

## Body composition during first year of life in a cohort of healthy Pakistani children

### Introduction:

Human growth during the first 2 years of life includes not only quantitative changes in body size, but also qualitative changes in composition. Body composition assessment provides an accurate measurement of growth and nutritional status of babies as compared to anthropometric measurements. In this longitudinal study we aimed to estimate body composition of babies studied during the first 2 years of life. This reference data will improve the understanding of the association between physical growth, body composition, health, and risk of non-communicable disease in later life.

### Methods:

A Multicenter body composition reference study was carried out at the Aga Khan University hospital Karachi, in collaboration with IAEA using stable isotope technique. The aim of this study was to produce normative body composition reference data in healthy term infants from age 3 to 24 months. Repeated anthropometric and body composition measurements were performed on 170 healthy term infants at 3, 6, 9, 12, 18, and 24 months of age. Body composition assessment was performed by deuterium dilution method. Total body water (TBW) was calculated, to estimate the amount of fat free mass FFM. Fat mass (FM) was then calculated as the difference between body mass and FFM.

### Results:

The mean  $\pm$  SD birth weight and length of the infants were  $3.10 \pm 0.37$  kg and  $49.04 \pm 1.65$  cm, respectively. Mean gestational age was  $38.50 \pm 2.32$  wk. We know FM and FFM is age dependent and gradually increase with age; in our study we found a similar trend. FM%, increased in girls and boys up to 6 months (girls  $20.92 \pm 4.63$  to  $24.31 \pm 5.63$ ; boys  $18.9 \pm 4.52$  to  $20.99 \pm 4.65$ ) and thereafter it reduced in both gender but more in boys than girls (Figure). However FM% was significantly higher in girls across all time points ( $p=0.037$ ).

### Conclusion:

This is the first longitudinal study evaluating the body composition of healthy Pakistani children in the first 2 years of life. Our study shows that the fat mass is comparable in both genders till 6 months of age. This may be due to similar feeding practices i.e. milk being the predominant nutrition offered to this age group. However females tend to lose less fat compared to the males. This aspect needs to be further explored.

## Country

Pakistan

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