

Effects of nadi-shodhan pranayama and yoga-nidra on emotional maturity and mental health of young adults

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ABSTRACT

Context: Young adulthood is an age of complex development marked by various concerns of mental and emotional well-being of the individuals which could lay grounds for development of mental health issues in later life. Mental health and emotional maturity are two such major concerns. Yoga is seen to be very effective for improving mental as well as emotional well-being. **Aim:** The impetus of the present study was to examine the effects of yoga practices which include Nadi-Shodhan Pranayama and Yoga-Nidra on mental health and emotional maturity of the participants. **Settings and Design:** A yoga specific practice programme which included nadi-shodhan pranayama and yoga-nidra was used as the intervention plan. The intervention was practised by the participants daily from 6:00 AM to 7:15 AM for a month. **Methods and Material:** A total sample size of thirty young adults was selected from a college situated in Uttarakhand (India). They were administered on Emotional Maturity Scale and Mental Health Scale before and after the intervention. **Statistical Analysis Used:** Paired t-test method was used for statistical analysis of the data obtained by administering the tests before and after the intervention. **Results:** All the participants attended the whole intervention plan. The yoga practices (nadi-shodhan pranayama and yoga-nidra) significantly increased the level of mental health ($p < 0.01$) and emotional maturity ($p < 0.01$). **Conclusion:** Nadi-shodhan pranayama and yoga-nidra both improve an individual's emotional maturity and mental health. Apart from its physical benefits, yogic interventions have a positive impact on our mental and emotional well-being.

Keywords: Young Adults, Emotional Maturity, Mental Health, Nadi-Shodhan Pranayama, Yoga-Nidra

Young adulthood is the age of transitory development characterised by gradual physical growth and enhanced mental growth. This period is a unique and critical time of development where unmet health needs and health disparities remain high (Leslie, Christie, Joffe, 2017).^[1] Young adults, typically ranging from 18-25 years of age, experience a wide array of behavioural, psychosocial and emotional changes. Evidences reveal that this age not only shows signs of emotional issues but it also affects the mental health. An estimated 10-20% of young adults globally experience mental health conditions,

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yet these remain under-diagnosed and under-treated (Kessler et. al., 2007).^[2] The severity could be estimated through the data which show one out every four adults experiences an episode of depression at this age (American Psychological Association, 2009).^[3] Studies reveal that the emotion dysregulation mediates the relationship between stressful life events and aggressive behaviour among young adults (Herts, McLaughlin, Hatzenbuehler, 2012).^[4] It is established that young adults with better emotional regulation are seen to be emotionally mature and possess better mental health whereas, emotional immaturity affects the mental well-being.

Emotional maturity means controlling, monitoring and directing our emotions rather than allowing our emotions to do so. Some signs of emotional maturity include, but are not limited to, taking responsibility of ourselves, recognizing and admitting when we are wrong, recognizing and accepting our own feelings and needs, setting healthy boundaries (stating what is acceptable to us, and what will and will not allow), pausing between feeling and reacting, grit, composure, and ability to endure setbacks, positivity and optimism, integrity and honesty, self-control and delayed gratification, gratitude expression, 'don't take it all so personally', etc.^[5]

Mental health refers to cognitive, behavioural, and emotional well-being. It is all about how people think, feel, and behave.^[6] It is the state at which someone functions at a satisfactory level of cognitive behavioural and emotional adjustment. In general, mental health is considered as an absence of mental illness. Positive psychology defines mental health as an individual's ability to enjoy life and to create a balance between life activities and efforts to achieve psychological resilience.^[7] The World Health Organisation (2001) suggests that mental health includes subjective well-being, autonomy, competence, perceived self-efficacy, inter-generational dependence, and self-actualization of one's intellectual and emotional potential, among others.^[8]

Emotional maturity and mental health of young adults have been studied as a broader construct. Different intervention programmes with an elaborate on counselling and psychosocial therapies have made ways to enhance these domains (Bala S, 2014).^[9] The results of counselling and psychosocial therapies are promising but also depend on various personality aspects of the clients. It is also seen that there is a marked tendency among young adults that they do not want to seek any psychotherapy, nor do they respond positively to counselling and psychotherapies. Apparently, to fill in the gap and developing a potential intervention plan that has better implication is required. In this context, Yoga has been emerging as a great therapy and intervention for different mental health issues.

The ultimate goal of yoga is self-realization, but in the intermediate context it provides complete health that comprises physical, mental, emotional, spiritual and social well-being. Yoga establishes harmony among the body, mind and soul (Shivom and Verma S, 2020).^[10] Hence, yoga is being used as an effective tool for therapeutic purpose, a preventive measure in addition to being a key to achieve self-actualization or self-realization. In general, it includes the practice of specific postures, regulated breathing, relaxation, and meditation.^[11] Plenty of techniques have been mentioned in different yogic texts that have a positive impact on our mental and emotional health. Further, it has been established that yoga has both immediate and long-term effects in reducing anxiety (Gururaja, 2011).^[12] Yoga is widely used for treating stress and other mental issues and for achieving good physical health and psychological well-being (Tripathi, 2016).^[13] The present study included two such practices

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viz., ‘Yoga-Nidra’ and ‘Nadi-Shodhan Pranayama’ as intervention techniques on young adults to study the effect of yogic practices on emotional maturity and mental health of the participants. Both yoga-nidra and nadi-shodhan pranayama relax our body to a greater extent and improve mental awareness as well. In addition, these are easy techniques which the practitioners can easily perform for personal benefits.

Nadi-Shodhan Pranayama

The word “Pranayama” is derived from the combination of two Sanskrit words, viz., *prana* which mean the ‘vital force’ and *ayama* which means length, to expand or to control. “Pranayama”, the term, is the control and extension of breath (Satyananda, 2001 p.258).^[14] The purpose of the pranayama is to extend *prana* into previously dormant areas of the body and brain so as to awaken various inherent faculties and sensitize perceptions (Muktibodhananda, 2004 p.89).^[15] Through the practice of pranayama, the irregular flow of breath is controlled consciously by a deliberate process and it involves the stages of inhalation, exhalation and retention of breath (Shrikrishna, 1996, p.55).^[16] It is established that practicing pranayama has a very significant effect in reducing stress and calming the nervous system (Joshi, 2020, John P, 2007).^[17,18] It also reduces levels of depression and normalizes the brain wave patterns (Ghanderi,2009).^[19] Nadi-shodhan pranayama reduces the level of anxiety and depression and improves autonomic functions of the body. If practised regularly, it increases will power and enhances the perception of the practitioners (Gupta, 2010).^[20] The practice of pranayama, specially nadi-shodhan, enhances emotional stability as well (Betel, 2015).^[21] In short, it can be said that nadi-shodhan pranayama has various physical as well as mental benefits.

Yoga-Nidra

Yoga-nidra in yogic parlance refers to ‘psychic sleep’ (Tripathi,2018).^[22] Sleeping with full awareness is the main concept of yoga-nidra. In this type of sleeping, the body sleeps and attains the state of complete and full relaxation; however, the mind remains awake and is in the state of complete awareness. Chiefly, the practice is performed during morning and evening. A peaceful environment is essential to perform this sleep. The complete practice of yoga-nidra takes 25-45 minutes. Practicing of yoga-nidra enhances general well-being, health and vitality (Dhamodhini, 2019).^[23] It establishes harmony among body-mind-soul. During the state of yoga-nidra, various responses have been seen in hypothalamus resulting in decreased sympathetic activities and increased parasympathetic functions which lead to a normal state (Saraswati, 2006).^[24] Practicing yoga-nidra has been proved to be a tool for relaxing the body and calming the mind. Experts suggest that it can be used to treat various psychological disorders like depression, anxiety, insomnia, and substance abuse. It is also truly effective in treating somatic problems such as asthma, hypertension, and coronary heart disease (Puri, 2015).^[25] Tripathi (2018) has explored that practice of yoga-nidra is very much efficient in reducing the level of anxiety and increasing self-concept.^[26] Stankovic (2011) studied the effect of yoga-nidra among military veterans and found that the practice of yoga-nidra reduces the symptoms of PTSD and increases the feeling of relaxation and peace (Stankovic, 2011).^[27]

Young adults are major working force for their nation, and their mental health and emotional maturity are of major concerns for the productivity of a country. Emotional maturity helps an individual not only in mental well-being but overall efficient functioning as well. This age group is unlikely to access mental health services (Pottick KJ, Warner LA, Stoep AV, Knight NM, 2014),^[28] which is bothersome given the high rates of mental health conditions

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(Klodnick VV et al., 2014).^[29] The relative lack of understanding and help seeking behaviour among young adults are of major concerns as these inflate stress and instability (Arnett, 2004).^[30] Though the issues have engaged scholars for long, there is a relative lack of scholarly materials on intervention techniques. Accordingly, there is a need for such intervention programmes which have enormous physical as well as psychological health benefits so that young adults, whether healthy or unhealthy, can practice these and make it a part of their daily routine. Yogic interventions are the best tools for this purpose which have various health benefits, easy to perform, no side effects and are very cost effective. Therefore, the present study is aimed at filling the gap and providing a yogic intervention plan for the same.

The objectives of this study are to evaluate the effects of yogic practices which include nadi-shodhan pranayama and yoga-nidra on both mental health and emotional maturity of the participants.

SUBJECTS AND METHODS

The present research was based on experimental method. Thirty college students from Haridwar, Uttarakhand, were selected as sample participants for the study. They were selected through accidental sampling method. The young adults selected for the study were between 18 to 25 years old. This was the only inclusion criteria. Both male and female participants were selected. The Mean age of the participants was 22 years. A written informed consent was taken from all the participants.

A pre-test and post-test research design was adopted for this study. The participants were administered on Mental Health Scale (MHS) and Emotional Maturity Scale (EMS) before the intervention. Thereafter all the participants were informed about the intervention plan as well as time and duration of the intervention plan. The intervention plan was executed thereafter for a month. All the 30 participants attended every yoga session. After the intervention, all the participants were again administered the MHS and EMS. Both the pre- and post-data were analysed by using t-ratio or t-test method.

Mental Health Scale was used for measuring mental health of the participants. MHS was proposed by Kamlesh Sharma in 1996. The scale includes 60 statements to be answered in: Yes, Indefinite, No. Scoring was done according to the prescribed norms. The emotional maturity of the students was measured by Emotional Maturity Scale (EMS) proposed by Yashvir Singh and Mahesh Bhargava (1999). The scale includes 48 items which covers five dimensions of emotional maturity.

After briefing all the participants about the research and intervention plan, the participants were asked to fill the MHS and EMS questionnaires. After the administration of the test, the participants were provided with the intervention plan which included the practice of nadi-shodhan pranayama and yoga-nidra. Every morning from 6:00 AM to 7:15 AM, the participants were approached and intervention was practised. The procedure of nadi-shodhan pranayama and yoga-nidra was as follows:

Nadi-shodhan Pranayama

According to Shiva-Swarodaya, the process of nadi-shodhan pranayama is as follows:

'Pranav mudra' is kept to facilitate the passage of air through the nostrils: Bend the first two fingers of the right hand into the palm, using the thumb to control the passage of breath

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through the right nostril and the ring (or third) finger to control the passage of breath through the left nostril.

Participants were asked to inhale through left nostril and then exhale through right nostril. Thereafter they were required to inhale through right nostril and exhale through the left nostril. Participants were asked to repeat the same process. Inhalation and exhalation were to be controlled in definite proportions (1:1), and later breath retention (Kumbhaka) was included in equal proportion after each inhalation and exhalation (1:1:1:1).

Figure: 1.



Yoga-nidra

The process of yoga-nidra consists of various steps. The eight major steps that were taken up for practice were as follows:

- 1. Preparation:** Participants were to lie down in Shavasana (corpse pose) with legs apart and hands beside the body while the palm facing upward. Head, neck and spine should be in a straight line. Participants were to close their eyes and relax the body. They were required to feel complete rest.
- 2. Relaxation:** Participants were asked to develop the feelings of complete rest in themselves but were required to abstain themselves from sleeping. They were to observe their body parts, observe the bodily conditions and observe the outer environment. Listen to the sounds coming from outside of the room but were required not attach with them and at the same time, asked to feel the calmness of the body and the mind.
- 3. Samkalpa:** Take a positive resolution (or samkalpa) related to the goal of their life. The resolution was to be short and simple. Repeat it three times mentally with complete determination.
- 4. Rotation of Consciousness:** In this endeavor, participants were asked to start rotating the awareness to their body parts. The instructions were as follows: Start with left side of the body, viz., left hand thumb, index finger, middle finger, ring finger, little finger, palm, back of the palm, left wrist, fore arm, elbow, upper arm, shoulder, armpit, left side of the chest, waist, left hip, left thigh, knee, ankle, left big toe, second toes, third toe, fourth toe, fifth toe and the whole left side. Bring the awareness to right side of the body and follow the same process as done at the left

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side of the body. Bring the awareness to the front part of the body, viz., top of the head, forehead, eyebrows, eyes, ears, nostril, cheeks, lips, chin, throat, chest, upper abdomen, lower abdomen, hip joint, thighs, knee cap, shin bone, feet, the complete front part of the body. Visualize the whole body in a conscious manner.

5. **Breath Awareness:** At this stage, participants were required to bring their awareness to the breath. They were asked not to change their breathing pattern and were asked to watch the natural breath. Apparently, participants were to observe the movement at abdominal region, the navel comes up and goes down.
6. **Visualization:** Participants were required to visualize the things or situations as per the instructions: just feel that the body weight is increasing and you are becoming heavy, feel that you are losing body weight and you are becoming light weighted, feel the hotness of the environment, etc. Try to visualize the rising sun, the candle flame, the burning fire, 'Om', etc.
7. **Samkalpa:** Participants were asked to repeat the resolution three times again, i.e., the same samkalpa they have earlier taken.
8. **Ending:** At the end, participants were asked to externalize the awareness. Start moving the toes and fingers, hands, legs, neck, etc. they were asked to move their body slowly, turn to the left and come up into seated position with eyes closed. They were instructed to rub the palms, keep them on the eyes and open the eyes slowly. Yoga-nidra ended this way.

RESULTS

All the 30 participants practised the whole intervention plan. The scores of the group were compared before and after the implementation of the intervention plan and the statistical analysis was done using t-test for both emotional maturity and mental health.

Table 1: Paired sample t-Test FOR EMS

	No. Of samples	Mean	SD	SED	df	t-ratio	Level of significance
Pre	30	112.3	16.39	2.182	29	15.6269	0.01
post	30	78.23	15.5				

Table 1 presents the data for emotional maturity of the group. The mean score and SD for pre-test were 112.3 and 16.39 respectively. The mean score and SD for post-test were 78.23 and 15.5 respectively. The t-ratio was 15.6269 which is significant at 0.01 level. The result reveals that the practice of yoga (nadi-shodhan pranayama and yoga-nidra) significantly increases the level of emotional maturity.

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Bar graph for EMS

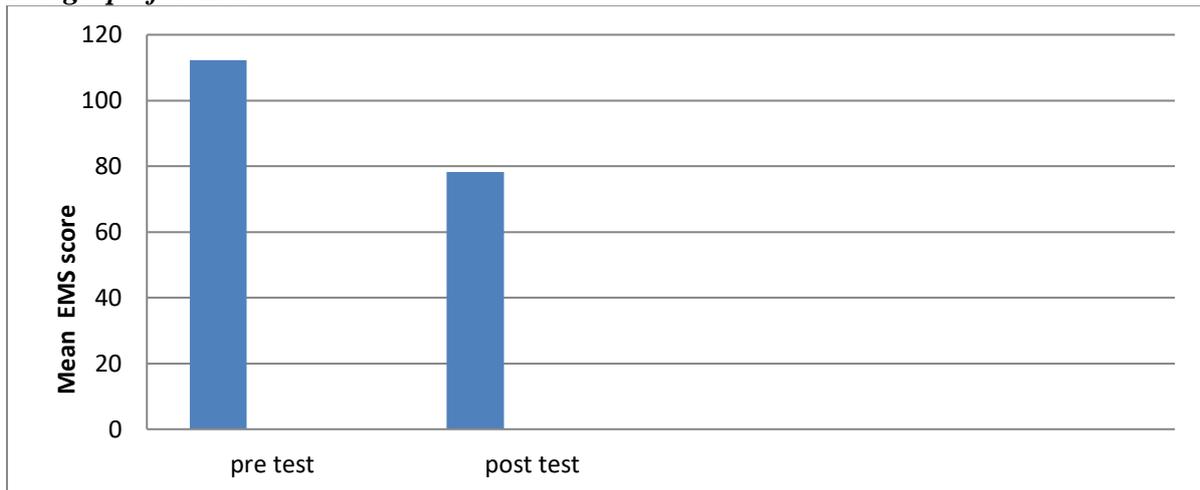
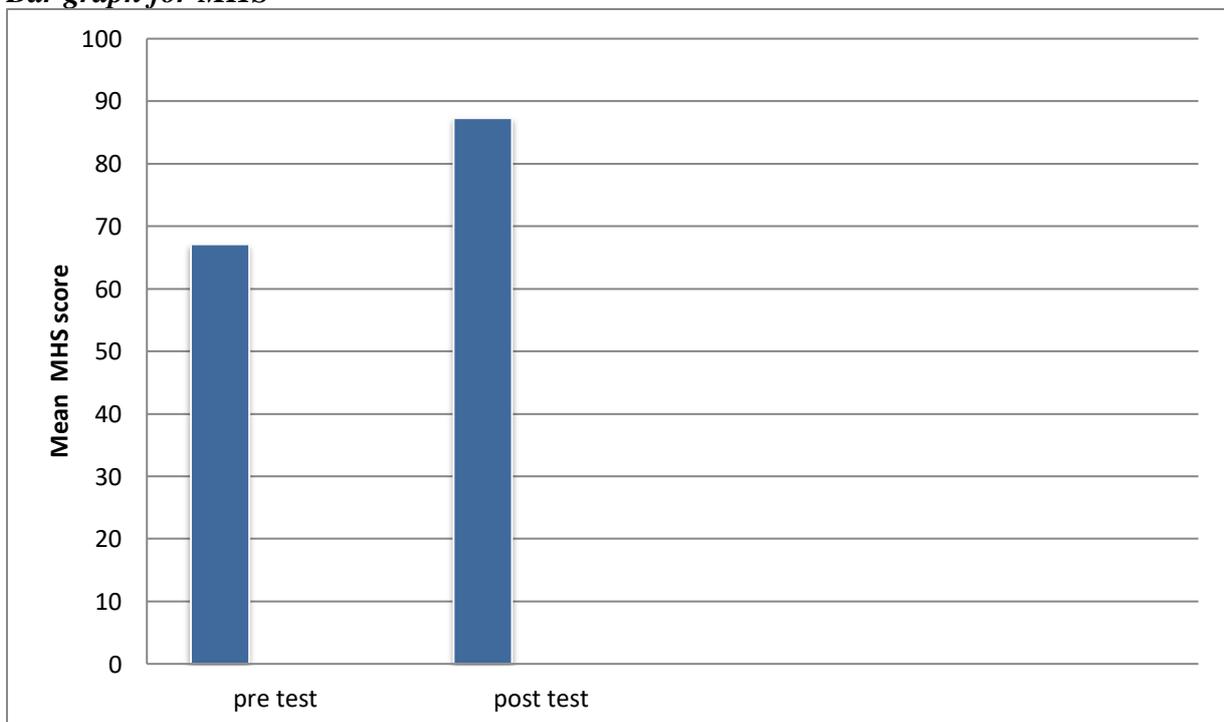


Table 2: Paired sample t-test FOR MHS

	No. Of samples	Mean	SD	SED	df	t-ratio	Level of significance
Pre	30	67.13	9.83	2.773	29	7.2734	0.01
post	30	87.30	9.97				

Table 2 depicts the data for mental health of the group. The mean for pre-and post-test was 67.13 and 87.30 respectively. The SD for the pre- and post-test were 9.83 and 9.97 respectively. The t-ratio is 7.2734 which is significant at 0.01 level. Therefore, the result indicates that the practice of yoga (nadi-shodhan pranayama and yoga-nidra) significantly increases the level of mental health of the participants.

Bar graph for MHS



DISCUSSION

The findings of the study suggest that nadi-shodhan pranayama and yoga-nidra have assured effects on emotional maturity and mental health of the young adults. Results indicate that regular practice of both nadi-shodhan pranayama and yoga-nidra enhances the level of mental health and also improved emotional maturity of the young adults. The results for pre-test and post-test show very significant differences ($p < 0.01$) in the level of emotional maturity and mental health of the participants who practised nadi-shodhan pranayama and yoga-nidra.

Two participants, named as Subject ZA and Subject ZB were facing some problems with sleeping at night before the intervention. During the intervention, they reported that their sleep pattern was improving. Further, after getting the whole intervention, both reported that their sleep cycle had improved considerably. They were able to take a sound sleep-cycle of about 6-8 hours during nights.

Pranayama is a breathing exercise to channelize our energy into different areas of brain as well as to the whole body. It affects the overall functioning and leads to better performance of the individual.^[31] Nadi-shodhan pranayam comprises of four steps: puraka (inhalation), kumbhaka (holding), rechaka (exhalation), kumbhaka. By these four steps, maximum intake of oxygen is possible which improves blood circulation and provide enough oxygen to the brain improving the working efficacy and increases the vital energy. The practice of pranayama improves the flow of energy so that various parts of the brain get stimulated and aroused which results into cogent functioning of the mind. According to Swarayoga, the imbalance in the flow of breath leads to the imbalance in the body, both at physical as well as mental level. For stability in mind and body, a steady and appropriate flow of breath is essential. Practice of nadi-shodhan pranayama brings stability in breath, improves the flow of the energy to the body and stimulates various previously dormant parts of the brain that leads to the improved mental as well as physical functioning (Muktibodhananda, 2004 p.89).^[32] Various studies have been done to evaluate the effects of pranayama on physical as well as psychological health of the practitioner. These studies reveal the positive effect of pranayama in treating stress, anxiety, depression, ADHD, high blood pressure, diabetes, etc (Joshi K, Bora S, Bora P, and Kandpal R, 2020, Umadevi P, Ramachandra S, Varambally S, Philip M, Gangadhar BN, 2013, Gupta PK, Kumar M, Kumari R, Deo JM, 2010, Hariprasad VR, Arasappa R, Varambally S, Srinath S, Gangadhar BN, 2013, Tripathi RC, 2018).^[33-37] All these studies support our findings that the practice of nadi-shodhan pranayama improves mental health of the practitioners.

Regular practice of pranayama leads to increased arousal of higher cortical areas (HCA) and decreased activation of limbic areas thereby reducing emotional reaction in an individual (Betal, 2015).^[38] The increased activity of HCA and reduced activity of the limbic areas bring about a rational and better cognitive functioning and mature response behaviour towards emotive stimulus and situations. Nadi-shodhan pranayama balances the functions of both parasympathetic and sympathetic nervous systems, also releases serotonin, a tranquilizing hormone, in the brain which provides calmness to the body, arouse restful awareness, reduces aggressive behaviour as well (Betal, 2015).^[39] The reduction in sympathetic system activation due to the practice of nadi-shodhan pranayama leads to the better understanding of the situations that further moves towards the integrated sense of self. This understanding of emotive situations and self-awareness are key to emotional maturity and stability.

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Yoga-Nidra is the state of conscious sleeping. Different steps involved in yoga-nidra have their own effect on mental as well as physical health of the practitioners. The practice of yoga-nidra has shown changes in the functioning of hypothalamus that leads to reduced sympathetic activation and increased parasympathetic activities which are responsible for the body's relaxation (Markil N, Whitehurst M, Jacobs PL, Zoeller RF, 2012).^[40] The authors also reported significant reduction in emotional processing and executive control persistent with hypothalamus activity. Reduction in parasympathetic system reduces the release of stress hormone, making an individual feel more composed and stable. These soothing effects as the result of practice of yoga-nidra help in controlling and managing our emotions and thereby improve emotional maturity.

Studies reporting to the reduction in stress and anxiety level of young adults with practice of yoga-nidra show the efficacy of the practice (Dhamodhini K, Sendhilkumar M, 2019, Tripathi, 2018).^[41,42] Practice of yoga-nidra reduces stress and also stress-related disorders by providing complete calmness at physical, mental and emotional level. In addition, it helps in awakening of the inherent creativity of the human being and also improves learning and memory abilities (Puri, 2015).^[43] There are other studies which show the positive effects of yoga-nidra on various psychological disorders. All these studies support our findings that yoga-nidra improves mental health of the practitioners.

Yoga-nidra and nadi-shodhan pranayama chiefly affect the same pathways of the brain functioning that lead to increased physical as well as mental relaxation and lead to better understanding of the cognitive and the emotional functioning. Regular practice of yoga-nidra and nadi-shodhan pranayama makes an individual more stable and improves the resilience of the individual. These techniques directly improve our mental health and emotional stability with other physical benefits.

It is concluded that the yogic practice which includes nadi-shodhan pranayama and yoga-nidra have momentous impact on mental health and emotional maturity of the practitioners. These two techniques are also very useful in treating other physiological and psychological problems. Regular practice of nadi-shodhan pranayama and yoga-nidra can be very beneficial for the practitioners. Everyone should make it as the part of the daily routine.

The limitations for the present study include small sample size. With large sample size the effects could be studied in detail. In addition, the present study is general in nature which does not include participants from clinical population and has not differentiated among the genders. Differentiation on basis of gender could possibly bring different results and implications of the intervention plan.

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Conflict of Interest

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