

A comparison of the quality of life in obese persons based on experience of *yoga* practice

¹Sachin Kumar Sharma, ¹Niranjan Kala, ¹Shirley Telles*, ²Jaideep Arya & ¹Acharya Balkrishna

¹Patanjali Research Foundation, Haridwar-249405, UK, India;

²Patanjali Yog Samiti, Patanjali Yogpeeth, Haridwar-249405, UK
E-mail: shirleytelles@gmail.com

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The present cross sectional comparative trial aimed to compare the quality of life (QoL) in Indian obese persons who had experience in *yoga* compared to those naïve to *yoga*. Forty obese participants (BMI $\geq 25\text{Kg/m}^2$) of both sexes (M:F, 18:22), age range between 30 to 50 years (Mean \pm SD, 43.1 \pm 4.6 years) took part in the study. There were two groups of participants i.e., (i) a *yoga* experienced group with at least six months experience in *yoga*, and (ii) a naïve to *yoga* group. The QoL was assessed using the Moorehead-Ardelt Quality of Life (QoL) Questionnaire and the results were determined using a *t*-test for unpaired data; with individual Holm-Bonferroni adjustments. A significant difference was found between the two groups in the following domains of QoL: (i) self esteem ($p < 0.001$), (ii) enjoyment in doing physical activities ($p < 0.01$), (iii) ability to work ($p < 0.01$), and (iv) total quality of life ($p < 0.01$). These four aspects of QoL were found to be significantly higher in the *yoga* experienced group compared to the naïve to *yoga* group, indicating the possible usefulness of *yoga* to improve QoL in obese persons.

Keywords: Quality of life, Obesity, *Yoga*, Naïve to *yoga*, Cross-section study

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The prevalence of obesity is increasing globally and in India; this has become a health concern¹. A recent study revealed the fact that India has the third maximum number of obese persons in the world, after the U.S. and China, with 30 million who are obese¹. It has been reported that overweight and central fat distribution are not only associated with serious medical conditions such as type 2 diabetes, cardiovascular disease, and several types of cancers but also adversely affects many dimensions of quality of life even in those who are without diseases which may be linked to obesity². Multiple studies have reported poor self-esteem³, impaired psychosocial functioning⁴, reduced physical functioning^{5,6} disability⁷ and sexual dysfunctions⁸ in overweight/ obese and centrally obese subjects. Weight loss has been associated with improvement in quality of life of overweight, obese and centrally obese subjects⁹. Revised guidelines for the prevention and management of obesity emphasize lifestyle modifications for weight loss in overweight and obese persons¹⁰. *Yoga* is an ancient Indian life-style intervention which includes an increased level of physical activity, changes in thinking and perception and eventually, dietary suggestions¹¹.

Multiple studies have been conducted to assess the effects of *yoga* for weight loss. These studies have shown that the practice of *yoga* is safe and useful for weight loss in overweight and obese subjects¹²⁻¹⁴. Despite the fact that the practice of *yoga* has been found useful for reduction in body weight in overweight, obese and in those who are centrally obese¹²⁻¹⁴, there are very few studies assessing the effects of *yoga* on the quality of life in obese participants. In a recent randomized controlled trial on 60 centrally obese otherwise healthy females, waist circumference as a measure of central obesity and other related anthropometric measures (waist/hip ratio, body weight, BMI, body fat percentage, body muscle mass percentage, blood pressure, health-related quality of life, self-esteem, subjective stress, body awareness, and body responsiveness) were assessed before and after 12 weeks of intensive *yoga* intervention (90 min per day twice a week)¹⁵. Following 12 weeks of intervention there were significant increases in self esteem, health related quality of life and a decrease in the waist circumference as well as other relevant anthropometric measurements. To our knowledge there is no study comparing the quality of life in Indian overweight and obese participants having experience in *yoga* with those who are naïve to *yoga*.

*Corresponding author

With this background the present study was planned to see if there is any difference in the quality of life of obese participants who have at least six months of experience in *yoga* and those who are naïve to *yoga*.

Methods

Sample

Forty obese persons (BMI $\geq 25\text{Kg/m}^2$) of both sexes (M:F, 18:22) with ages between 30 and 50 yrs (Mean \pm SD 43.1 ± 4.6 yrs) participated in the study. The participants were those enrolled in a weight management program at a *yoga* center. Their baseline assessment included the Moorehead-Ardelt Quality of Life Questionnaire and BMI among other measurements. Participants were included in the study if their BMI was $\geq 25\text{Kg/m}^2$. Participants were excluded if: (i) they drank alcohol or used tobacco in any form, (ii) they had any metabolic abnormalities (e.g. hypothyroidism and type 2 diabetes mellitus) or (iii) they were taking any medication. The baseline characteristics of the participants are given in Table 1. Recruitment was carried out by distributing leaflets in the locality and advertising in the local newspaper. A signed informed consent was obtained from each participant. The study had the approval of the institution's ethical committee.

Study design

The study was a cross sectional comparative control trial. Participants were recruited to form two groups, i.e., (i) a group of participants having at least six months of experience in *yoga* practice and (ii) a naïve to *yoga* group which included participants having no prior experience of *yoga* practice at the time of assessment. The participants of the *yoga* group had practiced the following *yoga* techniques (i) *pranayamas* and *yoga* breathing techniques (*kapalbhati*, *anulom-vilom*, *bhastrika*, and *bhramari*) and (ii) *asanas* (*tadasana*, *vakrasana*, *bhujangasana*,

mandukasana, *makarasana* and *shavasana*). Their daily practice was approximately 45 minutes a day for at least 5 days in a week.

Assessments

Quality of life: In the present study the quality of life was assessed using Moorehead-Ardelt Quality of Life Questionnaire¹⁶ which is often used to assess QoL in obese persons after bariatric surgery compared with before and assesses six different aspects of quality of life which are particularly compromised in overweight, obese persons, especially those who are centrally obese. The questionnaire is designed to assess different aspects of quality of life which are general self-esteem, physical activity, social contacts, satisfaction concerning work, sexual pleasure, and focus on eating behavior, in scores ranging from -0.5 to +0.5. The sum of these 6 scores provides an overall QoL score.

Data extraction

Data were extracted using standard methods¹⁶. Each score was classified into 5 categories (very poor: -3.0 to -2.1; poor: -2.0 to -1.1; fair: -1.0 to +1.0; good: 1.1 to 2.0; and very good: 2.1 to 3.0).

Statistical analysis

Statistical analyses were performed using the Predictive Analytic Software (Version 18.0, SPSS Inc). The t-test for unpaired data was used to detect differences between quality of life of both groups. The group average values and standard deviations are provided in the Table 2.

Table 1 — Baseline characteristics of the participants

	<i>Yoga</i> experienced group	Naïve to <i>yoga</i> group
n (males/females)	20 (9/11)	20 (9/11)
Age (years) Mean \pm SD	43.0 \pm 4.8	43.3 \pm 4.5
Experience of <i>yoga</i> (months)	6-84	0

Table 2 — Different aspects of quality of life in obese persons with and without experience in *yoga*.

SI.No.	Aspect of Quality of life	<i>Yoga</i> experienced group (Mean \pm SD)	Naïve to <i>yoga</i> group (Mean \pm SD)	<i>p</i> -value
1	Feeling of respondent about himself (good/bad)	0.3 \pm 0.2	0.0 \pm 0.2***	<i>p</i> <0.001
2	Enjoying physical activities	0.3 \pm 0.2	0.0 \pm 0.2***	<i>p</i> <0.001
3	Satisfactory social contacts	0.2 \pm 0.2	0.1 \pm 0.3	Not significant
4	Ability to work	0.3 \pm 0.2	0.1 \pm 0.2**	<i>p</i> <0.001
5	Sexual pleasure	0.1 \pm 0.2	0.1 \pm 0.4	Not significant
6	Approach towards food	0.3 \pm 0.2	0.2 \pm 0.2	Not significant
7	Total quality of life	1.4 \pm 0.7	0.5 \pm 1.1**	<i>p</i> <0.01

p*<0.05, *p*<0.01, ****p*<0.001 unpaired *t*-test

Individual *p* values were adjusted using the Holm-Bonferroni adjustment.

Results

The *yoga* experienced group had 6 to 84 months (group mean \pm SD; 31.9 ± 22.5 months) of experience of *yoga* practice.

There was a significant difference between groups in the following domains of quality of life: (i) self esteem ($p < 0.001$; where Holm-Bonferroni adjusted alpha = 0.0083(2)), (ii) enjoyment in doing physical activities ($p < 0.01$; where Holm-Bonferroni adjusted alpha = 0.0083(1)), (iii) ability to work ($p < 0.01$; where Holm-Bonferroni adjusted alpha = 0.0083(1)), and (iv) total quality of life ($p < 0.01$; where Holm-Bonferroni adjusted alpha = 0.0083(1)).

Discussion

Obese participants with at least six months of experience in *yoga* showed a significant improvement in quality of life, compared to those who were naïve to *yoga*. Self-esteem, enjoyment in doing physical activities, ability to work and total quality of life, were the four aspects of quality of life which were significantly better in the *yoga* experienced group compared to the group which was naïve to *yoga*. Self-esteem was significantly higher in the *yoga* experienced group of obese participants and is of importance as poor self-esteem has been linked with depression and even with ideas of suicide¹⁷. The results of the present study support the findings of an earlier study that reported that the practice of *yoga* improves self-esteem¹⁸. The difference between the earlier study¹⁸ and present study is that the earlier study was carried out on normal-weight, healthy volunteers while the present study was carried out on obese persons. Among other factors body dissatisfaction has been attributed to poor self-esteem in overweight and obese persons¹⁹. It is known that *yoga* practice which includes specific *yoga* postures, breathing techniques and meditation gives specific emphasis to body awareness and responsiveness²⁰. Increased body awareness and responsiveness have been linked with greater body satisfaction and lower levels of trait self objectification and may explain the significant group differences in self-esteem of obese participants having experience in *yoga* compared to those who were naïve to *yoga* in the present study. It is well known that overweight and obese participants are more likely to have poor physical functioning, which is also a measure of quality of life. In the

present study obese participants with experience in *yoga* reported significantly better physical functioning compared to those naïve to *yoga*. The practice of *yoga* has been reported to reduce body fat, the waist circumference¹³ and increase muscle strength²¹ in overweight and obese persons with and without complications associated with obesity. Apart from this, the practice of *yoga* has been shown to be beneficial in improving the cardio respiratory fitness in normal healthy volunteers²². In the present study it may be speculated that obese persons with experience in *yoga* may have significantly better muscle strength, joint mobility and cardio respiratory fitness in comparison to group naïve to *yoga*. However in the absence of measurements, such as body composition and VO₂ max this remains only a speculation. With an increase in age obese persons are more like to develop difficulty in performing daily activities such as carrying weights, kneeling and stooping²³. In general reduction in lean body mass has been correlated with limitations in performing daily activities²⁴. In the present study obese persons with experience in *yoga* showed significantly better ability to work compared to the naïve- to-*yoga* group. As mentioned above, the practice of *yoga* has been shown to improve lean mass in obese persons and this could be a possible factor why obese persons with experience in *yoga* have reported better ability to perform daily activities than the control group. Apart from this, the total quality of life was also significantly better in obese persons having experience in *yoga* compared to the naïve-to-*yoga* group. In the present study the total quality of life is obtained by adding the scores for the six different aspects of quality of life. Better quality of life in obese persons having experience in *yoga* in comparison to the naïve-to- *yoga* group could be related to the fact that out of six, three aspects of quality of life, i.e., (i) self esteem (ii) enjoyment in doing physical activities and (iii) ability to work were significantly higher in the *yoga* experienced group of obese persons. In the present study a significant difference in the total quality of life between obese persons having experience in *yoga* compared to those naïve to *yoga* could be attributed these three aspects of quality of life which were significantly better in the *yoga* experienced group.

In summary the present study indicates that the practice of *yoga* may be useful to improve different aspects of quality of life in obese persons. Further

research is required to understand the mechanisms by which obese persons having experience in *yoga* have better quality of life compared to those naïve to *yoga*.

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