www.jmscr.igmpublication.org
Impact Factor 5.84
Index Copernicus Value: 83.27
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossref DOI: https://dx.doi.org/10.18535/jmscr/v5i7.44

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Review Article

Benefits of Sudarshan Kriya (SKY) on mental well being of humans

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Abstract
A fast-paced life comes along with various physical and emotional stresses which affect our mental wellness at level which we are unaware of. Although, in the recent few years, disorders related to mental wellness have been given importance, there still exists a negligence and inhibition regarding the treatment of such disorders. Yoga and pranayama have been well documented in the ancient Indian scriptures as a tool for maintaining a well-balanced life. These techniques are believed to work at the molecular level inside our bodies and relieve the hidden stress and trauma. We review the effectiveness of Sudarshan Kriya, a breathing technique, on the mental condition of people suffering from various disorders like anxiety, depression, post-traumatic stress disorder and generalised stress. The review highlights the beneficial outcomes of regular practice of breathing exercises on our mental well being.

Introduction

The health of an individual is greatly affected by stress. Stress can be of various kinds, namely, social, psychological, or physical. Increasing evidence suggests that stress, especially oxidative stress, induces DNA damage and contributes to the pathophysiology of several diseases [1]. Increasing rates of psychosocial disturbances lead to increased risks and vulnerability for a wide variety of stress-related chronic pain and other illnesses. Relaxation exercises aim at reducing hidden and apparent stress and thereby help prevent the unwanted outcomes [2]. Yoga, an ancient Indian science, has been practiced as a healthy way of life and has now been recognised worldwide. It has been found that regular practice of yoga for 3–4 months has beneficial effects on subjective well being, depression, and anxiety [3-5]. One specific form of these exercises is Sudarshan Kriya and related practices (SK&P) which are understood to have favourable effects on the mind-body system. SK is a breathing technique that involves breathing in three different rhythms. It is preceded by Ujjayi Pranayam (long and deep breaths with constriction at the base of throat) and Bhastrika (fast and forceful breaths through nose along with arm movements) [1-2].

Previous studies suggested that SK&P may be useful for relieving depression, improving the antioxidant defences of the body, giving rise to beneficial EEG patterns, and possible improvements in blood chemistry [2].

Here in this review article, we have assimilated the various studies exploring the impact of SK&P on the mental wellness of humans.

Sudarshan Kriya and Anxiety

Anxiety disorders are among the most prevalent psychiatric conditions [6]. Generalized anxiety disorder (GAD) is characterized by excessive anxiety and worry that lasts for at least six months and is associated with three or four or more of the following symptoms: restlessness, being easily fatigued, difficulty in concentrating, irritability, muscle tension, and sleep disturbance [7]. This disorder also exhibits a high degree of chronicity, and is often complicated by a high prevalence (45-91%) of comorbidity with other psychiatric and/or medical conditions as well as a variety of cardiovascular, gastrointestinal and respiratory diseases [8-10]. In a study conducted by Katzman*et al*., [11] forty-one patients were enrolled in an open-label trial of the SKY course in addition to standard treatment of GAD. Subjects were motivated to practice the yoga breathing techniques at home for 20 min per day after the course and were offered group practice sessions for 2 h once a week led by certified yoga instructors. Thirty-one patients completed the program (mean age 42.6 ± 13.3 years). Among completers, significant reductions occurred in the pre- and post-intervention mean Hamilton Anxiety Scale (HAM-A) total score (t=4.59; P<0.01) and psychic subscale (t=5.00; P≤0.01). The response rate was 73% and the remission rate 41% as measured on the HAM-A. The results of this small pilot trial suggest that the SKY course represents a potentially valuable adjunct to standard pharmacotherapy in patients with GAD or treatment-resistant GAD.

Sudarshan Kriya and Depression

SKY is a well-described yoga-based stress reduction program that has been reported to relieve severe major depression. In a randomized controlled study, Janakiramaiah *et al*., [12], found that the level of depression significantly decreased (68-73%) in subjects hospitalized for major clinical depression who were given one week of instruction in SKY, followed by 30 min of practice (mean of 4.5 days a week) for three weeks, and this intervention was as effective as imipramine 150 mg/day. To demonstrate the anti-depressant effects of SKY in alcohol dependent individuals, a study was conducted by Vedamurthachar A et al.[13] wherein following a week of detoxification management consenting subjects (n=60) were equally randomized to receive SKY therapy or not (controls) for a two-week study. Subjects completed the Beck Depression Inventory (BDI) before and after the two weeks of this intervention. Morning plasma cortisol, ACTH and prolactin too were measured before and at the end of two weeks. In both groups reductions in BDI scores occurred but significantly more so in SKY group. Likewise, in both groups plasma cortisol as well as ACTH fell after two weeks but significantly more so in SKY group. Reduction in BDI scores correlated with that in cortisol in SKY but not in control group. Results reaffirm the antidepressant effects of SKY in alcohol dependence subjects. As depression is associated with stress and as a result elevated levels of cortisol and ACTH, a reduction in stress-hormone levels (ACTH and Cortisol) along with BDI reductions possibly hint towards a biological mechanism of SKY in producing beneficial effects.

Sudarshan Kriya and Post-traumatic Stress Disorder (PTSD)

PTSD is a disorder that develops in some people who have experienced a shocking, scary, or dangerous event. Symptoms usually begin early, within 3 months of the traumatic incident, but sometimes they begin years afterward. Sudarshan

Kriya yoga has shown to effectively reduce PTSD symptoms in tsunami survivors after the 2004 South Asian natural disaster. It was found that eight months after the 2004 tsunami, survivors living in refugee camps, who were given a yoga breath program (BWS) alone and followed by an exposure therapy (BWS + TIR), had significantly reduced scores on post-traumatic stress disorder (PCL-17) compared with that in a wait list control group [14]. War is a major traumatic events for the army men as well as their families. Many veterans from the Operation Enduring Freedom (Afghanistan war) or Operation Iraqi Freedom (Iraq war) suffer from pronounced posttraumatic stress disorder (PTSD) symptoms that contribute to alarming suicide rates. Given the limited success of conventional treatments for veterans with posttraumatic stress disorder (PTSD), investigations of alternative approaches are needed.A growing body of evidence suggests meditation-based interventions have the potential to reduce symptoms and improve well-being. Seppala et al., [15] studied the role of meditation, SK&P in U.S. male veterans of the Iraq or Afghanistan war and observed that a breathing-based meditation intervention led to improvements on psychophysiological and symptom measures. Sudarshan Kriya yoga, a week-long intervention with longitudinal benefits, shows promise as a viable alternative or adjunct intervention for addressing PTSD and suicide in returning veterans.

Sudarshan Kriya and Stress levels

Acute stress initiates hormonal and behavioral responses that enable an organism to make adaptations to environmental demands (Chrousos, 2000). The amygdala has been implicated in both human and animal studies as playing a crucial role during stress responses, including the detection of stressful and threatening stimuli and the initiation of adap- tive coping responses (Le Doux, 2000; Hasler et al., 2007). Aberrant amygdala function has been consistently demonstrated across several stress-related psychopathologies. exaggerated amygdala activation has been found in trait anxiety (Stein et al., 2007), post-traumatic stress disorder (PTSD; Rauch et al., 2000; Shin et al., 2004, 2005), social phobia (Phan et al., 2006), depression (Drevets et al., 1992). A study by Kharya C et al., explored the effect of SKY in relation to psycho-physiological status which in turn determines the ability of an individual to handle stress. The study group included 60 healthy volunteers (M:30, F:30) in the age group of 18 to 30 years (21.3 ± 3.2 yrs), randomly divided in to three groups of 20 subjects each--(1) The SK group (2) the PY group and the (3) Control group. Psychological assessment was done using questionnaires and for the autonomic tone quantification Heart Rate Variability (HRV) analysis was done using the standard lead II electrocardiogram recordings. In a post-hoc analysis each group was further sub divided in to the following two patterns, based on the baseline values of normalized Low Frequency (LF) power. The stress management skills were shown to significantly increase in SK group but not in PY and Control group. Subjects of SK, PY, and control group showed significant increase in LF value and LF:HF ratio for pattern A and significant decrease for pattern B. Plotted LF value for pattern A & B in SK and PY practitioners showed convergence, coming to a mean value over the period of 150 days. The LF:HF ratio curve plotted over time for pattern A & B showed convergence in SK group only. No such convergence in LF value & LF/HF ratio for pattern A & B was seen in control group, thus concluding that SudarshanKriya positively modifies stress coping behaviour and initiates appropriate balance in cardiac autonomic tone.

Conclusion

Research is being conducted all over the world in order to validate the traditional health practices. Yoga is one such practice with its root in ancient Indian culture. Sudarshan kriya is part of yoga and a novel practice with scientifically proven health benefits. It helps individual in relieving stress,

depression, anxiety, and post traumatic disorders as discussed above. Sudarshan Kriya is cost effective tool to live a healthy and happier life and children should be encouraged to follow this simple technique. More research is required in order to validate the other benefits of this technique.

Conflicting Interest (If present, give more details): Nil

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