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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ABSTRACT

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 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 faces many problems such as decreased quality of life and develop the former problems. 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 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:
50 participants of age group between 20-30 years. Qigong exercises are given for 32 sessions of 1 hour per session of 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. A 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 are college students and working people, Obese patients of 20 – 30 years, Patients without a recent history of illness, Patients with the height 150 -175cm

Exclusion criteria:
Extremely obese patients with BMI 30 and above, Patients with a pulmonary infection like tuberculosis, 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 the history of head injury, 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 taken of which 35 didn’t cooperate and 15 had no follow-up. 50 patients were given Qigong exercises. For 1 hour per session of two sessions per day for a total of 32 sessions in 9 weeks. A follow-up is taken after 3 months. The patients had done 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 is carried out for 3 sets with an interval of 1 minute in between each set and the next exercise [4].

1. Standing eight pieces of brocade:

➢ First piece:
Your feet should be parallel and shoulder-width apart, and your hands should be at your sides, standing comfortably. Close your eyes, relax your body, and take regular breaths. Continue to breathe naturally and smoothly as you open your eyes and look forward. Sink your Qi in the Lower Dan Tian and condense your Shen in the Upper Dan Tian. Then, without bending your arms, interlock your fingers and lift your hands above your head while lifting your heels. The phrase "two hands hold up the heavens" refers to this. Bend to the right and stand up straight after dropping your heels and tilting your torso to the left. Lower your hands in front of your body to complete one circle. Make a total of twenty-four repetitions.

➢ Second piece:
Squat down in a horse standing position by stepping your right leg to the right. Lift your hands to your chest, releasing them. Put both palms close, then gradually detach them by extending the right hand smoothly to the right nipple, although the left hand extends to the left in the "sword secret" or "single finger" hand form, as if pulling a bow to shoot a hawk. Your gaze is drawn to a faraway point to the left. Then raise and lower your hands to your chest, then repeat for the right side. Make a complete of twenty-four by doing twelve in each direction.

➢ Third piece:
Standing up and moving your leg back so that your feet are parallel and shoulder-width apart after finishing the last component, place both hands in front of your stomach, palms facing up. Raise your left hand over your head and press upward while lowering your right-hand palm to your side and gently pressing down. Rep the process by changing positions. Both hands should feel as if they're pushing against resistance, but you shouldn't tense your muscles. Do a total of twenty-four repetitions.

➢ Fourth piece:
Stand effortlessly and comfortably with both feet parallel and hands hanging down at your sides. To maintain a straight posture, lift your chest slightly from the inside, but don't force it out. Shift your gaze to the left and gaze back while you...
exhale, then inhale and return your head to the front. Follow the same steps as before, except this time in the opposite direction. For a total of twenty-four turns, turn each way twelve times. Always keep your front body in a forward position. Rotating it while turning your head isn't a smart idea. Put your hands on your waist and turn your head twenty-four times, just like you did previously. Finally, with your elbows and shoulders slightly forward, raise both hands to your chest, palms facing up, and move your head twenty-four times.

- **Fifth piece:**
  Squat down in a horse standing position by moving a single turn to the right with your right leg. Put your hand on top of your knees and your thumbs on the outside boundaries of your thighs. By moving your weight to your left leg and pressing down hard with your hand, you may align your head, spine, and right leg. Stay in this position for three seconds, then return to starting position and repeat on the opposite side. For a total of twenty-four turns, turn twelve times in each direction.

- **Sixth piece:**
  Extend your left leg to a shoulder-width distance between your feet. Raise your hands over your head, palms facing up, starting in front of your chest and working your way up, press both palms down slightly beside your waist. You tend to hold or lift something above your head in the form. Hold for three seconds before bending forward with your arms outstretched and your feet planted firmly. Pull your hands up slightly to apply slight pressure on your entire body. Three seconds in this position. Rep the procedure a total of 16 rounds.

- **Seventh piece:**
  This piece is extremely similar to the one that came before it. Squat with your torso erect and hands beside your waist in a horse stance, stepping your right foot to the side. Lock clenched fists and stretch one arm to the side in a twisting punch action. Your other hand forms a tight fist beside your waist. The outstretched hand might have been a fist or an open palm. Loosen both hands and bring the extended hand back to the starting position around your waist once you've finished the extending movement. Tighten both hands on the opposite side and repeat. Do eight on each side for a total of sixteen.

- **Eighth piece:**
  This activity is divided into three sections. To begin, naturally place both hands alongside your body. Keep your body straight and your thoughts at rest. Push yourself to your toes and hold for three seconds before dropping your feet to the floor. A rep for a total of twenty-four times. Put your hands on your hips and waist, and push yourself to three seconds on your toes before dropping yourself. Do this a total of twenty-four times as well. Finally, raise yourself twenty-four times while holding your hands in front of your chest. Take three minutes after you've finished reading the piece to stand up straight, calm your thoughts, and breathe slowly.

2. **Sitting eight pieces of brocade:**
   - **First piece:**
     Start focusing on your solar plexus while lying down with your legs crossed. Your chest should be relaxed and your head should feel like it is floating. It's simple and comfy to move about in the waist and spine. Closing your eyes and placing your hands on your lap is a good idea. Your teeth are pressed together and your mouth is shut. Make sure you're breathing evenly and steadily. Your thoughts are pure and untainted. Condense your Yi (mind) and Shen (spiritual energy) on an internal level (spirit). Until the Shen is at peace and the Qi has been reduced. Dan Tian's attention is drawn to Yi (solar plexus). Meditation should last for at least three to five minutes.
   
   - **Second piece:**
     Start by tapping your teeth 36 times. Suck up as much saliva as you can. Fold your hands together again, this time with the backs of your palms facing front. When you're tasting something, inhale deeply, and when you're resting, exhale deeply. Rep the process nine more times.
   
   - **Third piece:**
     Pick up where you left off in the last section. Keep your middle finger on the Jade cushion chamber and plug your ears with your hands (under the external occipital protuberance). To smack your head, combine your index and middle fingers. A drumming sound will be produced in the brain cavity as a result of this. This drill has been dubbed “Ming Tian Gu.” “Twenty-four times in a steady, even rhythm,” according to “play the celestial drum.” Both fingers can be used at the same time or alternated.

   - **Fourth piece:**
     Move on from the previous section by dropping your hands and gently resting them in your lap, palms facing up. While keeping your shoulders straight, turn your head to the left and then to the right twenty-four times. Then, moving your tongue around inside your mouth to produce saliva, rinse your mouth 36 times with the saliva to generate additional saliva. Swallow the saliva in three gulps, each time using your Yi to direct the spit toward the navel.

   - **Fifth piece:**
     Pick up where you left off in the last section. Inhale slowly and gently via your nose, leading the air to the middle Dan Tian (solar plexus). To warm your hands, rub them together. Then, putting your palms on the Shen Yu cavity, massage it twenty-

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four times in a circular motion. Don't try to massage twenty-four times if you can't hold your breath easily. Exhale after massaging twelve times or as many times as you feel comfortable. Inhale once more, massage your hands together, and repeat. Massage until your Yi and Qi are fully awakened, and focus your Yi on the navel or the Lower Dan Tian. The abdomen will become warm, if not hot, due to this concentration. When you're done massaging, take a deep breath and relax. Feel your kidneys' energy burning inside your navel if you sit calmly with your hands in your lap.

- **Sixth piece:**
  Pick up where you left off in the last section, relax by extending your legs flat on the floor with your arms at your sides. Bend forward and stretch your arms gently, palms down and fingers bent inward. Then, as if you were rowing a boat, make upward and backward circles with your hands. Then it's time to go around the circle again, continue rowing, and circle your hands downward and forward. Rep nine times in a row. Then, nine times more, reverse the way and repeat.

- **Seventh piece:**
  Carry on from the previous section. Interlock your hands and raise their palms above your head. Continue to imagine yourself raising and holding something above your head. Stay there for three seconds before turning your palms down and touching the top of your head. For roughly three seconds, press your hands down while lifting your head upward. Finally, separate your hands and lean forward while pulling your toes back with your hands. Maintain a three-second hold in this position by keeping your knees straight. Rep the process nine times more.

- **Eighth piece:**
  Your legs should be crossed and your hands should be on your lap. Close your eyes and relax. When enough saliva has accumulated, rinse and swallow three times with an audible gasp. After you swallow, keep your attention on your navel or lower Dan Tian and feel the Qi flowing smoothly throughout your body. Rinse once more and swallow three times if more saliva accumulates. A total of nine swallows in this rep. Relax and sense the Qi throughout your body as if it were fire. This entails channeling Qi to your skin to create a protective barrier around your body. After you've completed these eight steps, take three minutes to sit quietly and breathe evenly. (5).

Table 1: Different types of sleep disorders

<table>
<thead>
<tr>
<th>Insomnia</th>
<th>Difficulty falling or remaining asleep, as well as the effects of this during the day.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep-related breathing disorders</td>
<td>Obstructive sleep apnea (breathing cessation related to upper airway blockage), central sleep apnea (breathing cessation due to insufficient respiratory effort), and hypoventilation disorders are the three types of sleep apnea (A multitude of medical disorders cause shallow breathing.)</td>
</tr>
<tr>
<td>Central disorders of hypersomnia</td>
<td>Other sleep disorders are not the cause of excessive daytime sleepiness. Narcolepsy, unexplained hypersomnia, and inadequate sleep syndrome are among them.</td>
</tr>
<tr>
<td>Circadian rhythm sleep-wake disorders</td>
<td>Sleep-wake cycle anomalies are caused by a conflict of the biological clock with usual or needed sleep-wake intervals. These include sleep phases that are delayed or advanced, shift work problems, and jet lag.</td>
</tr>
<tr>
<td>Parasomnias</td>
<td>Sleep-related abnormal activities or catastrophes Sleep-walking, sleep terrors, and rapid-eye-movement sleep behavior disorder are examples of these.</td>
</tr>
<tr>
<td>Sleep-related movement disorders</td>
<td>Sleep movements that are abnormal and generally repetitive. Restless legs syndrome is included, which is periodic limb movement in sleep and leg cramps, even though it is a waking sensory disorder.</td>
</tr>
</tbody>
</table>

![Pittsburgh sleep quality index](image)
Table 2: Mean Difference, Standard Deviation and Paired ‘t’ Value of Pittsburgh Sleep Quality Index

<table>
<thead>
<tr>
<th>Experimental Group</th>
<th>Pittsburgh sleep quality index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean difference</td>
<td>10.12</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>5.32</td>
</tr>
<tr>
<td>Paired t value</td>
<td>12.29</td>
</tr>
<tr>
<td>Table Value</td>
<td>2.15</td>
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</tbody>
</table>

Statistical Data Presentation and Analysis

We have taken pre-test and post-test values for obese patients with sleep disturbances by assessing with Pittsburgh sleep quality index scale. The mean difference, standard deviation, and paired t-test values were taken and plotted.

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 that Qigong exercise had the shortest-term effects. The Qigong exercise was well received by the bulk of the respondents, who claimed they had gotten a lot out of it. Almost everyone who signed up for the Qigong lessons showed up. Given Qigong's efficiency, low cost, and accessibility, it's a good idea to try it out. As an entry-level treatment, it should be investigated in future research for various sleep-related diseases in a stepped-care strategy. Immediate post-intervention, qigong exercise resulted in greater sleep quality. The improvement in sleep quality, however, was maintained three months after the intervention. Participants who had not completed the lessons were likely to practice Qigong on their own afterward.

Previous research with smaller sample sizes has demonstrated that Qigong exercise improves sleep quality. We show that Qigong exercise significantly reduced fatigue daytime drowsiness and improved sleep quality in perimenopausal women, fibromyalgia patients, and community-dwelling [7–10] older persons. In the study, 32 Qigong exercise sessions were conducted over 9 weeks. We highly encouraged the participant to do at least 30 minutes of daily Qigong self-practice. The identity and self-monitoring ideas may have strengthened the efficiency of Qigong exercise self-practice. The favorable effect of the Qigong exercise that we discovered was consistent with the findings of a recent systematic review. [11]

Our study's findings were encouraging, but there were some drawbacks. Participants may have had unreasonable expectations regarding the intervention's efficacy because they were not blind to it. Which of these factors might exaggerate the reaction? However, gains were maintained three months after the intervention, indicating that Qigong's favorable effects aren't only due to anticipation. We only used young adults as a sample. As a result, the findings could not be applied to people over the age of 65.

To assess sleep disturbance, we didn't look at how people functioned during the day or use more sophisticated approaches like sleep diaries, actigraphy, or polysomnography. Other non-specific factors, such as the didactic teaching of Qigong masters, personal attention, and social support among participants, may have contributed to the improved outcomes. Future studies could benefit in understanding the therapeutic components of Qigong by using control therapies that encompass all non-specific aspects. Despite these flaws, the current study showed that Qigong exercise can help people sleep better.

Finally, 32 sessions of Qigong exercise were shown to be effective and acceptable. Obese patients are treated to improve their sleep. Future research should look at the effectiveness of the Qigong exercise in a group of people who are subjected to a variety of various conditions, as well as measures to increase participation in Qigong teachings and practice.

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