traditional treatment costs can be expensive, totaling approximately \$119,200.<sup>3</sup> The exact etiology of disordered eating is unknown, which makes treatment both challenging and frustrating.

The studies performed by Fogarty et al.<sup>2</sup> and Smith et al.<sup>5</sup> showed improvement in quality of life in patients who received acupuncture. This may demonstrate that acupuncture could be used as an adjunct therapy in the treatment of eating disorders to improve patient's anxiety states and quality of life. Fogarty et al.<sup>4</sup> reported an improvement in EDQoL scores and anxiety from acupuncture treatments. A positive therapeutic relationship between patient and practitioner can also improve outcomes in patients receiving acupuncture.<sup>4</sup>

All three of these studies used very small sample sizes, which is an important limiting factor when assessing the significance of the results.<sup>2,4,5</sup> None of the studies controlled for the length of time since the participants were initially diagnosed with an eating disorder. The studies conducted by Fogarty et al.<sup>2</sup> and Smith et al.<sup>5</sup> provided patients with 10 and 9 sessions of acupuncture, respectively. The number of acupuncture sessions may have been a limiting factor in the difference between baseline and end of treatment scores.

Acupuncture has the potential to be an expensive treatment, especially since it is not covered by most health insurances. Many patients already have out of pocket costs during their treatment and may not be able to afford additional therapeutic interventions. Additionally, due to the specialty training it requires to be able to perform acupuncture, it may be difficult to find a

practitioner nearby to provide treatment. Fogarty et al.<sup>2</sup> and Smith et al.<sup>5</sup> both provided treatment in an in-patient setting, which made it possible for participants to have access to care that some people may not have.

## **Conclusion**

The trials reviewed in this EBM showed a potential benefit of the use of acupuncture as an adjunct treatment for eating disorders. The studies by Fogarty et al.<sup>2</sup> and Smith et al.<sup>5</sup> demonstrated promising data for the improvement in quality of life in patients with eating disorders who receive acupuncture. However, further research is warranted using a larger population group in order to assess for stronger clinical significance of the findings. Additionally, further studies may consider increasing the number of treatments and lengthening the time patients are followed after treatment. This may be beneficial to prove long term improvement in participants. Finally, it may be necessary to study the benefits of acupuncture in patients not enrolled in an in-patient facility in order to make the results more generalizable. There is very little data to prove the definitive benefit of acupuncture improving quality of life in patients with eating disorders. The necessity for further research is apparent as only \$28 million per year in the U.S. is funded by the federal government.

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