

Chant and Be Happy: The Effects of Chanting on Respiratory Function and General Well-Being in Individuals Diagnosed with Depression

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Abstract

The effects of chanting on respiratory function and general well-being in individuals with mild to severe depression were tested in this pilot study. A total of 10 women and 1 man participated in this 8-week-long chanting program. All of the participants had been previously diagnosed with mild to severe depression.

Several testing measures were employed. All subjects filled out a preliminary screening questionnaire and took the Beck Depression Inventory at the beginning of the study prior to their first chanting class and at the last meeting before chanting started. A 5-point Likert Scale Questionnaire was administered before and after each session. Spirometry was used to evaluate subjects' FVC, FEV, and FET. Each subject also self-administered pre and post peak/flow tests, taking the best of three forced exhalations before and after each chanting session.

At the end of 8 weeks, our results showed that participants increased their breath control and overall expiratory output level. Additionally, 10 of our 11 subjects surveyed showed an increase in their overall mood on the Beck Depression Inventory. The score for one participant remained the same. Preliminary results from this pilot study indicate that chanting is an effective means of increasing people's moods in the immediate present, as well as over an extended period of time in which chanting is performed at least once per week.

Participants

Our participants were notified of our study by web announcement, public radio announcements, print advertising, and flyers. To be admitted to the study, each potential participant was required to fill out a screening application. Minimum criteria included: availability, a diagnosis of depression, and no axis-2 conditions. Additional screening questions included cigarette/alcohol/drug use, prior Yoga experience, prior singing or chanting experience, prior knowledge of the respiratory system and its functioning, medication use, and prior history of respiratory ailments, including asthma and allergies.

Measures

The following measures were used:

1. *Beck Depression Inventory (BDI):*¹ The BDI was administered twice as a pre/post measure, at week 1 and at the beginning of week 8. The Beck measures several parameters associated with depression, including sadness, dislike of self, and low energy level, and has been shown to have excellent validity and reliability. Scores are given on a 0–40 scale with intervals describing specific degrees of depression.
2. *Spirometry:*² Spirometry was also used twice, at week

1 and at the beginning of week 8. A spirometer is a sophisticated and sensitive instrument used to measure respiratory function.

3. *Five-point Likert Scale Questionnaire (5LSQ)*: A 5-point Likert Scale Questionnaire (5LSQ) developed by the researchers specifically for this study was used before and after each session. In the 5LSQ, subjects were asked to respond to a total of 10 short statements. Participants were asked to rate their experience from between 1 and 5 with 1 indicating the least agreement and 5 the greatest. The ten statements were as follows:

- I feel tired.
- I feel sad.
- I feel hopeful.
- I feel connected.
- I like myself.
- I feel energetic.
- I feel anxious.
- I have a lot to offer.
- I have many good qualities.
- I feel stressed.

4. *Peak/Flow Meter*:³ A peak/flow meter is a simple, portable, inexpensive device that measures airflow, or peak expiratory flow rate (PEFR). This was self-administered by each of the participants prior to and following each of the eight chanting sessions.

5. *Final Qualitative Questionnaire*: The researchers devised a Final Qualitative Questionnaire (FQQ) to allow for participants to offer anonymous, yet personal descriptions of their experience. Subjects responded to the following ten questions:

1. In general, what are your overall impressions of how your mood may have changed throughout these past 8 weeks?

2. Did you ever unexpectedly find yourself chanting at any points during the week? If so, which chants came to mind?

3. Did anyone around you, family, friends, or coworkers, notice or make any comments about your change in mood or behavior that you may attribute to your participation in the study? If so, please describe.

4. Have you noticed any changes in your life since participating in the study? If so, please describe.

5. Have you noticed any change in your breathing/respiratory capacity since the start of the study? Do you notice an increase in your desire to be more physically active, i.e., take a Yoga class, go for a walk, etc.?

6. Do you think you will continue to chant on a regular basis?

7. What did you like most about the study and/or your experience?

8. What did you like least?

9. If we were to do this again, what recommendations would you make that could improve this study?

Methodology

Participants were sought via word of mouth, via service announcements on a local radio station, and through The Samarya Center's website. Additionally, flyers describing the purpose of the study were sent to several Seattle area Yoga studios for posting. A total of 12 people responded to the call for participants. Due to attrition, infrequent attendance, or incomplete measures, the final number of participants whose data could be used for statistical analysis was 10.

Subjects were asked to commit to a minimum of six of eight Yoga classes in exchange for receiving free classes upon completion of their par-

ticipation in the study. Before being accepted into the study, subjects were asked to complete a preliminary screening questionnaire that explored each subject's history of depression, age of diagnosis, and lifestyle behaviors, in addition to acquiring emergency contact and demographic information.

At the first meeting, participants completed a Beck Depression Inventory (BDI) before chanting began, and then spirometry, the best of 3 measures from a peak/flow meter, and a 5-point Likert Scale Questionnaire (5LSQ) at the beginning and end of class.

Classes had the same general structure from week to week. We began with checking in, which included announcements, as well as comments, feedback, and questions from the class. Chanting accounted for approximately 45–60 minutes of the 90-minute session, with the duration of each chant progressively increasing over the 8-week period. We started with 6 minutes each and gradually increased to over 12 minutes. Class might consist, for instance, of five 6-minute and two 12-minute chants, varying in tone and structure from simple to complex. The majority of chants were done as call and response, although most sessions ended with the sacred *mantra om purnamaha* chanted in unison, followed by *shavāsana* (corpse pose).

At the end of every session, participants completed the 5LSQ and wrote down their greatest of three peak/flow meter results on the latter questionnaire. On the last evening of the study, participants were retested using a spirometer, and they completed a second BDI in addition to completing the 5LSQ and providing peak/flow results.

Results

Beck Depression Inventory

A paired sample t test was conducted to examine differences between pre and post test scores on the Beck Depression Inventory. A significant difference was found ($t=3.934$, $p=.003$). On average, participants prior to the intervention scored in the range of moderate depression and at week 8 scored in the borderline range, while 3 of the 10 participants fell in the normal range at the end of treatment. This shows an average improvement of 5.6 points on the scale.

FVC and FET

No significant differences were found between pre (week 1) and post (week 8) tests. For more details, however, please see the discussion.

Flow

No significant differences were found between average pre and post tests each session, nor over the course of the eight weeks.

Likert Scale Items

Positive Item Factor: No significant change over the course of treatment was found, but there was a significant difference between pre and post tests each session. Positive items increased at session post test.

Negative Item Factor: No significant change over the course of treatment was found (although the change approached significance), but there was a significant difference between pre and post tests each session. Negative items decreased at session post test.

Single Items: For each item there was a significant change from pre to post test each session. Only energy level, however, showed significant change over the course of treatment, increasing over the eight weeks.

Final Qualitative Questionnaire: There were mostly positive responses, including, "I've noticed more clarity, more groundedness, and a stabilizing of my emotions"; "[I have] increased energy, much stronger expressions of self"; "Sometimes in stressful or panic moments, I'll look to the chants to try to calm myself." Most participants reported a greater desire to participate in physical activity during the 8-week study, even though there was little or no *āsana* practice during the sessions.

Discussion

At the end of this eight-week pilot study, participants demonstrated increased breath control and overall expiratory output level as measured by spirometry, and 10 of 11 subjects showed an increase in their overall mood (with one participant's score on the Beck Depression Inventory remaining the same). Participants reported an increase in positive statements (e.g., "I feel connected") and a decrease in negative statements (e.g., "I feel anxious") at the end of each chanting session. The latter finding is perhaps one of the most encouraging. In as little as one hour of chanting, in addition to reporting increased mood, participants' thoughts and statements about themselves noticeably improved. They consistently reported having more "good qualities" as well as having "more to offer."

This preliminary eight-week study thus shows interesting and promising results for the use of chanting as an effective modality in

increasing people's moods. Although there are several factors to consider in applying these results, the simplicity of the method, along with the significant results found suggest that the use of chanting should not be overlooked as a part of a complete Yoga program for individuals with depression who are seeking Yoga therapy.

As Yoga therapists, many of us use chanting as an opening or closing ritual in our sessions, but we tend not to use it as a primary therapeutic modality. Not only did our study find, however, that chanting as a primary modality made a significant change in mood, but our participants also stated that they were more interested in taking up physical activity—an unanticipated finding. This further strengthens the argument for Yoga therapists to use chanting, not only as a way to increase mood, but also as a way to elicit more movement from students.

In addition to a decrease in depressive symptoms, all the participants increased their forced expiratory time suggesting an overall increase in breath control, even though the changes were not statistically significant. We also observed students' general tendency to take one or more full deep inhalations at the end of each chant, as well as increased overall mood and vitality among the students at the end of the session. The importance of breath as an indicator of well-being is well known to practitioners of both Yoga and medicine. It is believed to be the only aspect of the autonomic nervous system that is both voluntary and involuntary. That is, we can use our deep breathing to elicit a relaxed state, something that tends to be lacking in clinical populations.

The implications of an accessible, no-cost intervention for depression are substantial. Depression

impacts approximately 19 million Americans per year and is the fifth leading cause of death and disability worldwide. The annual cost of mental illness in the United States runs approximately \$205 billion, with depression comprising a large proportion of those costs. Lengthy psychotherapy interventions and expensive pharmacological treatments account for a large proportion of the latter. By providing an intervention methodology that is readily available and easily incorporated into existing programs, treatment programs could potentially be shortened and costs reduced.

One limitation to this study is the lack of a control group. A control group would help to identify if it was actually the chanting that increased the mood and scores on the BDI and LSQ, or if there were other factors such as joining a group, making an eight-week commitment, deciding to do something positive for one self, or simply the passing of time that could account for the decrease in depressive symptoms and increased respiratory functioning.

A larger study will have access to a larger cohort and more well-controlled diagnostic criteria, and in addition it would be interesting to note differences among groups with varying degrees of depression. A larger study also will hopefully allow us to apply these results more specifically and in more clinical and medical settings.

The final qualitative statements by the participants in the study say it all: "I've noticed more clarity, more groundedness, and a stabilizing of my emotions"; "Increased energy, much stronger expressions of self"; "Sometimes in stressful or panic moments, I'll look to the chants to try to calm myself."

Definitions

Chanting: "Chanting" for the purposes of this study is defined as repetitive devotional invocations sung primarily as *kirtana*, or call-and-response singing. Chants last for up to twelve minutes and may be accompanied by hand clapping, drumming, or other basic percussion.

Depression: For the purposes of our study, having been diagnosed with depression by a medical professional at some time within the past five years, or being self-described as currently depressed, constituted "depression."

General well-being: This refers to the general emotional state as described on both standardized (Beck Inventory) and subjective measures (Likert Scale). Changes in well-being were measured over eight weeks with standardized pre and post tests, as well as within each of the eight individual sessions.

Respiratory function: This includes peak flow, total volume, and respiratory control.

Endnotes

1. The Beck Depression Inventory (BDI) has been shown to be statistically accurate and was used for its ease in administration and statistical sturdiness. The BDI was designed to measure the presence of depression in adolescents and adults and yields a single score indicating intensity of an individual's depression.

The BDI was originated by A. T. Beck, C. H. Ward, M. Mendelson, J. Mock, and J. Erbaugh. See their article, "An Inventory for Measuring Depression," *Archives of General Psychiatry*, 1961, 4:561-571. The latter was revised in 1971 and copyrighted in 1978. Both the original and revised versions have been found to be highly correlated at .94 test-retest reliability.

As described by G. Groth-Marnat in *Handbook of Psychological Assessment* (New York: John Wiley and Sons, 1999), the Beck

Depression Inventory (BDI) is "a 21-item test presented in multiple choice format which purports to measure presence and degree of depression in adolescents and adults. Each of the 21-items of the BDI attempts to assess a specific symptom or attitude 'which appear(s) to be specific to depressed patients, and which are consistent with descriptions of the depression contained in the psychiatric literature.' Although the author of the BDI, Aaron T. Beck, is associated with the development of the cognitive theory of depression, the Beck Depression Inventory was designed to assess depression independent of any particular theoretical bias."

The BDI requires a fifth to sixth grade reading level to sufficiently understand the questions and takes approximately 10 minutes to complete.

2. Spirometry assesses the mechanical properties of the respiratory system by measuring expiratory volumes and flow rates. This test requires the patient to make a maximal inspiratory and expiratory effort. The patient, in a sitting position, breathes into a mouthpiece, giving full effort, encouraged by a skilled tester. At least three tests of acceptable effort are performed to ensure reproducibility of results.

FEV1 (forced expiratory volume 1): the volume of air that is forcefully exhaled in one second

FVC (forced vital capacity): the volume of air that can be maximally forcefully exhaled

FEV1/FVC: ratio of FEV1 to FVC, expressed as a percentage

FEF25-75 (forced expiratory flow): the average forced expiratory flow during the mid (25-75%) portion of the FVC

PEF (peak expiratory flow rate): the peak flow rate during expiration

3. A peak/flow meter is blown into quickly and forcefully, and the resulting peak flow reading indicates how open the airways are, or how difficult it is to breathe.

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