

Chinabunchorn chanting causes stress level reduction evaluated by Thai Stress Test



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ABSTRACT

Background: Stress is defined as a bodily or mental tension resulting from factors that tend to alter an existent equilibrium. A stress response is the compensatory reaction the body makes to the disturbance caused by the stressor where overall impact of a stressor will depend on its features and the characteristics of those who have been affected. **Aims and Objective:** The aim of this study was to investigate how the Chinabunchorn chanting, an Eastern method of Buddhist meditation, reduced the self-perceived stress among participants. The specific objectives of the study was also to determine the stress level reduction of participants who have self-perceived stress and to relief the stress during specific circumstance. **Materials and Methods:** The samples were thirty participants divided into two groups; the target group who listened to Chinabunchorn chanting, the control group who did similar to the previous one except seeing the Buddha image. The Thai Stress Test was applied to all participants by rating their subjective feelings during experiment. **Results:** The result showed that there were statistical significance differences of both positive and negative scales comparing between before and after listening to Chinabunchorn chanting. All participants in the target group felt 'normal mental health' to 'excellent mental health' after listening Chinabunchorn chanting. Meanwhile, all participants in the control group felt 'mild stress' to 'normal mental health' after listening to Chinabunchorn chanting. However, no participant showed severe stress (stressful) in this study. **Conclusion:** By listening to Chinabunchorn chanting during any activities would help the stress level reduction.

Key words: Stress; Thai stress test; Meditation; Chanting; Chinabunchorn chanting

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INTRODUCTION

Stress is known as a matter of perception.^{1,2} Stress represents the wear and tear of the body.¹ Internal individual factors such as gender, age, and chronic illness as well as external individual factors named newly added experience from the environment such as education, occupation, and income have an influence on stress.³ Exploring the relationships, both of internal and external, of individual factors, is necessary.

Stress can be positive or negative. Positive stress is named eustress and negative stress is distress. Eustress triggers the body alarm, and enhances attention, performance and creativity which has temporary effects only. On the other hand, the distress has negative effects on the body.¹ However, chronic stress can have serious effects on human health and behavior.¹ Both assessing our bodies, reacting to stress and how we think, feel and behave in stressful situation are increasingly attention. The emotional responses to stress may include such feelings

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an anxiety, irritability, anger, embarrassment, depression, and hospitality, respectively.⁴

Stress is defined as a bodily or mental tension resulting from factors that tend to alter an existent equilibrium. A stress response is the compensatory reaction the body makes to the disturbance caused by the stressor.⁵ In addition, stress is defined as the process of appraising events (as harmful, threatening, or challenging), of assessing potential responses, and of responses which may include not just physiological but also cognitive and behavioural changes.⁶ Stress in individuals is defined as anything that disrupts the normal person's physical or mental wellbeing. A mild form of stress may manifest as a bad mood while an extreme one may lead to an act of violence, burnout or suicide.^{1,2} Nevertheless, the overall impact of a stressor will depend on its features and the characteristics of those who have been affected. The perceived rather than the absolute quantities of a stressor determine its potential impact.²

In balancing the dimensions of one's humanness, many people adopted several Eastern methods⁷, for instance, one such method is Buddhist mediation, which has been shown to be effective in treating mild to moderate hypertension.⁸ By engaging in Buddhist meditation, it could cultivate concentration and positive mindfulness to facilitate a decrease in the sense of suffering and an increase in a sense of calm.⁹ Therefore, the aim of this study was to investigate how Chinabunchorn chanting, an Eastern method of Buddhist meditation, reduced the self-perceived stress among participants. The specific objective of the study was also to determine the stress level reduction of participants who have self-perceived stress and to relief the stress during specific circumstance. It was also hoped that this study could contribute to the existing literature on the topic and provide information for possible future interventions.

MATERIALS AND METHODS

Participants

A total of thirty participants were participated in this study. They were equally divided into two groups; one was a control group (15 participants) and the other was the target one (15 participants).

The mean age of participants was 33.46 years (SD = 4.29) in the target group whereas 36.93 (SD = 2.44) for the control group.

Instruments

The Thai Stress Test which was developed by Phattharayuttawat et al.¹⁰ consists of 24 questions describing psychological reactions (both positive and

negative) in relation to events occurring in daily life of Thai people. All twenty-four questions in the Thai Stress Test was used to assess one's feelings and thoughts (positive and negative) over the past month, for instance, "Do you feel lonely?"; "Do you feel bored and discouraged about doing anything?"; "Do you feel proud about yourself?"; and, "Do you feel pleased about your life?", respectively. Possible responses to each questions include 0 means "Never"; 1 means "Sometimes", 3 means "Often", respectively. Responses to questions assessing negative feelings (items 1-12) and positive feelings (items 13-24) were separately summed, with both having a possible range of 0 to 36. Each question could be rated on a three-point scale: 'never', 'sometimes' and 'often'. The respondents were asked to put a tick (✓) in the column corresponding to the feeling that has applied best to them during the past month. To calculate scores, positive and negative scores were combined separately. Weights of 0, 1 and 3 are assigned to represent 'never', 'sometimes' and 'often' respectively, then stress indicator is categorized by using the matrix table of the Thai Stress Test, shown in Table 1. To obtain an index scores, results of the two scores were simultaneously compared to the Thai Stress Test matrix table. The index score obtained, according to the Thai Stress Test matrix table, was used to determine the individual's level of stress (good mental health, normal, mild stress or severe stress). Based on the Phattharayuttawat's study,¹⁰ the Thai Stress Test has both constructive validity and reliability: the total reliability coefficient for the Alpha, which was 0.84, and value, of the two scales ranged from 0.83 to 0.86. The total split half was 0.88, with the Alpha ranging from 0.85 to 0.91.

The four stress levels were divided into four groups as follows:

- Group with stress has score group of 7,8 and 9 for those indicating severe stress or stressful
- Group with mild stress has score group of 5 and 6 for those indicating mild stress
- Group with normal has score group of 2,3 and 4 for those indicating normal mental health
- Group without stress has score group of 1 for those indicating excellent mental health, shown in Table 2.

Table 1: Matrix table for the index of the Thai Stress Test

Negative Scales Score (Sum of Items 1-12)	Positive Scales Score (Sum of Items 13-24)				
	12-36	9-11	6-8	3-5	0-2
0 – 1	1	2	3	4	5
2 – 3	2	3	4	5	6
4 – 5	3	4	5	6	7
6 – 7	4	5	6	7	8
8 – 36	5	6	7	8	9

Procedures

All thirty participants were divided into two groups; the target group saw Buddha image on the computer screen in front of them while listening to Chinabunchorn chanting for 10 minutes long and the other control group saw spot on the computer screen in front of them while listening Chinabunchorn chanting for 10 minutes long. The procedures included (a) focus group discussions which carried out by the authors to obtain qualitative information about sources of stress during the past months, and (b) questionnaires were sent to participants which composed of demographic data and personal information including gender, age, educational level, and Thai Stress Test questionnaire to measure stress levels. In the Thai Stress Test, all participants were asked to rate their stress level for each particular event ranking from 0 = 'no stress at all' to 4 = 'severely stressful'.

The Institutional Review Board (IRB) of the primary investigator's (PI) academic institution (Mae Fah Lung University, Thailand) reviewed the study and its procedure and approved prior to implementation. As participants arrived to the laboratory, all participants were informed about (a) the purpose of the study, (b) voluntary participation, (c) what study involvement entailed, (d) confidentiality and anonymity issues, and (e) the right to withdraw from the study anytime without repercussions, accordingly. Both written and verbal consents to participate along with the questionnaires were also obtained from

those agreeing to take part in the study. All activities took at the Brain Science and Engineering Innovation Research Unit, School of Anti-Aging and Regenerative Medicine, Mae Fah Luang University, Bangkok, Thailand.

Data collection and analysis

Demographic data and stress levels were analyzed by using descriptive statistics. Descriptive statistics (mean, standard deviation, and percentages) were used for summarizing the outcome variables. A comprehensive score was derived from the twenty four questions of the Thai Stress Test as an outcome variable using the statistical software.

RESULTS

A total of 30 participants involved in this study showing in Table 3. They were equally divided into two groups; one was a control group (15 participants) and the other was the target one (15 participants). The participant comprised unequal number of male (30%) and female (70%); a number of male (33.33%) and female (66.67%) participants in the target group whereas a number of male (26.67%) and female (73.33%) participants in the control one. The mean age of participants was 33.46 years (SD = 4.29) in the target group whereas 36.93 (SD = 2.44) for the control one. A total of 93.33 percent had an undergraduate educational level in the target group whereas 46.67 percent was in the control one. In addition, there was one participant (6.67%) had a graduate level similar to the control group. However, there were diversity of educational background of participants in the control group; 6.67 percent at Prathom 6 level, 20 percent at Mathayom 6 and Vocational diploma, respectively.

Chinabunchorn chanting in target group

Table 4 compared the stress indicator between before and after listening to Chinabunchorn chanting in the target group. It was found that there were statistical

Table 2: Distribution of the sample of the index of the Thai Stress Test

Score Group	Stress Indicator (Level of Stress)
1	Excellent Mental Health
2, 3, 4	Normal Mental Health
5, 6	Mild Stress
7, 8, 9	Stressful

Table 3: Demographic data of the sample (n = 30)

Characteristics	Control Group (n = 15)		Target Group (n = 15)	
	Number	Percent	Number	Percent
Gender:				
Male	4	26.67	5	33.33
Female	11	73.33	10	66.67
Age:				
Less than 25 years	-	-	5	33.33
26 – 30 years	3	20.00	3	20.00
31 – 35 years	5	33.33	1	6.67
36 – 40 years	4	26.67	2	13.33
41 – 60 years	3	20.00	4	26.67
Education				
Prathom 6	1	6.67	-	-
Mathayom 3	-	-	-	-
Mathayom 6	3	20.00	-	-
Vocational diploma	3	20.00	-	-
Undergraduate	7	46.67	14	93.33
Graduate	1	6.67	1	6.67

significance differences of both positive scales scores ($t(29) = -2.63; p = 0.02$) and negative scales scores ($t(29) = 4.23; p = 0.001$) between before and after listening to Chinabunchorn chanting. The positive scale scores (25.67 ± 6.26) before listening to Chinabunchorn chanting were smaller than after listening to Chinabunchorn chanting (28.27 ± 7.29). On the other hand, the negative scale scores (7.20 ± 4.96) before listening Chinabunchorn chanting were larger than after listening Chinabunchorn chanting (4.80 ± 4.57) (Table 4 and Figure 1). Matrix table of the Thai Stress Test index between before and after listening to Chinabunchorn chanting in the target group is also shown in Table 5.

Table 5 showed the stress indicator of all participants in the target group (15 participants) of both before and after listening to Chinabunchorn chanting. The stress indicator showed as ‘normal mental health’ to ‘excellent mental health’.

Chinabunchorn chanting in control group

Table 6 compared the stress indicator between before and after listening to Chinabunchorn chanting in the control

group. It was found that there was no statistical significance differences of both positive scales ($t(29) = -1.46; p = 0.17$) and negative scales ($t(29) = 1.26; p = 0.23$) between before and after listening to Chinabunchorn chanting. The positive scale scores (23.40 ± 8.20) before listening to Chinabunchorn chanting were smaller than after listening to Chinabunchorn chanting (24.60 ± 8.42). In contrast, the negative scale scores (7.40 ± 2.95) before listening Chinabunchorn chanting were larger than after listening Chinabunchorn chanting (6.40 ± 3.87) (Table 6 and Figure 2). Matrix table of the Thai Stress Test index between before and after listening to Chinabunchorn chanting in the control group is also shown in Table 7.

Table 7 showed the stress indicator of all participants in the control group (15 participants) of both before and after listening to Chinabunchorn chanting. The stress indicator showed as ‘mild stress’ to ‘normal mental health’.

DISCUSSION

This study is a cross-sectional study. Participants were asked to rate their subjective feelings which reflected only their current level of stress assessed by the Thai Stress Test.¹⁴ It was found that there were statistical significance differences of both positive and negative scales between before and after listening to Chinabunchorn chanting. The positive scales were larger before listening compared to the after listening session. In contrast, the negative scales were larger before listening compared to the after listening session. All participants in the target group felt ‘normal mild health’ to ‘excellent mental health’ after listening to Chinabunchorn chanting. Meanwhile, all participants in the control group felt ‘mild stress’ to ‘normal mental health’ after listening to Chinabunchorn chanting. No participant showed severs

Table 4: Stress indicator in the control group compared between before and after listening to Chinabunchorn chanting

Stress indicator	n	Mean	SD	t	p
Positive scale: Before listening	15	25.67	6.26	-2.63	0.02*
Positive scale: After listening	15	28.27	7.29		
Negative scale: Before listening	15	7.20	4.96	4.23	0.001**
Negative scale: After listening	15	4.80	4.57		

* $p < .05$; ** $p < .01$

Table 5: Matrix table of positive and negative scores assessed by the Thai Stress Test in the target group compared between before and after listening to Chinabunchorn chanting

Participants	Before Listening to Chinabunchorn Chanting				After Listening to Chinabunchorn Chanting			
	Positive scale	Negative scale	Score group	Stress indicator	Positive Scale	Negative scale	Score group	Stress indicator
1	20	4	3	Normal	20	3	2	Normal
2	28	6	4	Normal	34	1	1	Excellent
3	27	5	3	Normal	34	1	1	Excellent
4	28	3	2	Normal	32	1	1	Excellent
5	36	7	4	Normal	36	5	3	Normal
6	20	18	5	Mild stress	20	12	5	Mild stress
7	25	4	3	Normal	26	3	2	Normal
8	32	4	3	Normal	36	1	1	Excellent
9	19	4	3	Normal	22	2	2	Normal
10	18	6	4	Normal	24	5	3	Normal
11	36	5	3	Normal	36	3	2	Normal
12	24	10	5	Mild stress	18	12	5	Mild stress
13	16	18	5	Mild stress	18	12	5	Mild stress
14	30	3	2	Normal	32	0	1	Excellent
15	26	11	5	Mild stress	36	11	5	Mild stress

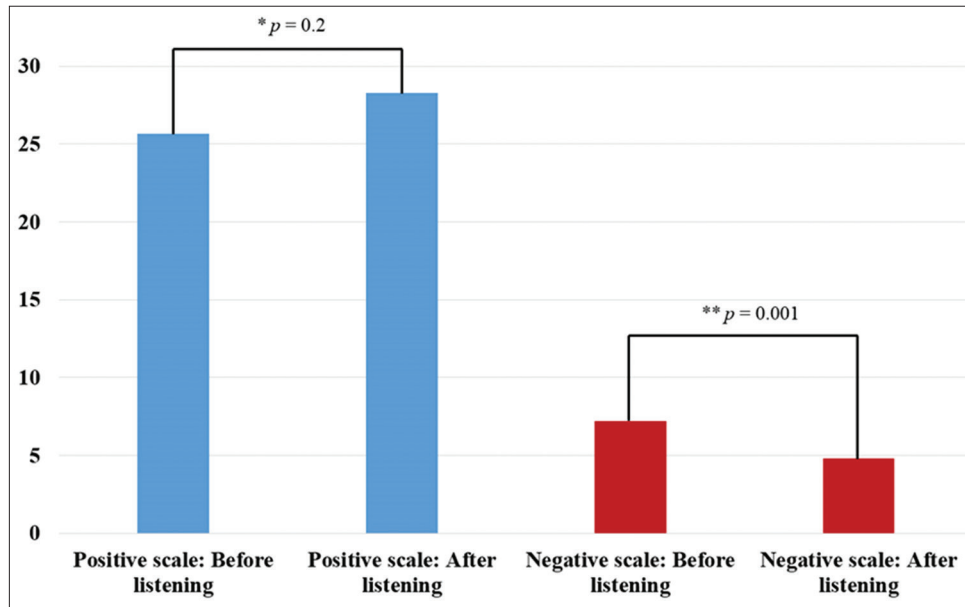


Figure 1: Stress indicator in the target group compared between before and after listening to Chinabunchorn chanting

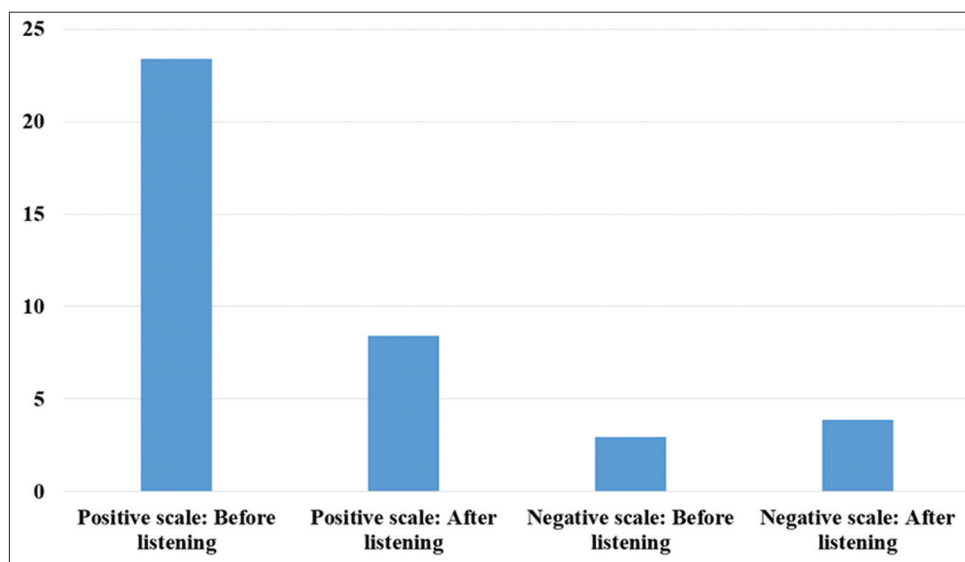


Figure 2: Stress indicator in the control group compared before and after listening to Chinabunchorn chanting

Table 6: Stress indicator in the control group compared before and after listening to Chinabunchorn chanting

Stress indicator	n	Mean	SD	t	p
Positive scale: Before seeing picture	15	23.40	8.20	-1.46	0.17
Positive scale: After seeing picture	15	24.60	8.42		
Negative scale: Before seeing picture	15	7.40	2.95	1.26	0.23
Negative scale: After seeing picture	15	6.40	3.87		

stress (stressful) in this study. The result assessed by the Thai Stress Test in this study will then be a more direct

and meaningful application to detect mental health illness.

Stress is the psychological and physical state that results when the resources of the individual are not sufficient to cope up with the demands and pressure of the situation.²⁷ It usually results in negative thoughts and perceptions which affects even their day to day life. Similar to a previous study,¹⁸ the framework upon which this research was based Buddhist doctrine. According to the previous studies, Buddhism views illness as an imbalance between the body and mind.¹²⁻¹⁵ This imbalance can lead to suffering (i.e. discomfort or stress) and a decreased sense of peacefulness.¹⁴ Buddhist meditation then appears to serve as a catalyst for self-healing by restoring and balancing

Table 7: Matrix table of positive and negative scores assess by the Thai Stress Test in the control group compared between before and after listening to Chinabunchorn chanting

Participants	Before Listening to Chinabunchorn Chanting				After Listening to Chinabunchorn Chanting			
	Positive scale	Negative scale	Score group	Stress indicator	Positive scale	Negative scale	Score group	Stress indicator
1	29	7	4	Normal	30	7	4	Normal
2	36	4	3	Normal	36	2	2	Normal
3	16	8	5	Mild stress	17	9	5	Mild stress
4	32	13	5	Mild stress	32	11	5	Mild stress
5	26	9	5	Mild stress	23	6	4	Normal
6	7	6	6	Mild stress	7	5	5	Mild stress
7	32	2	2	Normal	36	2	2	Normal
8	27	7	4	Normal	34	3	2	Normal
9	14	5	3	Normal	22	3	2	Normal
10	24	6	4	Normal	24	12	5	Mild stress
11	12	9	5	Mild stress	12	9	5	Mild stress
12	28	8	5	Mild stress	24	6	4	Normal
13	22	5	3	Normal	22	5	3	Normal
14	26	12	5	Mild stress	28	14	5	Mild stress
15	20	10	5	Mild stress	22	2	2	Normal

the interaction between one's mind and body.¹⁴⁻¹⁶ Previous studies found that Buddhist meditation had an influence on the stress levels and blood pressure readings of the hypertensive participants.¹⁴ Regardless of the type of meditation practice used, prior studies have found when meditation is performed, for 10 to 45 minutes at least once to twice daily for six weeks or more, there tends to be a decrease in both the systolic and diastolic blood pressure readings,¹⁷⁻²¹ and levels of stress.^{14,17,18} When stress begins, muscles constrict and the respiratory rate increases, consuming metabolic energy.¹⁴ The breakdown of stored energy increases blood glucose circulation and stimulates insulin production. Chronic stress can atrophy muscles and lead to fatigue and insulin resistance, decreasing the quality of life.¹⁴

Stress has been found to be associated with anxiety and depression,^{12,22} interpersonal conflict,¹⁷ sleep problems,¹⁸ and lower academic and clinical performance.¹⁹ In 1956, Selye described on organism's physiological responses to stress and formulated the general adaptation syndrome (GAS), composed of three phases including alarm, resistance, and exhaustion, respectively.²⁰ Thus, it is necessary to take into account the psycho-social-spiritual aspects of being human by mean of the interactions among all dimensions of humanness, especially the physical body and mind.^{21,23,24}

Achterberg and colleagues²⁵ additionally stated that according to a Buddhist perspective, mankind confronts distress at all times because of the "Three Characteristics of Existence" (*tilakkhana*): impermanence (*anicca*); suffering (*dukkha*); and, no-self (*anatta*), respectively.²⁶ However, humans can decrease or eliminate their suffering or distress by practicing Buddhist meditation.²⁶ It helps

establish cheerfulness (*pramod*), joy (*piiti*), pleasure (*sukha*) and concentration (*Samadhi*), all which appear to stimulate the parasympathetic nervous system.²⁶ Previous studies showed that stimulation of the parasympathetic nervous system could lead to a decrease in heart rate, dilatation of peripheral blood vessels and improvement in blood flow, which, subsequently, causes a decrease in blood pressure.^{14,21,26} Engaging in Buddhist meditation cultivates concentration and positive mindfulness that can facilitate a decrease in the sense of suffering and an increase in a sense of calm. Positive mindfulness appears to stimulate the parasympathetic nervous system, which, in turn, leads to a decreased heart rate, dilation of the peripheral blood vessels and improved blood flow.²⁸ These factors, subsequently, contribute to reduction in one's blood pressure.^{14,27} Saeloo and colleagues¹⁴ stated that the peacefulness experienced by these individuals, as a result engagement in Buddhist meditation, may have been the result of beta endorphin production in the hypothalamus. In addition, beta endorphins have a morphine-like characteristic that can have a positive effect on mood (i.e. peacefulness and calmness).¹² A peaceful state of mind (i.e. reduced stress) can stimulate functioning of the parasympathetic nervous system which results in a decrease in heart rate, dilation of the peripheral blood vessels and improvement in blood flow.^{12,22} All of these factors can finally lead to a reduction of one's blood pressure.¹⁴

The fact that Buddhist meditation had an influence on the stress levels and blood pressure readings of the hypertensive participants is consistent with prior findings. Regardless of the type of meditation practice used, prior studies have found when meditation is performed, for 10 to 45 minutes at least once to twice daily for six weeks or more, there tends to be a decrease in both the systolic

and diastolic blood pressure readings,^{16,29-32} and levels of stress.^{16,32} Prior research has found that meditation decreases systolic and diastolic blood pressure,^{16,29-32} heart rate,^{29,30} stress,^{16,32} and the use of antihypertensive medications.³¹

However, this study had limitations that need to be taken into consideration. First, all participants were Buddhists and had a middle socio-economic level. Thus, this experimental design may not be applicable to individuals from other religions, cultures or socio-economic levels. Second, because of the small number of subjects (30 participants), no inferential statistics could be done to demonstrate if any of the changes in blood pressure, stress levels or mindfulness levels were statistically significant. The findings of the evaluation of stress level must be used with great caution. Using a much larger participant sample size thus is recommended for future study. Finally, a sufficient number of measurements regarding stress, mindfulness and blood pressure need to be obtained so that inferential statistics can be used in the determination of whether Chinabunchorn chanting actually has a statistically significant impact on one's stress level, mindfulness and blood pressure.

CONCLUSION

Findings of participants' feeling as an 'excellent mental health' after listening Chinabunchorn chanting indicated psychological morbidity played as a common role facing with any circumstances. By listening to chanting during any activities would help the stress level reduction. The result assessed by the Thai Stress Test was more direct and meaningful application to detect mental health illness. Further studies based on larger sample sizes are recommended to explore consequences and describe this phenomenon.

Disclosure

The author reports no conflicts of interest in this work.

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Authors Contribution:


MW-Concept and design of the study, statistically analyzed and interpreted; **VB**-Concept and design of the study; **AS**-Concept and design of the study; **PS**-Concept and design of the study, manuscript preparation, statistically analyzed and interpreted, critical revision of the manuscript.

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