SUMMERY
SUMMARY

This study entitled “evaluation of thyroid function in critically ill and severely malnourished children” was undertaken with the aim to study the changes in thyroid hormonal pattern in cases of critical illness and severe malnourishment. We studied 50 cases between one month to 48 months, in which 10 cases served as control and 20 cases of critical illness and 20 cases of severe malnourishment were taken in the study group. Study subjects comprised of children suffering from acute severe systemic illness requiring intensive care and children weighting less than 50% of 50th percentile of Howard standard for their age. The cases of PEM were graded according to classification adopted by Indian academy of paediatrics. Controls were age and sex matched with the study group. Details of history inclusive of present illness, past illness, birth history, dietary history, anthropometric measurements, clinical examination, biochemical analysis were secured on specially designed Performa. Patients having maternal history of thyroid dysfunction, evidence of endocrine abnormality especially thyroid and with clinical goiter were excluded from the study. Blood sample were collected in plain vial and serum was separated by centrifugation and stored at –20°C for up to 30 days. Samples were analysed by ELISA method for thyroid hormones.

Observations were tabulated and data was analysed statistically. The Mean ± S.D. values were calculated and statistical significance of each parameter was determined by applying students
‘t’ test, comparing the value in study group with that of control group. The following inferences were made when data were analysed.

**Evaluation of thyroid hormone status**

1. **Triiodothyronine (T₃):** The mean values of serum T₃ was lower in both study groups (93.85±22.26 in critically ill and 105.40±36.26 in severely malnourished patients) as compared to that of control group (143.25±31.76). The decrease in the serum T₃ levels were found to be statistically significant in both critically ill patients (P<.001) and severely malnourished patients (P<.01).

   Different hypotheses for decrease serum concentration of T₃ in critically ill and severely malnourished patients have been given by different workers Viz. Impaired thyroid secretion rate low thyrobinding proteins, impaired T₄ monodeiodination in liver due to reduced activity of 5’ deiodinase system resulting in a decrease in serum T₃ and increase in serum rT₃ concentrations commonly known as “low T₃ syndrome”. Corticosteroids, which are elevated in stress also inhibit T₃ generation from T₄ by inhibiting the 5-deiodinase system.

2. **Thyroxine (T₄):** The mean values of serum T₄ was lower in both study groups (6.59±1.60 in critically ill patients and 7.04±1.26 in severely malnourished patients) as compared to that of control group (8.14±0.67). The decrease in serum T₄ levels were found to be statistically significant in both critically ill patients (P<.01) and severely malnourished patients (P<.02).

   Different hypotheses for decrease serum concentration of T₄ as well as T₃ have been given by different researchers viz- decreased
thyroid secretion rate, decreased serum concentration of thyrobinding proteins like TBG, TBPA and serum albumin, relative iodine deficiency associated with high fecal loss and malabsorption of iodine and abnormal thyrotropin secretion.

3. **Thyroid stimulation hormone (TSH):** The mean serum TSH level was 3.34±1.10 in critically ill patients, 2.12±0.84 in severely malnourished patients and 2.66±0.89 in control group. Statistically significant difference was not observed when study groups were compared to control groups (P>0.1 in both groups).

Normal TSH level is explained on the basis that as T₄ undergoes intracellular monodeiodination to T₃ at the pituitary level, so central feed back mechanisms are apparently preserved, allowing appropriate adaptation of the thyroid.