

# A Randomized Control Trial of Lavender and Chamomile Against Anxiety and Stress Patients

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## Abstract

Anxiety and stress are among the most common mental health disorders and are a major cause of emotional distress around the globe. To overcome this issue, the use of natural products such as herbal medicines are becoming an appealing approach. Lavender and Chamomile has been proved to have better efficacy against stress and anxiety. The current study was performed to investigate the impact of Lavender and Chamomile in reducing the stress and anxiety. Proximate analysis of Lavender and Chamomile were performed. In combination, the dried herbs (powder) were simply added to capsules as an organic supplement, which serves as a natural product to reduce stress and anxiety at different substitution levels. Lavender herb and chamomile was taken as same amount of 1.2 gram respectively and 2.4 g mixed powder taken up to 3 times per day in the form of a capsule. Subjects were divided in two groups  $G_0$  and  $G_1$ .  $G_0$  was a control group and  $G_1$  was an experimental group. The research groups were introduced with the selected dosage of supplement for the time of 8 weeks. Results enlightened that the improvement in symptoms of stress and relate anxiety in experimental participants of this study. The experimental supplement prepared by lavender and Chamomile had significant ( $P < 0.05$ ) effect in reducing stress and anxiety throughout the study trial.

**Keywords:** Lavender, Chamomile, Stress, Anxiety, Emotional Distress

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## Introduction

In modern society, people are suffering from different psychiatric problems, mainly depression, anxiety, and insomnia. Anxiety and stress are among the most prevalent among the adults (Hosseini *et al.*, 2015). Stress is a physical or perceived threat to homeostasis (Qi *et al.*, 2016). Chronic stress is linked with difficulty concentrating, fatigue, cardiovascular problems, depression, and less social support (American Psychological Association, 2013).

Anxiety is major mental illness which includes unpleasant feelings, restlessness, and insomnia (Shahinfar *et al.*, 2017). Among the world, one person out of five peoples suffers from anxiety

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during his life (Kessler *et al.*, 2005). Neurobiological process of anxiety is linked to dysregulation of serotonergic, noradrenergic, glutamatergic, and GABA-ergic transmission (Nutt *et al.*, 2002). Most commonly, psychotropic drugs that are recommended against depression, anxiety, and stress have limited efficacy, more side effects and expensive, so they are not regarded as better choices by health professionals. So, nonpharmacological modalities have better option against such disorders. Alternative treatment involves aromatherapy, acupuncture, and massage therapy (Amini Rarani *et al.*, 2021). Less cost, easy intake, non-invasiveness, nonpharmacological and without side effects are major attributes of alternative treatment (Nasiri *et al.*, 2017).

Various research had presented the positive impacts of herbal products in lowering stress (Montibeler *et al.*, 2018), depression and anxiety (Jafari-Koulaee *et al.*, 2019). Currently, aromatherapy is among common procedure (Montibeler *et al.*, 2018) that have no side effects, better efficacy and is considered as therapeutic method by the World Health Organization (Paula *et al.*, 2017). The utilization of medicinal plants for various mental illnesses as they are easily available (Cunha *et al.*, 2010).

Chamomile (*Matricaria chamomilla*) is one of the most popular medicinal plants for mental health (Rabiei *et al.*, 2016). Anti-anxiety of chamomile effects has also been reported (Keefe *et al.*, 2016). Chamomiles have flavonoids which modulate noradrenalin, serotonin, dopamine, and amino butyric acid neurotransmission along with hypothalamic-pituitary adrenocortical axis activity. Chamomile lowers the anxiety and depression, that both are side effects of stress (Amsterdam *et al.*, 2012). L-theanine is an amino acid present in chamomile that has properties to reduce stress and anxiety (Ngan and Conduit, 2011).

Lavender (*Lavandula officinalis*), another traditional herb that is effective against anxiety (Akhondzadeh *et al.*, 2003). Lavender has monoterpene and cecotropes including linalol, linaline acetate and flavonoids that play key role in lowering stress and anxiety (Mehrabani *et al.*, 2007). Lavender 10%, 20%, 30% have a beneficial effect as an anti-stress treatment by reducing cortisol hormone level (Suyono *et al.*, 2020).

Lavender oil has been considered effective against anxiety (Kasper *et al.*, 2014). Linalool and linalyl acetate present in Lavender is better for mental health (Linck *et al.*, 2009). Lavender products could be inhaled (Lillehei *et al.*, 2015), used topically (Hongratanaworakit, 2011), or swallowed (Dimpfel *et al.*, 2004) to reduce the stress and anxiety. The chamomile-lavender essential oil is one of the essential oils used to reduce the anxiety of patients. Aromatherapy with chamomile lavender essential oil reduced the anxiety of patients (Cho *et al.*, 2013).

Chamomile and lavender suppress stress by lowering cortisol level, it stimulates olfactory system that contributes to reducing stress level (Davis *et al.*, 2005). Lavender 10%, 20%, 30% have a beneficial effect as an anti-stress treatment by reducing cortisol hormone level (Suyono *et al.*, 2020).

## Methodology

### Research Design

Research was conducted in department of Nutrition and Dietetics in University of Faisalabad. The raw material (lavender herbs and chamomile) in the dry form was collected from the Nishat Agriculture farm, Pindibhatian, Pakistan. The herbs were washed with lukewarm water thoroughly to remove the dust particles, or any dirty foreign material linked to them. After washing, the herbs were dried at room temperature with the help of present air under the shed and then crushed these herbs together for a mixture with the help of a grinder and turn into fine powdered. Then this powder was filled in a capsule having the size of “735mg” (Tabaraei and Khalili, 2018).

### Proximate analysis

Herbs powder was determined for moisture content, total ash, crude fiber, carbohydrates, crude protein, and nitrogen free extract as per certified procedures (AOAC, 2000). In combination, the dried herbs (powder) were simply added to capsules as an organic supplement, which serves as a natural product to reduce stress and anxiety at different substitution levels.

### Participants

The participants were assessed by a questionnaire specially made for this research work. According to the symptoms of anxiety and stress the participants were distributed into two groups. The experimental group was given the prescribed dosage of lavender (*Lavandula angustifolia*) and chamomile to analyze the efficacy against the mental stress. Each candidate was given two questionnaire forms (Perceived Stress Scale and Anxiety Questionnaire) by the end of each week as the trial is of 8 weeks in total. The scoring figures of the questionnaire determined the level of stress and anxiety in the members of experimental Group G<sub>1</sub> as a comparison with Controlled group G<sub>0</sub> as shown in Table 1.

Table 1: Details of dosage of Lavender and Chamomile powders given to each group

Group Number	N	Lavender	Chamomile	Dosage	Period
Controlled Group G <sub>0</sub>	10	-	-		8 Weeks
Experimental Group G <sub>1</sub>	10	1.2 grams	1.2 grams	Total=2.4 grams	8 Weeks

### Statistical analysis

Data collected from various parameters were analyzed using Analysis of Variance Technique (ANOVA) under Completely Randomized Design (CRD) (Steel, 1997).

### Results and discussion

Lavender and Chamomile powder samples were subjected to a variety of analytical procedures to assess their dietary composition, moisture content, crude protein, crude fiber, crude fat, crude ash, and nitrogen free extract correspondingly. Table 2 showed the physiochemical parameters analysis of lavender herb includes moisture (6.41%), crude protein (11.67%), crude fats (2.80%), total ash (9.26%), crude fiber (25.33%), and NFE (44.53%) respectively.

**Table 2: Proximate composition of Lavender and Chamomile**

Physiochemical Parameter	Mean ± Standard deviation of Lavender	Mean ± Standard deviation of Chamomile
Moisture (%)	6.41±0.015	24.10±0.051
Crude Protein (%)	11.67±0.005	1.49±0.320
Crude Ash (%)	9.26±0.015	9.91±0.040
Crude Fat (%)	2.80±0.002	3.34±0.200
Crude Fiber (%)	25.33±0.02	17.60±0.556
NFE (%)	44.53±0.005	43.53±0.87

The above-mentioned Table 2 showed the proximate composition of Lavender. These results were in accordance with Gharic *et al.* (2013) who analyzed the proximate composition of lavender herb. Analysis of quality parameters of dry lavender includes fats (2.77), moisture (6.40), carbohydrates (40.53), crude proteins (11.65), crude fiber (25.36) and ash (9.22, 11.45%).

The physiochemical parameters analysis of chamomile herb includes moisture (24.10%), crude protein (1.49%), crude fats (3.34%), total ash (9.91%), crude fiber (17.60%), and NFE (43.53%) respectively. Like current results, Chauhan, and Aishwarya, (2018) analyzed the proximate composition of chamomile herb. The outcome of the study was quite like my study as it contained moisture 22.20%, protein 1.25%, fat 3.2%, fiber 17.2% and ash 12.00%.

#### Effects of Lavender and Chamomile on anxiety:

The results of current study showed that lavender and chamomile have significant ( $P < 0.05$ ) impact on anxiety as shown in Figure 1. Like current results, Conrad, and Adams (2012) stated that supplementation of 2% Lavender oil dilution showed significant effect ( $P < 0.05$ ) against anxiety. Similarly, Kritsimida *et al.* (2010) reported that aroma of Lavender significantly ( $P < 0.05$ ) affects the patients suffering from anxiety. Similarly, Cho *et al.* (2013) described the combined aromatherapy by using lavender, roman chamomile and neroli essential oils was effective in lowering anxiety. Similarly, Zamanifar *et al.* (2020) reported that chamomile-lavender essential oil recovers the anxiety among peoples. Similarly, Keefe *et al.* (2017) stated that Chamomile, whose mechanism involves increasing cortisol secretion, reduces anxiety.

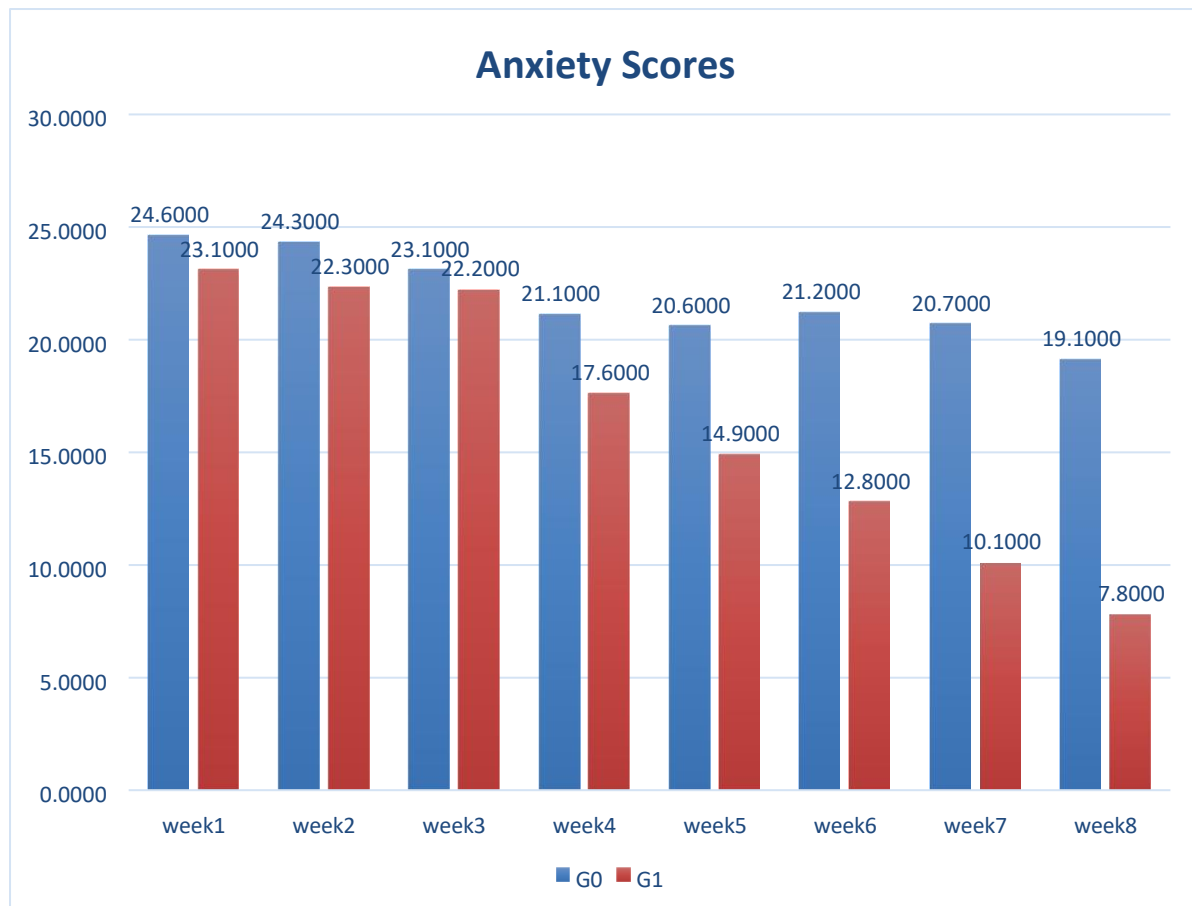


Figure 1: Effect of supplements (Lavender and Chamomile) on Anxiety

#### Effect of supplements on the stress level of patients:

Supplements with the proper quantity of Lavender and Chamomile were given for 8 weeks. Lavender and Chamomile have a significant ( $P < 0.05$ ) effect in reducing the stress level of patients as shown in Figure 2. The current results are like Ebrahimi *et al.* (2021) who reported that statistically significant improvement occurred in stress levels in lavender and chamomile groups than control group ( $P < 0.01$ ). Similarly, Uehleke *et al.* (2012) stated that application of oral lavender (80 mg/day) for six weeks in fifty patients suffering from neurasthenia or post-traumatic stress disorder showed significant improvements of their general mental health status and quality of life.

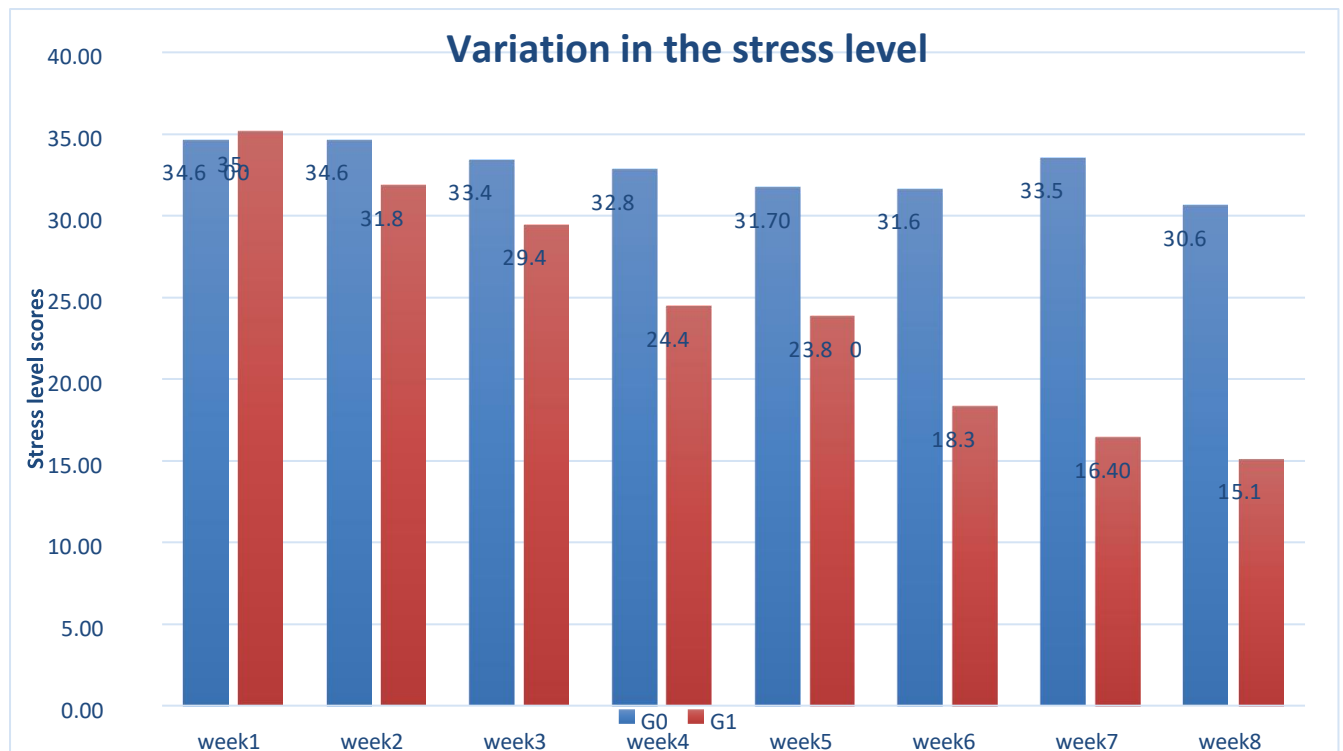


Figure 2: Effect of supplements (Lavender and Chamomile) on Stress

### Conclusion

The current study concluded the positive outcome of Lavender and Chamomile in healing of mental distress, anxiety, and stress. The astonishing impact with minimal side effects will be helpful for the people suffering from these emotional ailments.

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**Conflict of interest:** The authors declared that they don't have any conflicts.

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