

Baseline Anxiety Level as Efficacy Moderator for Self-Administered Acupressure for Anxiety Reduction

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Abstract Managing anxiety is an important issue for maintaining mental health in college students. Acupressure, a treatment method in Chinese medicine, has been shown to reduce anxiety. However, it remains unclear as to who can benefit the most from it. Previous studies in qigong, the purpose of which is to correct the flow of energy and make it compatible to the purpose of acupressure, have shown that greater decreases in anxiety are associated with higher baseline levels of anxiety. Thus, it may be possible that acupressure is more effective for individuals who are more anxious. This study tested the baseline anxiety level as a moderator of efficacy for self-administered acupressure for anxiety reduction. It was hypothesized that a greater decrease of anxiety during self-administered acupressure would be found in more anxious students. The participants, 33 male and 16 female college students, were instructed to perform five sessions of acupressure. Each session included pressing six acupressure points on the neck (three points each on the left and right sides) for five seconds. All the participants completed the tension and anxiety (TA) subscale of the Profile of Mood States before and after the intervention. They were divided into the following four groups based on their baseline TA scores: Less anxious group; Slightly anxious group; Mildly anxious group; and Highly anxious group. Partially supporting the hypothesis, improvement of anxiety was significantly greater in the Mildly anxious group than in the other three groups. This study provided initial, but important evidence that individuals with mild anxiety levels can benefit significantly from a self-administered acupressure treatment course to reduce anxiety.

Keywords Acupressure, Anxiety, Self-care, College Students

1. Introduction

Managing anxiety is an important issue in school health. Entering college has great effects on many aspects of daily life, and most students experience anxiety and stress[1, 2]. Experiencing excessively high anxiety may lead to mental health problems. Thus, a significant decrease in the anxiety levels of college students is important from a school health perspective.

One approach to the self-management of anxiety is using relaxation techniques. For example, representative relaxation techniques include autogenic training, progressive relaxation, and biofeedback. However, it is important to note that no single relaxation technique can be effective for all individuals[1]. Thus, it is useful to determine whether other types of relaxation techniques are effective. This

determination will aid in designing relaxation techniques that suit each individual's specific needs[3].

Acupressure, a treatment method in Chinese medicine, is one such relaxation technique. It is based on the meridian theory, which assumes that energy (Qi) flows through meridians, invisible circuitries, or channels in the body. Mental and physical health is disturbed if a Qi imbalance occurs (i.e., the energy flow is too slow, too fast, turbulent, or static). Acupressure aims to correct such imbalances by applying pressure to the traditional acupuncture points instead of puncturing the skin. It is important to note that acupressure can be self-administered once an individual learns to press particular acupuncture points accurately[4].

A survey of the literature has suggested that a single session of acupressure, provided by professionals, reduces anxiety[5–9]. Furthermore, Honda, Tsuda, and Horiuchi[10] have reported that a single session of self-administered acupressure significantly reduces anxiety in Japanese college students. In addition, self-administered acupressure is cost-free and can be used along with other techniques such as cognitive behavioral therapies[4]. These results

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have suggested that self-administered acupressure can be applied in the self-management of an anxiety.

However, no study has focused on individual differences in the magnitudes of anxiety reduction resulting from acupressure. Therefore, little is known about factors causing individual differences in efficacy. Greenberg[1] noted that no single relaxation technique can be effective consistently in all individuals. It may be possible that some people experience substantial decreases in anxiety through acupressure, whereas others experience very small ones. It is important for practitioners be cognizant of which individuals can benefit the most from acupressure.

One of the potential moderators may be the baseline level of anxiety. Although no direct test has been conducted in acupressure research, some studies on qigong have reported that the baseline level of anxiety moderates efficacy of qigong for reducing anxiety[11, 12]. Compatible results have been reported in stress[13]. Both qigong and acupressure aim to correct Qi imbalances, and it is suspected that the baseline anxiety level moderates efficacy of self-administered acupressure for reducing anxiety.

This study tests the baseline anxiety level as a moderator of efficacy for self-administered acupressure for anxiety reduction. It was hypothesized that a greater decrease in anxiety during self-administered acupressure would be found in more anxious students. Demonstration of evidence that the baseline anxiety level moderates the efficacy of self-administered acupressure would be expected to provide new information for maximizing its efficacy.

2. Methods

2.1. Participants

The participants in this study were 33 male and 16 female college students, and they provided complete data. The mean age was 30.6 years (SD = 9.10). College students majoring in acupuncture and moxibustion medicine were invited to participate because efficacy of acupressure depends on how accurately each participant presses certain acupuncture points, and these participants were expected to have greater knowledge of the positions of acupuncture points than students majoring in other subjects[3]. All the participants reported no history of current or previous physical or psychiatric illnesses. Because there was a lack of published data, it was difficult for us to determine how representative they were as a sample of college students majoring in acupuncture and moxibustion medicine in Japan.

2.2. Outcome Measure

The level of anxiety was measured using the Tension-Anxiety (TA) subscale of the Japanese version of the Profile of Mood States short form[14]. Participants were asked to report their anxiety at the moment when the scale was administered on a 5-point Likert scale. The raw score was converted into a T score (mean = 50, SD = 10) according to the manual. A T score of 60 or higher indicated a

relatively high level of anxiety.

2.3. Self-Administered Acupressure Course

The self-administered acupressure course used in this study was developed by Honda, Tsuda, and Horiuchi[3]. Briefly, participants were requested to press six acupressure points on the neck (three points each on the left and right sides) for twenty-five seconds, with sufficient pressure, but without causing discomfort. The majority of students who experienced this course of treatment reported that it was not too lengthy, easy to incorporate into their daily lives, and interesting[10]. This acupressure course has been confirmed to reduce anxiety effectively in Japanese college students [10].

2.4. Procedure

This study was conducted during classes in March 2011. The consent form and protocol of this study were approved by the Institutional Review Board of the university to which the first author belonged when the study was conducted. The participants received a thorough explanation about the study's purpose and procedure and signed written informed consent forms. After receiving a detailed explanation, all the participants completed the self-administered acupressure course described above.

2.5. Analyses

Prior to the main analyses, we confirmed whether the self-administered acupressure course would reduce anxiety. The mean TA score was expected to decrease over time. A paired t-test was used.

The participants were divided into the following four groups based on the baseline TA scores: Less anxious group (T score lower than 39); Slightly anxious group (T score ranging from 40 to 49); Mildly anxious group (T score ranging from 50 to 59); Highly anxious group (T score higher than 60). We examined whether the four groups were matched with regard to mean age using an analysis of variance with group as independent variable. These groups were fairly matched with regard to age [$F(3, 45) = 2.42, n.s.$].

Table 1. Age and Baseline Anxiety Level across Four Groups

	Variables	
	Age	Baseline anxiety level
Group		
Little	33.9 ± 10.7	35.3 ± 2.7
Slightly	33.1 ± 9.4	43.7 ± 2.7
Mildly	30.8 ± 8.3	53.3 ± 2.7
Highly	25.8 ± 6.5	66.7 ± 5.9

Then, the TA improvement score was calculated for each participant by subtracting the post-TA score from the pre-score. A greater value of TA improvement indicates

greater improvement in anxiety level. An ANOVA was conducted with the group as the independent variable and the TA improvement score as the dependent variable. The research hypothesis would be supported if the improvement was significantly greater in the Highly anxious group than in the Mildly anxious group, which would be greater than in the Slightly anxious group, which would be greater than in the Less anxious group.

3. Results

3.1. Change in Anxiety over Time

Figure 1 shows the change of the mean TA score over time. The score significantly decreased over time [$t(48) = 3.32, p < .01$]. The difference between the mean scores at two time points was 2.35.

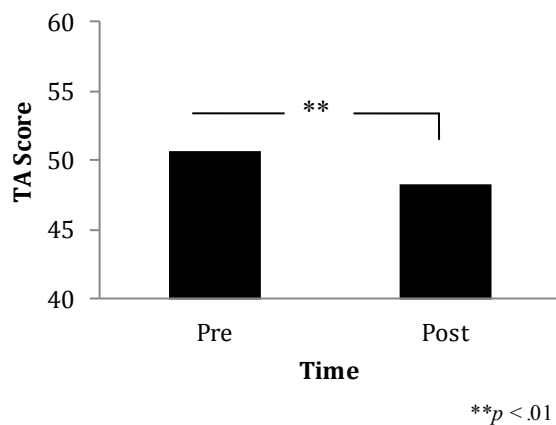


Figure 1. Change of the mean level of anxiety in the participants over time. Note. TA: tension-anxiety

3.2. Differences of Improvement across Groups

Figure 2 indicates the TA improvement scores across the four groups. The analysis of variance found a significant main effect for group [$F(3, 45) = 3.83, p < .01$]. Tukey's HSD post-hoc tests indicated that the TA improvement score was significantly higher in the Mildly anxious group than in the other three groups (all, $p < .05$).

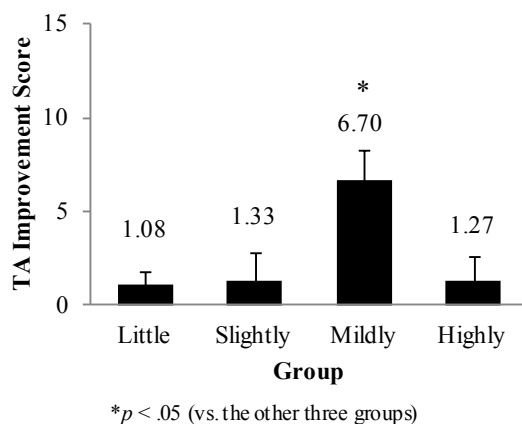


Figure 2. Magnitude of improvement in anxiety across groups. Note. TA: tension-anxiety

4. Discussion

This study tested baseline anxiety level as a moderator of efficacy for self-administered acupressure for anxiety reduction. A single session of the self-administered acupressure course significantly reduced anxiety, which was measured with the TA subscale of the Japanese version of the Profile of Mood States short form[14]. This result was in line with those of previous studies, which have reported that anxiety significantly decreases during self-administered or professionally provided acupressure courses. The absolute improvement in the whole sample group was 0.24 SD. This is in the small range in Cohen's[16] terms. However, the meaning of an effect size seems to vary across the contexts in which an intervention is conducted. For example, if an intervention is conducted to improve the anxiety level of a large population of students, it is hard to observe a substantial change in the average anxiety level. In such a circumstance, the effect in Cohen's[16] terms may be in the medium range[17]. Thus, the reduction of anxiety by 0.24 SD may be relevant in the context of a population-based intervention.

Acupressure has been known to decrease sympathetic activity. For example, Chang and Jun[15] reported that a 20-minute acupressure session resulted in a significantly lower blood level of noradrenaline, which is an indicator of sympathetic activity, 30 min after the intervention. Such a physiological effect may explain the significant decrease in anxiety found in this study.

The research hypothesis was only partially supported. It was hypothesized that the TA improvement score would be significantly higher in the Highly anxious group than in the Mildly anxious group, which would be higher than in the Slightly anxious group, which would be higher than in the Less anxious group. However, the TA change score was significantly higher in the Mildly anxious group than in the other three groups. The absolute improvement in this group was 0.67 SD. This is in the medium range in Cohen's[16] terms and seems to be in the large range in the context of a population-based intervention. Thus, the authors believe that this reduction is meaningful in terms of prevention and treatment. These results suggest that the associations between baseline anxiety level and the magnitude of decrease in anxiety during self-administered acupressure course are not linear. The improvement in anxiety was found to be more prominent in students who were mildly anxious, while such prominent improvement was not observed in those whose anxiety levels exceeded a cut-off point and were assumed to be high.

One might consider that those with mild anxiety responded well because it is a dose effect. However, if so, it is not reasonable that a very small decrease was observed in those in the Highly anxious group. Thus, it is not possible to explain the intergroup differences in the magnitudes of the decreases in anxiety merely by a dose effect. It is necessary to explore the mechanisms causing such differences.

These results were not consistent with those of previous

qigong studies, which have found greater improvements in anxiety during qigong exercises in more anxiety participants [11, 12]. One of potential reasons for inconsistent findings may be the difference between interventions. While both qigong and acupressure aim to correct Qi imbalance, these techniques are clearly different. Acupressure applies pressure on the body to correct Qi imbalance. In contrast, qigong mainly consists of respiration exercise and activation. Another reason may be the differences in the statistical analyses used. This study divided the participants into four groups and could detect non-linear associations between baseline anxiety level and the magnitude of decrease in anxiety during self-administered acupressure. However, previous qigong studies have used correlation and/or multiple regression analyses and focused on linear associations. Thus, the differences in the statistical analyses seem to be a potential cause of inconsistent results.

Although only limited support was obtained for the research hypothesis, the results of this study provided new, practitioner-friendly information. That is, individuals whose anxiety levels are not clearly high can receive prominent benefit from a self-administered acupressure course of treatment for reducing anxiety. In other words, if the anxiety level is clearly high, other techniques and interventions are more effective. This study's findings suggest that health promotion practitioners measure baseline anxiety level to predict how great a benefit their clients may receive through self-administered acupressure.

This study involves the following limitations. First, only one session of acupressure was conducted. It is important to examine whether findings in this study can be generalized to longer interventions. However, evidence of moderating effects of baseline anxiety levels in a single session represents an initial step for testing similar effects in a longer intervention. Second, only students majoring in acupuncture and moxibustion medicine were studied. It remains unclear whether the findings of this study can be generalized to other student populations. Indeed, efficacy of self-administered acupressure is affected by how accurately participants can press acupuncture points. It is reasonable, then, to choose a group of students in which the variation caused by the difference in such skill can be minimized. Third, no control group was included in this study. On the basis of the previous finding of Honda *et al.* [3] that the self-administered acupressure course used in this study reduced anxiety, this study did not include such a control group.

5. Conclusions

This study provided initial, but important evidence that individuals whose anxiety levels are not clearly high, but mild can benefit significantly from a self-administered acupressure treatment course for reducing anxiety.

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