9. APPRAISAL

9.1 Summary

In the initial phase 460 girls from a residential college in Anantapur, Andhra Pradesh, India, were screened for assessing prevalence of PCOS in India, 42 who satisfied Rotterdam criteria of PCOS. Thus, the prevalence of PCOS was 9.13 percent in this population. Amongst 42 PCOS girls, 1 girl (2.38 %) had oligo/amenorrhea with clinical hyperandrogenism, 29 (69.05 %) had oligomenorrhea with polycystic ovaries, 1 girl (2.38 %) had polycystic ovaries with clinical hyperandrogenism and 11(26.19 %) girls had oligomenorrhea with polycystic ovaries in the presence of clinical hyperandrogenism. Out of 42 girls who had PCOS, 12 (2.61%) satisfied the NIH criteria. However by assuming that the girls who did not have an ultrasound had a similar prevalence of polycystic ovaries and including the imputed data, the total prevalence estimates increased to 10.97%.

In the second phase, through a prospective randomized active interventional controlled trial, the effect of 12 weeks of holistic yoga program was compared with that of physical exercise program on hormonal, biochemical, psychological and anthropometric variables on adolescent PCOS girls (aged 15-18years). Seventy two girls satisfying Rotterdam criteria of PCOS were randomized into 2 groups, 37 in the yoga group and 35 in the exercise group.

The intervention consisted of a 12 week intensive yoga program comprising of āsanas (physical postures) designed for PCOS, prāṇāyāma (breathing practices), meditation apart from interactive sessions on philosophical concepts of yoga. The control group practiced physical exercises and also had interactive sessions on lifestyle change.

The overall change at the end of 12 weeks was significantly different between the two groups in most variables.
9.2 Uniqueness of the study

This is a first study ever providing an estimate of PCOS prevalence in India. Also, first comprehensive intensive interventional study where unlike previous studies where diet or exercise was used as an intervention primarily focusing on weight loss, present study used IAYT as an intervention which is based on holistic approach with multidimensional interventions at physical, mental, emotional, intellectual and spiritual levels in keeping with the WHO definition of health. The daily progress was monitored by a team of well-trained yoga therapists, and counselors as the daily 1 hour intervention was provided in the college premise as part of the student’s daily routine activity unlike most of the previous studies where dietary modules or exercise modules were provided to take home and visit to investigator was only for follow up.

9.3 Conclusion

This RCT has shown an improvement in hormonal profile, biochemical profile and psychological variables after 12 weeks of holistic integrated yoga program in adolescent PCOS girls in comparison to the physical exercise program.

9.4 Strength of this study

a) The randomized control design with the control group also received supervised matched intervention.

b) Significant results in hormonal and biochemical profiles, in the absence of anthropometric changes, along with improvement in anxiety, emotions and quality of life within 12 weeks were seen.

c) More applicability for adolescent PCOS girls before resorting to the pharmacological intervention
d) Introduction of 5 days of detraining (no intervention) before collecting the post intervention blood sample.

e) No side effects of both experimental and control interventions.

9.5 Limitations of the study

a) Captive adolescent population with a highly selective age group which raises the question of generalizability of the conclusions

b) Possibility of some interaction and exchange of ideas could not be ruled out as both groups were in the same campus although special care was taken to keep the sessions for both the groups at the same time but at separate venues.

c) Change in hirsutism within 3 months of intervention time could be due to some confounding factors such as waxing, hair removing cream etc.

9.6 Implications

a) Significant results seen in restoration of normal endocrine and biochemical profiles with improvement in psychological profile within 12 weeks in adolescent PCOS girls. This encourages acceptability of the program in young PCOS patients.

b) The treatment is cost effective compared to high costs of conventional medical management thus reducing the economical burden related to PCOS.

c) Yogic intervention also takes care of the psychological components like anxiety and stress which contribute to better attitude and functioning.

d) Yogic intervention improves quality of life which helps in coping skills and fostering a better sense of wellbeing.

9.7 Suggestions for future work:

a) It will be useful to include objective and subjective measures of stress that may help in understanding the mechanisms.

b) A long-term follow-up and measures of cognitive changes may be studied.
c) Longer duration of follow up with continued home practice for about six months.

d) Future studies may be designed to include longer duration of follow up to observe the changes in ovarian volume and follicular size.

e) Generalizability of this program in different cultures to be assessed by studies in different ethnic groups.