ABSTRACT

Background

Scientific and technological progress all over the globe has made mankind highly sensitive, critical and also creative. Technology has helped us reap the benefits of its use. Associated with this progress is the emergence of two basic challenges, pollution and stress. The challenge of pollution is being tackled effectively. But on the second front, in spite of extensive research all over the globe, a decreasing “Quality of Life”, increasing health hazards, social unrest, student unrest etc., which are all different expressions of
stress, have shown no trend of decrease. On the contrary, over the last two decades, it is rather on the path of ascent (Nagendra & Nagarathna, 2001).

Hence, understanding what “Quality of Life” is becomes an important criterion.

**Aims**

The present trial was aimed to evaluate the effects of Yoga and Physical exercise on quality of life, Guëäs Self Esteem and promotion of positive health.

**Methods**

After screening 1228 persons of both sexes between the age group of 18 – 71 years, 226 subjects consented to participate in the project. Finally data was available on 184 subjects for analysis. They were randomized into two groups, Yoga (Y) and physical exercise (PE). Assessments of the two groups were made at baseline and after 8 weeks. The Y group practised integrated yoga module. The techniques included physical practices (Kriyas, asanas, healthy yoga diet), breathing practices with body movements and Pranayama, meditation, devotional sessions, lectures on yoga, stress management and lifestyle change through notional corrections for blissful awareness under all circumstances (action in relaxation). The PE group practiced mild to moderate physical exercises. Both groups practiced for sixty minutes a day, six days a week for 8 weeks.

**Assessments**

The Quality of life (QoL) was assessed by using following six questionnaires.

**WHO QoL – 100** – This questionnaire has acceptable psychometric properties with good internal consistency with Cronbach’s alpha ranging from 0.65 (for physical environment) to 0.93 (for working capacity). This questionnaire contains six broad domains of QoL namely Physical health (PHY), Psychological health (PSY), Level of Independence (LOI), Social relations (SRD), Environmental (ENVD) and Spiritual health (SD). Each domain
contains 24 facets of 4 items each. One additional facet (4 items) pertains to Global Health (GH).

**The Vedic Personality Inventory (VPI):** – The VPI developed by Wolf DB in the year 1998 is a “psychological construct” to assess the three Gunas namely *Sattva, Rajas* and *Tamas* and has acceptable psychometric properties. It has 90 items comprising 30 for *sattva guna*, 28 for *rajoguna* and 32 for *tamo guna*. It has good internal consistency and reliability with Cronbach’s alpha ranging from 0.850 for *Sattva* 0.915 for Rajas and 0.699 for *Tamas*.

“**The ‘G’-Inventory of Personality**” (GIN) – The GIN inventory is a measure of the three Gunas contains 10 questions that have 3 response choices. This test has a test-retest of 0.60 with a confidence level of 99% and has been validated.

**Self Esteem Questionnaire (SEQ)** - This multidimensional questionnaire developed and standardized by S.K. Karunanidhi (1996) has acceptable psychometric properties with good internal consistency, reliability and validity.

**The Verbal Aggressiveness Scale (VAS)** – The VAS was developed by Infante DA, Wigley CJ. This Scale is stable across time. The reported test-retest reliability is 0.82 for a 4-week period. Further the cross-culture reliability has been supported in a number of studies.

**The Satisfaction with Life Scale (SWLS)** - The SWLS is a short, 5-item instrument designed to measure the global judgment of life satisfaction. The SWLS has shown strong internal reliability and moderate temporal stability. Diener et al (1985) reported a coefficient alpha of 0.87 for the scale and a 2-month test-retest stability coefficient alpha of 0.82. The scale usually requires only about one minute of respondent time.

**Results**

**WHO QoL** - 100
A comparison between the baseline values in the present study with normative values in different states of India and with other countries showed that the group in the present study had marginally higher baseline values on all domains.

The baseline values were not normally distributed. The differences between the baseline values were statistically significant. Yoga group had higher effect size in Global health and Spiritual domain (0.38) and PE group had higher effect size in physical (0.22), Psychological (0.52), Level of Independence (0.32), Social relations (0.23), environmental domain (0.47) and Global health. All domains in Yoga group showed significant changes except PHY and LOI. All domains in control group also showed significant changes except PHY. There was no significant difference between the groups.

The Vedic Personality Inventory (VPI)

The baseline values were normally distributed for Tamas, Sattva. The differences between the baseline values were not statistically significant. 

Sattva- scores have increased significantly in both Y (4.88 to 5.26) (p=0.001) and PE (4.91 to 5.21) (p<0.001, Paired samples test).

Rajas – The PE group showed significant decrease in scores from 3.67 to 3.43 (p=0.002). Seniors have shown significant decrease in both Y (3.81 to 3.51) (p=0.002).

Tamas – The PE group showed a significant decrease in the Tamas score from 3.24 to 2.99 (p=0.001, independent samples t test).

“The ‘G’ – Inventory of Personality”- The GIN gives a single overall score that describes the disposition of an individual towards Sattva, Rajas or Tamas. The question of interest was whether an individual’s guna type changes after intervention. To ascertain this, three different McNemar’s tests were done by checking the change from presence of a guna to its absence, to ascertain the significance of shifts of the number of subjects who were predominantly of non-Sattva type before intervention, to Sattva type after intervention. The same was done for non-Rajas to Rajas and non-Tamas to Tamas types. In the Yoga group, significant number of subjects shifted from non-Sattva to Sattva type after the intervention.

Self Esteem Questionnaire (SEQ)
Competency (COM) - The PE group (43.44 to 45.23) (p=0.033) and juniors in PE group (42.34 to 45.07) (p=0.035) showed a significant increase.

Global Self-esteem (GSE) – The Y group (46.68 to 49.47) (p=0.036) showed a significant increase.

Moral and Self-esteem (MSE) – Significant changes occurred in Y (34.78 to 37.31) (p=0.003), seniors (34.31 to 39.39) (p=0.004) and females (33.59 to 37.77) (p=0.001).

Social esteem (SSE) – Significant changes occurred in seniors (31.39 to 33.92) (p=0.023) and females (31.28 to 33.41) (p=0.006) in Y group.

Family Self-esteem (FSE) – A significant increase was noticed in seniors (34.83 to 38.11) (p=0.002) and females (35.15 to 37.36) (p=0.003) in Y group.

Body and physical appearance (BPA) – A significant improvement is noticed in Y group (24.56 to 26.23) (p=0.003). In the PE group, juniors (25.93 to 26.59) (p=0.002) and males (26.37 to 25.90) (p=0.047) have shown a significant increase.

The Verbal Aggressive Scale has shown the changes after the intervention in the two groups. The scores on VAS in Y group (59.77 ± 7.51 to 57.36 ± 6.20) showed a significant decrease (p=0.017). There was a non-significant increase in PE group (58.71 ± 9.25 to 59.93 ± 8.63). There was a significant difference between groups (p=0.013) on ANCOVA considering the pre values as a covariate.

Satisfaction with Life Scale has shown that satisfied and extremely satisfied subjects have increased in both Y & PE groups whereas dissatisfied and neutral subjects have decreased considerably after intervention.

Conclusions

1. Quality of Life improved after both yoga and PE. Higher effect size after yoga in Spiritual health and Social relations and after PE in Physical health, Psychological health, Level of Independence, Social relations, Global health and Environmental domains.
2. Yoga increased *Sattva* reduced *Tamas*. PE group reduced *Rajas*. There was a significant difference between the groups in *Rajas*.

3. Yoga helped in shifting from non *Sattva* to *Sattva* and *Tamas* to Non *Tamas*.

4. Yoga improved Global, Moral and Body and physical appearance. PE improved Competency.

5. There was a significant decrease in verbal aggressiveness in Y group with a non-significant increase in the PE group.

6. Satisfaction with Life increased whereas dissatisfaction decreased after both Y & PE.

The effect size was higher in PE

**Limitations of the study**

A third group without any intervention would have thrown more light on the special dimensions of yoga. A larger study with greater number of subjects would have brought out the influence of yoga on different category of people as also of gender effectively. Only psychological parameters were studied and some quantitative measures of physiological measures, as for example on brain signals (EEG studies) would have thrown more light on the relative influences of Y in comparison to PE at physiological levels also.

**Suggestions for future**

The duration of the interventions to be increased to six to twelve months for better results. It would be desirable to evaluate the benefits of the interventions in a single place rather than evaluating in different places.