

# Hypothyroidism, its association with body composition, anthropometric measurements and physical activity levels

NIDHI BUDHALAKOTI AND KALPANA KULSHRESTHA

**Objective:** To establish relationship between, body composition, anthropometric measurements and physical activity levels with hypothyroidism. **Material and methods:** The study was carried out in Pantnagar area of Udham Singh Nagar district, Uttarakhand on 150 female subjects of age between 21 to 50 years, selected by random sampling. The plan of study was carried out in two phases. Basic anthropometric measurements such as weight, height, waist and hip circumference measurements were taken using standard methods. Body composition of the subjects was determined using bioelectrical impedance and physical activity levels of the subjects was also determined in the first phase. Blood samples of the subjects suspected to have hypothyroidism (n=30) on the basis of symptoms, anthropometric measurements and body composition analysis were also collected for estimation of thyroid hormone levels in the second phase. **Results:** A significant positive correlation was seen ( $p \leq 0.01$ ) in case of anthropometric and body composition parameters such as weight, waist circumference, hip circumference, body mass index and fat mass per cent whereas, in case of fat free mass, total body water, protein, mineral and muscle mass per cent a significant negative correlation was seen with hypothyroidism. On the basis of physical activity pattern there was a significant difference between the average number of hours spent by hypothyroid patients ( $7.6 \pm 0.39$ ) and normal subjects ( $7.40 \pm 0.59$ ) in sleeping, physical work like brisk walking, exercise, jogging or yoga and average number of hours spent in leisure (chatting, socialization, watching T.V., reading magazine, listening to music, napping). There was a non-significant positive correlation between disease and hours spent in sleeping, leisure and household work. Whereas, a non-significant negative correlation was seen between disease and hours spent in personal care/grooming or hygiene, miscellaneous activities, physical work and occupational work. **Conclusion:** Conclusively it can be said that individuals with high weight, BMI and waist and hip circumference along with the symptoms like weight gain, puffy face, hands and feet, increased need for sleep, constipation, poor muscle tone (muscle hypotonia), impaired cognitive function (brain fog) and inattentiveness, depression etc. should undergo body composition analysis and biochemical screening for thyroid function so that their status is clear. If in such individuals after body composition analysis fat mass per cent is increased along with decreased fat free mass, total body water, protein, mineral and muscle mass per cent and thyroid function tests are not normal mainly with increased TSH levels and with or without reduced  $T_3$  and  $T_4$  levels then the individuals are suffering from hypothyroidism.

**Key Words :** Anthropometric parameters, Body composition parameters, Physical activity, Hypothyroidism

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