

## Stress Management through Manual-Acupuncture in Type-2 Diabetic Patients

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### ABSTRACT

Since stress is linked with detrimental health complications, one should learn the measures to combat its detrimental nature. Acupuncture is one the ancient practices helping in reducing the stress caused by various reasons. The present study is to understand the beneficial role of acupuncture in the management of stress in type-2 diabetic patients. It was a case controlled study approved by institutional ethical committee, conducted at Yes 4 health hospitals at Hyderabad in 60 participants (30 controls) and (30 cases) with their consent. We used a DASS 42 for assessment of stress, anxiety and depression. In this study we observed the levels of stress, anxiety and Depression in both controls and cases before and after the intervention. The results obtained were analyzed by using SPSS 20. We observed a significant change on the stress, anxiety and depression levels on type 2 diabetic patients stating the positive effects of manual acupuncture i.e. it reduces the levels of stress, anxiety and depression in the cases. We recommend further studies to identify mechanisms linking different forms of stress and incident type 2 diabetes.

**KEY WORDS:** Stress management, Acupuncture, Diabetes, anxiety, depression.

### 1. INTRODUCTION

Although every individual experience stress at one or the other time, its difficult to define exactly what stress is. Stress can be viewed in three perspectives like stress may be an event where in various reasons like relationships, economic crisis or serious illness may lead to stress. Stress can also be a reaction leading to certain biological changes in an individual to cope up with the serious situation and may put strain on the biological system further leading to mental and physical illness including cardiovascular disease, hypertension, diabetes and anxiety. Stress as a transaction occur due to the environmental demands made to achieve the goals or to fulfill the needs of others. (Sophie and Nicolas, 2011). Since stress is linked with detrimental health complications, one should learn the measures to combat its detrimental nature. Acupuncture is one the ancient practices helping in reducing the stress caused by various reasons. Certain randomized control trials had stated that is one of the effective therapies in reducing the chronic stress (Huang, 2011). Wu (2011), stated that acupuncture reduced the stress response during laparoscopic cholecystectomy by keeping the haemodynamics stable. It is also learnt that acupuncture decreases the emotional stress by reducing the secretion of cortisol concentration (Kwong and Yiu, 2010). Pavao (2010), stated that acupuncture may be effective in increasing the cellular immunity and also help in attenuating psychological distress. Thus, acupuncture is proven to be one of the finest therapies in reducing stress not only in healthy individuals but also in individuals with serious illness and with emotional stress. Diabetes is one such disease where in patients with diabetes may experience emotional stress that may lead to the increase in glucose levels in the body. This increase may be due to elevation of stress hormones like cortisol, epinephrine, etc.; or irregular medication due to stress. The exact reason or cause for type 2 diabetes is unclear but literature states that emotional stress has a markable role in the etiology of type 2 diabetes emotional stress is now established as a risk factor leading to depression and anxiety (Pouwer, 2010). Our aim of the present study is to understand the beneficial role of acupuncture in the management of stress in type-2 diabetic patients.

### 2. MATERIALS AND METHODS

**Study design:** Case control study.

**Patients and controls:** Thirty cases of controlled type 2 diabetes mellitus and thirty ages matched healthy individuals (controls) of either sex were included in the present study after obtaining informed consent. Controlled diabetic patients (fasting blood sugar levels  $\leq$  126 mg/dl and post prandial blood sugar level  $\leq$  180mg/dl), attending our diabetic clinic for regular check up, having diabetes at least one year duration and those on diabetic diet and oral hypoglycemic agents, not suffering with any other complications or diseases were included in the study. Unwilling

participants and participants with any severe complications, cancer, pulmonary tuberculosis, and rheumatoid arthritis and those with vestibular or ear disorders were excluded from the study.

All the healthy participants and patients were subjected to general and physical examination. Cognition tests were carried out in the morning at 9 am, after familiarizing the participants with the procedures. After recording the baseline parameters (pre-intervention values), intervention was administered to the cases for weekly three days (alternative days) for 3 months. After 3 months, post intervention values were recorded and compared (Danasegaran, 2016).

**Laboratory setting:** The present study was carried out at Yes 4 Health Hospital, Hyderabad, Telangana, India. The patients were instructed to follow strict diabetic diet and not to consume alcohol and other caffeinated beverages and not to smoke during the study duration.

#### **Intervention:**

**Acupoints:** The acupoints used in the study are Pishu (BL 20), Shenshu (BL 23), Zusanli (ST 36), Sanyinjiao (SP 6), Hegu (LI 4), Jianjing (GB21), Quchi (LI 11), Waiguan (TW5), Jiexi (St.41), Taibai (Sp.3), Taichong (Liv3), Dazhui (Du14). These points are standard points used in acupuncture for diabetes specified in the literature. Acupuncture was administered by trained professional from Yes 4 Health hospital (Dan, 2004).

**Parameters:** Depression, anxiety and stress were assessed by DASS 42 questionnaire.

**Ethical consideration:** The study was approved by Institutional Human Ethics committee (EC/22/1/2015) of the hospital.

**Statistical analysis:** Data was presented as mean  $\pm$ SD. Data was analyzed by using SPSS 20.0. Student t test was used to assess significance of difference between the groups.

### **3. RESULTS**

Results were presented in table.1 to table.4. Depression, anxiety and stress levels are significantly higher in cases when compared with controls before intervention (table.1). Followed by intervention we have observed decline in the stress and anxiety scores in cases (table.3) and significance of difference also reduced when compared with control group (table.2). Depression, anxiety and stress scores were not significantly different in control group before and after the intervention (table.4).

**Table.1. Depression, anxiety, stress scores in cases and controls before intervention**

Sl.No	Parameter	Cases (n=30)	Controls (n=30)	P value
1	Depression	18.28 $\pm$ 7.43	12.75 $\pm$ 4.76	0.001***
2	Anxiety	16.71 $\pm$ 5.37	9.62 $\pm$ 7.28	0.0001***
3	Stress	24.31 $\pm$ 6.42	19.62 $\pm$ 4.82	0.002***

Values are expressed in Mean  $\pm$  SD. \*P<0.05, \*\*P<0.01, \*\*\*P<0.001

**Table.2. Depression, anxiety, stress scores in cases and controls after intervention**

Sl.No	Parameter	Cases (n=30)	Controls (n=30)	P value
1	Depression	15.44 $\pm$ 5.32	11.92 $\pm$ 4.97	0.01**
2	Anxiety	12.91 $\pm$ 3.84	10.37 $\pm$ 4.61	0.02**
3	Stress	21.17 $\pm$ 4.55	19.01 $\pm$ 5.81	0.11

Values are expressed in Mean  $\pm$  SD. \*P<0.05, \*\*P<0.01, \*\*\*P<0.001

**Table.3. Depression, anxiety, stress scores in cases before and after intervention**

Sl.No	Parameter	Before	After	P value
1	Depression	18.28 $\pm$ 7.43	15.44 $\pm$ 5.32	0.09
2	Anxiety	16.71 $\pm$ 5.37	12.91 $\pm$ 3.84	0.003***
3	Stress	24.31 $\pm$ 6.42	21.17 $\pm$ 4.55	0.03**

Values are expressed in Mean  $\pm$  SD. \*P<0.05, \*\*P<0.01, \*\*\*P<0.001

**Table.4. Depression, anxiety, stress scores in controls before and after intervention**

Sl.No	Parameter	Before	After	P value
1	Depression	12.75 $\pm$ 4.76	11.92 $\pm$ 4.97	0.51
2	Anxiety	9.62 $\pm$ 7.28	10.37 $\pm$ 4.61	0.63
3	Stress	19.62 $\pm$ 4.82	19.01 $\pm$ 5.81	0.65

Values are expressed in Mean  $\pm$  SD. \*P<0.05, \*\*P<0.01, \*\*\*P<0.001

### **DISCUSSION**

Since stress is linked with detrimental health complications, one should learn the measures to combat its detrimental nature. Acupuncture being an ancient practices helping in reducing the stress caused by various reasons such as relationships, financial status and serious health complications. In our present we tried to learn the beneficial effects of manual acupuncture in patients with type2 diabetes. Diabetes is one such disease where in patients with diabetes may experience emotional stress that may lead to the increase in glucose levels in the body. This increase

may be due to elevation of stress hormones like cortisol, epinephrine, etc; or irregular medication due to stress. The exact reason or cause for type 2 diabetes is unclear but literature states that emotional stress has a markable role in the etiology of type 2 diabetes emotional stress is now established as a risk factor leading to depression and anxiety (Pouwer, 2010). We observed that there is a significant difference in the stress, anxiety and depression levels of patients with type 2 diabetes when compared to controls. Significant improvement was observed in diabetic patients on the levels of their stress, anxiety and depression when compared before and after the intervention. Thus, stating that manual acupuncture definitely has positive role in decreasing the stress levels and also decreases the anxiety and depression in the patients with type 2 diabetic. Similar studies but in various conditions and causes of stress had shown the same positive effects in treating the stress. In a study conducted by Balk (2010), stated that acupuncture reduces the levels of stress in women around the embryo transfer had improved the pregnancy rates having IVF. Various studies have enlightened on the mechanisms acupuncture in the reduction of stress. Acupuncture is generally believed to stimulate the central nervous system leading to the release of neurochemical messengers, this causes the biochemical changes in an individual which may further influence the body's homeostatic mechanism. This finally relieves the physical and emotional stress. A study by Hui (2010), suggested that acupuncture may reduce the sensitivity to pain and their by reduces stress causing relaxation and analytical brain deactivation the soul cause for anxiety. Acupuncture may reduce the levels of cortisol thereby decreases stress (Park, 2010). As stress leads to the activation of sympathetic nervous system acupuncture causes the activation of parasympathetic nervous system initiating the relaxation (Arranz, 2007). Thus acupuncture is proven to be the finest practices in reducing the stress and their by preventing an individual from anxiety and depression.

#### 4. CONCLUSION

In the present study we have observed positive impact of manual acupuncture in the management of stress in diabetic population. We recommend further detailed studies to identify underlying mechanisms linking different forms of stress and incident type 2 diabetes.

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