



Research Article

Effect of Qigong Exercise in Improving Sleep Quality in Obese Patients by Assessing with Pittsburgh Sleep Quality Index in Younger Adults

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Background: Obese people are more vulnerable to sleep disturbances. They are more likely to suffer from anxiety and despair. In comparison to the general population, obese people are more prone to have other health-related problems due to lack of sleep which can lead to hospitalization. With the help of the Qigong exercise, we are emphasizing the importance of sleep and improving it. **Method:** The basics of inclusion and exclusion criteria were taught to a total of fifty obese people. A convenient sampling method was used to collect subjects. For nine weeks, the patients were treated with Qigong exercises. **Result:** The pre and post-test values were assessed by the Pittsburgh Sleep Quality Index scale. The outcomes were recorded and analyzed using the paired t-test. On the Pittsburgh Sleep Quality Index, the average value is 10.12, with a standard deviation value of 5.32 and paired 't' value of 12.29. **Conclusion:** The study's finding suggests that obese patients can enhance their sleep quality by Qigong exercise. The exercises done during the morning regulate the blood flow throughout the body and keep them free of daytime sleepiness, and the exercises done during the evening make them fall asleep earlier. Obesity is a major trigger for illnesses such as heart disease, stroke, type 2 diabetes mellitus, and osteoarthritis, according to the World Health Organization. People are mostly obese in the younger adult age group due to lack of physical activities and hence face many problems such as decreased quality of life. We train such people and improve their quality of life and make them free of developing secondary problems.

Keywords: Obese People, Sleep Quality, Qigong Exercise, and Pittsburgh Sleep Quality Index.

INTRODUCTION

Sleep is a bodily and mental state in which the nervous system is relatively inactive, the eyes are shut, the postural skeletal muscle is relaxed, and awareness is dissolved. It lasts for several hours every night. According to extensive analysis, sleep is critical for our good functioning and even survival, with many studies employing the strategy of disturbing sleep and examining the results. Whilst awake, sleep is required for waking cognition, which includes the ability to think, stay alert, and remain concentrated. We also know that sleep centralizes memories and performs a major function in emotional regulation. Dr. Dinges and other scientists have found that after more than 16 hours of continuous wakefulness, cognitive

performance and vigilant attention begin to deteriorate quickly and that sleep deficits from partial sleep deprivation can accumulate over time, due to the gradual degradation in alertness. When sleep duration falls below seven hours, particularly when it approaches six and a half hours or fewer, a variety of illnesses become more likely. The majority of studies reveal that there is a kind of equilibrium point that most people should strive for, and that zone is preferably between seven and seven and a half hours for the average healthy adult. That's what the consensus evaluations of over a thousand scholarly journals revealed [1]. Obesity is a condition in which the body's fat cells grow in size and proportion. It's a

chronic ailment that has been classified as a disease by the World Health Organization (WHO) and several other national and international organizations [2]. According to the World Health Organization, obesity is a major risk factor for non-communicable diseases such as heart disease, stroke, type 2 diabetes, certain cancers (endometrial, breast, ovarian, prostate, liver, gallbladder, kidney, and colon), and osteoarthritis. Obesity affects 40.3 percent of Indians. Obesity was more common in women than in men (41.88 percent vs. 38.67 percent), in cities than in rural areas (44.17 percent vs. 36.08 percent), and in people over 40 than in those under 40 (45.81 percent vs. 34.58 percent). Obesity was associated with higher levels of education (44.6 percent educated vs. 38 percent uneducated), as was decreased physical activity (43.71 percent sedentary vs. 32.56 percent intensely active) [3].

MATERIALS AND METHODS

MATERIALS

50 participants of age group between 20-30 years. Qigong exercises are given for 32 sessions of 1 hour per session, two sessions per day, for 9 weeks - a morning session of one hour and an evening session of one hour. A follow-up is taken after 3 months. The study was done in the general OPD for patients with obesity of BMI 25-30. The patients had no recent unstable angina [4].

Inclusion criteria

Obese patients, both males and females; patients with BMI more than 25-30; participants who are college students and working people; obese patients of 20-30 years; patients without a recent history of illness; patients with a height of 150-175 cm.

Exclusion criteria

Extremely obese patients with BMI 30 and above; patients with a pulmonary infection like tuberculosis or asthma; patients with cardiac conditions like infective endocarditis; patients who underwent surgeries for cardiovascular disease; patients who have dyspnea on exertion; patients who have ECG abnormality; patients who have sleep disorders due to

neural problems; patients with a history of head injury or seizures.

Procedure

All patients underwent a general physical check-up and were assessed using the Pittsburgh Sleep Quality Index to find out the reduced sleep quality. 100 patients were screened, of which 35 didn't cooperate and 15 had no follow-up. 50 patients were given Qigong exercises for 1 hour per session, two sessions per day, for a total of 32 sessions in 9 weeks. A follow-up was taken after 3 months. The patients performed a morning session of Qigong standing exercises for 45 minutes and an evening session of Qigong sitting exercises for 45 minutes under the supervision of a physical therapist. Each exercise was carried out for 3 sets with an interval of 1 minute between each set and the next exercise [4].

Standing Eight Pieces of Brocade

First piece

Feet parallel and shoulder-width apart, hands at the sides, standing comfortably. Close the eyes, relax the body, and take regular breaths. Continue to breathe naturally and smoothly while opening the eyes and looking forward. Sink the Qi in the Lower Dan Tian and condense the Shen in the Upper Dan Tian. Without bending the arms, interlock the fingers and lift the hands above the head while lifting the heels ("two hands hold up the heavens"). Bend to the right and stand up straight after dropping the heels and tilting the torso to the left. Lower the hands in front of the body to complete one circle. Perform twenty-four repetitions.

Second piece

Squat into a horse stance by stepping the right leg to the right. Lift the hands to the chest, then gradually separate them by extending the right hand toward the right side while the left hand extends to the left in a "single finger" hand form, as if pulling a bow to shoot a hawk. Gaze toward a distant point on the left. Raise and lower the hands to the chest, then repeat on the right side. Perform twelve repetitions on each side for a total of twenty-four.

Third piece

Stand with feet parallel and shoulder-width apart, place both hands in front of the stomach, palms facing up. Raise the left hand overhead and press upward while lowering the right palm to the side, gently pressing down. Repeat by alternating sides, keeping both hands feeling as if pushing against resistance without tensing the muscles. Perform twenty-four repetitions.

Fourth piece

Stand comfortably with both feet parallel and hands hanging at the sides. Lift the chest slightly to maintain a straight posture. Turn the gaze to the left while exhaling, then inhale and return the head to the front; repeat to the opposite side, turning each way twelve times for a total of twenty-four. Keep the front of the body facing forward throughout. Place the hands on the waist and turn the head twenty-four times. Finally, with elbows and shoulders slightly forward, raise both hands to the chest, palms facing up, and move the head twenty-four times.

Fifth piece

Squat into a horse stance by turning to the right with the right leg. Place the hands on top of the knees with the thumbs on the outer thighs. Shift the weight to the left leg and press down with the hand to align the head, spine, and right leg. Hold for three seconds, return to the starting position, and repeat on the opposite side. Perform twelve repetitions in each direction for a total of twenty-four.

Sixth piece

Extend the left leg to a shoulder-width stance. Raise the hands overhead, palms facing up, starting from the chest and pressing both palms down slightly beside the waist, as if lifting something overhead. Hold for three seconds, then bend forward with arms outstretched and feet planted firmly, pulling the hands up slightly to apply gentle pressure through the body. Hold for three seconds. Repeat for a total of 16 rounds.

Seventh piece

Squat with the torso erect and hands beside the waist in a horse stance, stepping the right foot to the side. Make clenched fists and stretch one arm to the side in a twisting punch motion while the other hand remains in a fist beside the waist. Loosen both hands and return the extended hand to the starting position, then repeat on the opposite side. Perform eight repetitions on each side for a total of sixteen.

Eighth piece

This exercise has three parts. First, place both hands naturally alongside the body, keep the body straight, and push up onto the toes, holding for three seconds before lowering; repeat for twenty-four repetitions. Next, place the hands on the hips and repeat the toe-raise for twenty-four repetitions. Finally, raise onto the toes twenty-four times while holding the hands in front of the chest. Take three minutes afterward to stand straight, calm the mind, and breathe slowly.

Sitting Eight Pieces of Brocade**First piece**

Sit with legs crossed, focusing on the solar plexus. Keep the chest relaxed and the head feeling as if it is floating. Close the eyes and place the hands on the lap, teeth lightly pressed together and mouth shut. Breathe evenly and steadily, keeping the mind calm and focused inward, drawing attention to the Dan Tian (solar plexus). Meditate for at least three to five minutes.

Second piece

Tap the teeth together 36 times. Collect saliva, then fold the hands together with the backs of the palms facing forward. Inhale deeply while tasting, and exhale deeply while resting. Repeat the process nine more times.

Third piece

Place the middle fingers on the Jade Cushion area and plug the ears with the palms (below the external occipital protuberance). Tap the head using the index and middle fingers together to produce a drumming sound in the cranial cavity ("playing the celestial

drum"), twenty-four times in a steady, even rhythm, using both fingers together or alternating.

Fourth piece

Drop the hands and rest them in the lap, palms facing up. Keeping the shoulders straight, turn the head to the left and then to the right, twenty-four times. Move the tongue around inside the mouth to generate saliva, rinse the mouth 36 times, then swallow the saliva in three gulps, directing it mentally toward the navel.

Fifth piece

Inhale slowly and gently through the nose, directing the air to the middle Dan Tian (solar plexus). Rub the hands together to warm them, then place the palms on the Shen Yu area and massage in a circular motion, twenty-four times or as many as comfortable, exhaling after every twelve. Repeat while inhaling and massaging until the abdomen feels warm, then rest with hands in the lap, focusing on the navel or Lower Dan Tian.

Sixth piece

Extend the legs flat on the floor with the arms at the sides. Bend forward and stretch the arms gently,

palms down and fingers bent inward, making upward and backward circles with the hands as if rowing a boat; repeat nine times, then reverse direction for nine more repetitions.

Seventh piece

Interlock the hands and raise the palms above the head, holding as if lifting something overhead for three seconds. Turn the palms down and touch the top of the head, pressing down for about three seconds while lifting the head upward. Separate the hands and lean forward, pulling the toes back with the hands, holding for three seconds while keeping the knees straight. Repeat nine times.

Eighth piece

Sit with legs crossed and hands on the lap. Close the eyes and relax. When enough saliva accumulates, rinse and swallow three times audibly; repeat until a total of nine swallows is reached, keeping attention on the navel or Lower Dan Tian and sensing the Qi flowing throughout the body as a protective barrier. After completing the eight pieces, sit quietly and breathe evenly for three minutes [5].

RESULTS AND DISCUSSION

Table 1: Different Types of Sleep Disorders

Sleep Disorder Type	Description
Insomnia	Difficulty falling or remaining asleep, as well as the effects of this during the day.
Sleep-related breathing disorders	Obstructive sleep apnea (breathing cessation related to upper airway blockage), central sleep apnea (breathing cessation due to insufficient respiratory effort), and hypoventilation disorders — the three types of sleep apnea (a multitude of medical disorders cause shallow breathing).
Central disorders of hypersomnolence	Excessive daytime sleepiness not caused by other sleep disorders. Includes narcolepsy, unexplained hypersomnolence, and inadequate sleep syndrome.
Circadian rhythm sleep-wake disorders	Sleep-wake cycle anomalies caused by a conflict between the biological clock and usual or needed sleep-wake intervals. Includes delayed or advanced sleep phases, shift-work problems, and jet lag.
Parasomnias	Sleep-related abnormal activities or events, such as sleep-walking, sleep terrors, and REM sleep behaviour disorder.
Sleep-related movement disorders	Abnormal, generally repetitive sleep movements. Includes restless legs syndrome (periodic limb movement in sleep) and leg cramps.

Table 2: Mean Difference, Standard Deviation and Paired 't' Value of Pittsburgh Sleep Quality Index

Experimental Group	Pittsburgh Sleep Quality Index
Mean difference	10.12
Standard deviation	5.32
Paired t value	12.29
Table value	2.15

Statistical Data Presentation and Analysis

Pre-test and post-test values for obese patients with sleep disturbances were taken by assessing with the Pittsburgh Sleep Quality Index scale. The mean difference, standard deviation, and paired t-test values were computed and tabulated (Table 2).

DISCUSSION

The findings showed that Qigong exercise was more beneficial than other forms of exercise in improving sleep in obese patients. The considerable improvement in subjective sleep quality was sustained three months after the intervention, indicating durable effects of the Qigong exercise. The Qigong exercise was well received by the bulk of the respondents, who reported having gotten a lot out of it, and attendance among enrolled participants was high. Given Qigong's efficiency, low cost, and accessibility, it is a good candidate for an entry-level treatment and should be investigated in future research for various sleep-related conditions in a stepped-care strategy. Immediately post-intervention, Qigong exercise resulted in greater sleep quality, and this improvement was maintained three months after the intervention. Participants who had not completed the lessons were likely to continue practicing Qigong on their own afterward. Previous research with smaller sample sizes has demonstrated that Qigong exercise improves sleep quality. Our results show that Qigong exercise significantly reduced fatigue and daytime drowsiness and improved sleep quality in perimenopausal women, fibromyalgia patients, and community-dwelling older persons [7-10]. In this study, 32 Qigong exercise sessions were conducted over 9 weeks, and participants were encouraged to complete at least 30 minutes of daily self-practice. Identity and self-monitoring concepts may have strengthened the efficiency of this self-practice. The favorable effect of Qigong exercise observed here is

consistent with the findings of a recent systematic review [11]. Our study's findings were encouraging, but there were some limitations. Because participants were not blinded to the intervention, they may have held expectations regarding its efficacy that could have exaggerated the response. However, gains were maintained three months after the intervention, suggesting that Qigong's favorable effects are not attributable to anticipation alone. Only young adults were sampled, so the findings may not generalize to people over the age of 65. To assess sleep disturbance, we did not examine daytime functioning or use more sophisticated approaches such as sleep diaries, actigraphy, or polysomnography. Other non-specific factors — such as the didactic teaching style of the Qigong instructors, personal attention, and social support among participants — may also have contributed to the improved outcomes. Future studies could better isolate the therapeutic components of Qigong by using control conditions that account for these non-specific factors. Despite these limitations, the current study showed that Qigong exercise can help people sleep better. In summary, 32 sessions of Qigong exercise were shown to be effective and acceptable for improving sleep in obese patients. Future research should examine the effectiveness of Qigong exercise across a variety of populations and conditions, as well as strategies to increase participation in Qigong teaching and practice.

CONCLUSION

The study's findings suggest that obese patients can enhance their sleep quality through Qigong exercise. The exercises performed in the morning regulate blood flow throughout the body and keep patients free of daytime sleepiness, while the exercises performed in the evening help them fall asleep earlier. Obesity is a major trigger for illnesses such as heart disease, stroke, type 2 diabetes mellitus, and osteoarthritis, according to the World Health Organization. People

in the younger adult age group are increasingly obese due to a lack of physical activity, leading to decreased quality of life and related complications. Training such individuals in Qigong exercise can improve their quality of life and help prevent the development of secondary problems.

AUTHORS' CONTRIBUTIONS

- Francis S — Conceptualized and designed the study, contributed to data interpretation, and drafted the initial manuscript.
- Arun Yoburaj (Corresponding Author) — Supervised the overall study, guided the Qigong exercise protocol, contributed to critical revision of the manuscript, and approved the final version for submission.
- Shruthi S — Coordinated participant recruitment and screening based on inclusion/exclusion criteria, and assisted in data collection.
- I.M. Sarah Binu — Conducted the pre- and post-intervention assessments using the Pittsburgh Sleep Quality Index and managed data compilation.
- K.P. Abhishek — Performed the statistical analysis (paired t-test) and contributed to writing the Results and Discussion sections.

All authors read and approved the final manuscript.

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