ABSTRACT

The present study lays the foundation for a more comprehensive investigation into obesity, and the non-invasive, individualized, behaviour-change-based strategies intended to treat this prevalent problem of health. The four objectives of the study were to: study the socio-economic status, determine the nutritional status, lifestyle pattern including physical activity, sleep quality, and Knowledge, Attitudes and Practices (KAP) of 18 to 25 year old women; develop aerobic exercise routines and nutrition education modules as interventions; and assess their impact on the above parameters. A total of 632 women participants, who self-reported as aged between 18 and 25 years, had lived in Coimbatore for at least three years, and their initial Body Mass Index (BMI) suggested that they were overweight or obese were included as participants of the present study. Pre-tested and validated, structured survey forms were used towards clinical, biochemical and dietary assessment. The Global Physical Activity Questionnaire and the Pittsburgh Sleep Quality Index assessed the subjects' physical activity levels and sleep quality respectively. Subjects were randomly allocated to either the control group (Group 0), the exercise intervention group which underwent exercise for five days a week (Group 1), the nutrition education group which had 20-minute dietary counselling every week (Group 2) or the combination of exercise and nutrition education group (Group 3). The subjects were re-evaluated for their nutritional status, dietary habits, level of physical activity, sleep quality, and KAP after six months. Multiple regression analysis showed that educational awareness decreased body weight, BMI and Waist-to-Hip Ratio (WHR). Exercise improved Skeletal Muscle Mass (SMM) by 2.7 kg and Basal Metabolic Rate (BMR) by 0.5 kcals up to 60%. As a combined effect of 42%, weight, BMI, WHR, and percentage of body fat significantly decreased while SMM and BMR increased ($F=19.56$, $p<0.001$). Nutrition education intervention improved the haemoglobin content and lowered the serum thyroid levels. Combining both interventions, random blood glucose, and thyroid function parameters decreased while haemoglobin increased up to 48% ($F=11.60$, $p<0.001$). Both the interventions combined significantly reduced dietary intake as well as improved the sleep quality of the study subjects up to 44% ($F=247.37$, $p<0.001$). Thus, a combination of exercise and nutrition education results in an overall enhancement in the women's lifestyles and the potential for long-term weight management by improving their nutritional status, physical activity, and sleep quality.

Keywords: *exercise, nutrition education, overnourished women, physical activity, sleep quality*