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Review Article

EFFECTS OF ALTERNATE NOSTRIL BREATHING ON QUITTING SMOKING

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ABSTRACT

Studies have proven that exercise is very effective in reducing cigarette cravings. But most of the smokers are sedentary and it's very impractical for most of the smokers. Alternate Nostril Breathing (ANB) yogic-style breathing exercise has also been proposed as a way of fighting cigarette cravings and withdrawal symptom. The aim of this study is to review the articles related with ANB yogic-style breathing in the reduction of craving and withdrawal symptoms of cigarette and possible health benefits in smokers.

Key Words: Smoking, Sedentary, Yoga, Stress, Craving, Withdrawal Symptoms

INTRODUCTION

Prevalence of smoking and challenges for quitting:

According to 2017 WHO report, there are 1.1 billion tobacco smokers globally among which 80% are living in low and middle-income countries. The morbidity and mortality due to smoking remain very high. The tobacco kills more than 7 million people each year and remains biggest public health threats the world has ever faced. Tobacco smoke contains a mix of more than 7000 chemicals, more than hundreds are harmful, and 70 can cause cancer. Several health-related problem and disease such as cancer, heart disease, stroke, and chronic lung disease are caused by smoking tobacco related products. And Quitting smoking greatly reduces the risk of developing several smoking-related diseases. Increasing awareness and health concerns in individual inspire to quit smoking. However, Nicotine dependence is a condition that often requires treatments. Severe cravings for cigarettes, lack of pleasure previously obtained from smoking, and the smoking environments remain the major obstacle for individual who try to quit smoking [1]. Depression, time spent with urges to smoke, and difficulty not smoking during abstinence are associated with lapse back to smoking [2] [3]. Stress is also associated with smoking relapse by exacerbating desire to smoke and also by motivating for smoking [4][5]. Patients with psychiatric history such as generalized anxiety, mood, and cognitive disorder have severe nicotine dependence and are resistant to pharmacotherapy for abstinence [6] [7]. Reduction in craving and withdrawal symptom and managing of anxiety, stress, and depression can help abstaining smoking [8] [2]. Quitting smoking for several individual not easy and may require several attempts and there are several helpful resources for quitting.

Current smoking cessation treatments and its drawback:

A number of pharmacological and non-pharmacological therapies are available for smoking cessations which are helpful during smoking abstinence. Pharmacological therapy includes nicotine replacement products (such as nicotine patch, gum, lozenge, nasal spray and oral inhaler), and non-nicotine medications such bupropion, varenicline tartrate. Nicotine replacement therapy (NRT) and drugs have proven to be very effective by moderating cigarette cravings and withdrawal symptoms [9] [10]. However, the use of NRT is associated with a variety of side effects such as increased risk of heart palpitations and chest pains, nausea, gastrointestinal complaints, vomiting, and insomnia. NRT patch is associated with skin irritations whereas oral administration of NRT associated is with mouth and throat soreness [11]. Long-term use of NRT is associated with increased risk for cardiovascular events in patients with previously diagnosed ischemic heart disease and cerebrovascular disease [12]. And non-nicotine medications such as varenicline and bupropion have also reported side effects such as nausea, insomnia, and headache [13]. The majority of populations who are in low economic conditions are out of reach of medical facilities and Psychiatric patients are resistant with pharmacotherapy [6] [7].

Non-pharmacological therapy includes behavioral therapies (such as counseling, support groups, telephone quit-line, and classes), physical exercises interventions, and mindfulness approaches. Exercises

have shown a promising effect on quitting smoking by decreasing craving and withdrawal symptoms [14]. As duration and intensity of exercise increase the desire to smoke and tobacco withdrawal symptoms also decrease [14]. Studies show that in the sedentary smoker, exercises have shown an immediate and significant reduction in strength of desire to smoke, restlessness, stress, tension and poor concentration [8]. However, exercise is impractical in many circumstances. Most of the smokers are sedentary with very less daily physical activity and their compliance with any exercises program is low, and people tend to drop out within a few weeks of starting exercise. Quite recently, considerable attention has been paid to mindfulness technique for reducing craving and withdrawal symptoms in smokers [15]. The study shows significant reductions in the strength of desire to smoke and tobacco withdrawal symptoms in temporarily abstaining smokers following 10 minutes of guided relaxation [15]. ANB exercise is mindfulness technique which has proven to be effective in reducing stress, depression and many other health benefits [16] [17] [18] [19].

ANB and its effects on smoking cessation:

Yoga is a group of physical, mental and spiritual practices which brings unconscious into awareness. It is an ancient science which originated in India about 5000 thousand years ago. Yoga includes specific postures, voluntary breath regulation, meditation, and certain philosophical principles. ANB is yogic breathing exercise and also known as Nadi Shodhan pranayama (Nadi=subtle energy channel, Shodhan=cleaning, purification; pranayama = breathing). It is a slow frequency of yoga breathing and for centuries it is believed that ANB yoga practices are helpful in calming mind and balance in physical, mental, and emotional well-being. For last few decades researchers have shown practicing ANB exercises have many beneficial effects on human health and as the period of time and duration of ANB increase, the scope of health benefits also increases. Practices of ANB for 15 to 20 min can have acute effect lowering blood pressure, heart rate, respiratory rate and anxiety [20] [21] [22]. Studies show 30 min of practices of ANB significantly increase in perception of mental and physical energy, and feelings of alertness and enthusiasm [23]. ANB significantly facilitated the learning and retention of a newly acquired motor skill [24]. Practices of ANB for a longer duration have significant effects on cognitive functions, pain, depressions. Practices ANB for 12 weeks has a significant reduction in perceived stress and improvement in cognitive domains such as attention, visuomotor speed, and memory retention capacity [25]. ANB reduce the BP, improve attention, bimahual dexterity and visuomotor coordination [16]. Regular practices of ANB enhances ventilation and oxygenation of the Paranasal sinuses and have the positive effects on the nasal respiratory epithelium by increasing the better surface availability of oxygen [17]. Two to three months regular practices of ANB decreases dyspnea-related lung disease and significantly improve pulmonary function [26] [27] [28].

Severe craving and withdrawal symptoms such irritability, anxiety, depression, impaired concentration, insomnia encourage smokers to continue smoking to relieve these symptoms. Several studies suggested that ANB yogic-style breathings can be helpful to tackle the situation of withdrawal symptoms and craving. Studies have shown that 10 min yogic breathing exercise has an immediate effect on the reduction in strength of urges to smoking [18] and regular yogic breathing is effective in reducing depression and stress

[29] [30] [31] [32]. increasing stress and deleterious mood effects are the symptoms of acute nicotine withdrawal [5]. In a smoker, there is heightened stress prior to smoking which reduced immediately after smoking. These feeling state changes have a strong psychological rationale for addictive nature of tobacco use [33]. The desire to smoke increase during stress and stress situations are influential in maintaining smoking behavior in smokers and big obstacles in quitting attempt [3]. R. J. West and P. Hajek conducted study in 227 smokers found that depression, time spent with urges to smoke, and difficulty not smoking were significantly associated with lapse back to smoking in the second week and depression, and difficulty not smoking during the second week significantly predicted smoking status during the third week [2]. Numerous authors support the claim that reduction of withdrawal symptoms may be a worthwhile for helping smokers to quit. Review published in 2009 in the journal of the Annals of the New York Academy of Sciences provided several clinical evidence for the use of yoga breathing in the treatment of depression, anxiety, and post-traumatic stress disorder [19]. Vivek K Sharma reported that after the practice of pranayama for 12 weeks, there was a significant reduction in perceived stress and improvement in cognitive domains such as attention, visuomotor speed, and memory retention capacity [25]. Vinod Kochupillaia conducted study on cancer patients who had completed their standard therapy, and found that significant increase in natural killer (Nk) cells in yoga breathing (Sudarshan Kriya and pranayama) group at 12 and 24 weeks in compare with control group and also helped to control the tobacco habit in 21% of individuals who were followed up to 6 months of practice [34]. The prevalence of smoking among psychiatric patients are significantly higher than other general populations (52% verses 30%) [35] . Smoking is especially prevalent among patients with schizophrenia or mania and among the more severely ill patients. Smoking prevalence in psychiatric patients higher and lower the chances of quitting smoking for several reasons. Smoking in psychiatric patients can obscure the symptoms of anxiety, the cause of tremor, and improve cognition, whereas abstinence from smoking in psychiatric patients causes anxiety, insomnia, hungry, restlessness, headache, and depression [36]. Katie J. Schuver stated that regular practice pranayama and meditation reduce depressive symptoms [37]. Maryam M Bidgoli reported that pranayama is effective in alleviating anxiety [21]. Katie J. Schuver stated that regular practice pranayama and meditation reduce depressive symptoms [37]. ANB reduce the BP, improve attention, bimahual dexterity and visuomotor coordination [16]. The research published in 2017 in the journal Natl J Pharm Pharmacol discovered that cognitive impairment was improved significantly after practicing yoga asanas and pranayama for six months [38].

DISCUSSION

Yoga is getting very popular in the form of exercise and alternative therapy for various clinical, behavior, and mental disorders. The goal of this paper is to bring to light the utility of ANB yogi-style breathing in managing craving and withdrawal symptoms in smokers and improving the overall quality of life. Several studies show that ANB is very effective in managing depression, anxiety, restlessness, craving, and other behavior and mood disorder which are common during smoking abstinence. However, there are

not many studies done in ANB for managing craving and withdrawal symptoms. Although our review provided some insight into the benefit of ANB in managing smoking craving during abstinence. Most of the studies were done in a combination of yoga poster, meditation, and different kind of pranayama.

No pharmacotherapy such as Cognitive Behavioral Therapy (CBT) and exercise are becoming alternative choices in people who want to effectively quit smoking and maintain cessation. Exercise shows encouraging effects in reducing craving and withdrawal symptoms. As the intensity and duration of exercise increases, the strength to desire smoking also decreases [14]. James Z. Daniel' and Mark Cropely conducted a study in 40 sedentary smokers who were having smoking abstinence for 11-15 hours, there was a rapid reduction in desire to smoke and withdrawal discomfort after doing 10 minutes bout of moderate-intensity exercise [8]. Studies show mindfulness activities and yogic breathing exercise effective in reducing the desire to smoke and decreases withdrawal symptoms and other several other health benifits[39] . Lion Shahab and Robert West conducted a study in 96 smokers who were randomly divided into two group (yogic breathing exercise group and video control group) and found that 10 min yogic breathing exercise shows an immediate reduction in strength of urges to smoke in yogic breathing group [18]. Sheetal Panwar performed study to assess the effect of yogic breathing exercises on pulmonary function test in 75 medical students, after practicing ANB for 30 min every day for 3 months, there was significant improvement in pulmonary function test (tidal volume ($p<.0001$), vital capacity ($p<.0001$), maximum voluntary ventilation ($P<.001$), peak expiratory flow rate ($p<.001$), forced expiratory volume ($p<.001$), forced vital capacity ($p<.005$)) [26]. A meta-analysis done on five randomized controlled trials involving 223 patients by Xun-Chao Liu shows yoga (includes pranayama, yoga asana, and yoga posture) training significantly improved FEV in COPD patients [40]. A study done by Donesky-Cuenco D reported older adults with COPD who practices twice-weekly yoga (yoga asanas and visama vritti pranayama) for 12 weeks have greater reductions in dyspnea-related distress and improve in self-reported functional performance [28] . Research published in the International Journal of Nursing Studies (2009) reported that emotional stress which triggers and exacerbates asthma in children were significantly reduced by practicing relaxation breathing for 12 weeks [41]. ANB with different yoga asana is proven to be more effective in reducing craving and improve individual health. Ambareesha G Kondam and Nagadeepa W performed a study on yoga in increasing the cognitive performance in medical students, by dividing students into 4 groups (1. Control group, II. Pranayama group, and III. Suryanamaskar, IV. Pranayama and Surya Namaskar combined group). After 6 months, there was a significant reduction of anxiety level and improvement in cognitive functions in pranayama group and yogic postures (Surya Namaskar) group when performed individually, however, combined group (Surya Namaskar and Pranayama) improvement was much more significant. Practices of pranayama have shown encouraging physiological and psychological improvements in the neurological disorders [42]. The study has suggested that yoga (pranayama, meditation and, asana) can offer an alternative to traditional exercise for reducing negative symptoms that prevent from smoking cessation and predict relapse [43]. A Mooventhan and vitthal Khode reported that Bhramari pranayama and OM chanting for the duration of 10 min (5 min each practice) per day

for 2 weeks, significantly improved in peak expiratory flow (PFE), forced expiratory flow (FEF) 25% and maximal voluntary ventilation (MVV) along with a significant reduction in weight in SG compared with CG in independent samples *t*-test. Significant improvement in slow vital capacity (SVC), forced expired volume in 1 s (FEV1) along with PEF, FEF25% and MVV [27]. A study done by Donesky-Cuenco D reported older adults with COPD who practices twice-weekly yoga (yoga asanas and visama vritti pranayama) for 12 weeks have greater reductions in dyspnea-related distress and improve in self-reported functional performance [28] . Another research published in 2015 in the journal of American Research Thoughts reported that groups of students age between 15-17 years, who practice ANB pranayama and kapalbhati for 12 weeks, each group have significantly decreased in stress [32]. Vivek K Sharma reported that after the practice of pranayama for 12 weeks, there was a significant reduction in perceived stress and improvement in cognitive domains such as attention, visuomotor speed, and memory retention capacity [25]. Research published in the Journal of the Indian Academy of Applied Psychology 2010 conduct study in elderly people and found a significant decrease in depression [Beck depression score mean±SD, before 27.96±12.76, after 15.63±10.23)] after practicing anuloma viloma pranayama for 3 months [31].

CONCLUSION

Several studies have shown that symptoms of Depression, anxious, restlessness, irritation, poor sleep and poor concentrations can be easily managed by ANB which are also common withdrawal symptoms during quitting smoking. Recent studies shows that ANB has immediate reductions in the strength of urges to smoke after doing ANB. Besides reductions in craving and withdrawal symptoms of smoking, ANB also effective cleaning lungs and increasing Pulmonary Function Test (PFT). ANB can also be effective in smokers with psychiatric conditions who are resistant to pharmacotherapy. Overview of several studies suggested that effects of practicing ANB can be helpful during abstaining from smoking and improve overall health. ANB can offer an alternative to traditional exercise in sedentary smokers. Further research and study need to be done to see effects of ANB in quitting smoking in long duration.

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