Letters to the Editor

Spring Balance vs. SECA Balance as a Measure of Weight in Children

Monitoring children's growth is an important component of research and programs of public health. SECA electronic balance although the most recommended method of weight measurement, in community based studies is expensive to begin with; it gets easily affected by child's movements or cry making weighing difficult. Moreover, need for electricity and marked voltage fluctuations hampering its precision, further, prevents its use. Field trial involves extensive traveling on jerky roads, in our experience a scale does not last more than 1 year of use under these conditions. There is a need for alternatives which can be used for community based trials.

We evaluated whether the modified and adopted spring balance recommended by WHO which is cheaper and less maintenance intensive alternative for weight measurement in preschool children, performed as well as the sophisticated SECA electronic balance for monitoring the growth of children in a developing country community based clinical trial setting. Within context of a randomized clinical trial of zinc supplementation, a total of 2281 children 5-36 months of age, were weighed using both spring balance which was modified by marking a 50 g graduation (Model MP 25; 25kg × 100g; CMS weighing equipment Ltd.; made in England) and a SECA electronic scale (SECA Model 727; 20 × 10g; made in Germany). They were weighed first by a team of field workers, followed by the supervisor's team who were blinded to each other's weights. Thus, two measurements were recorded for each child. Prior to the study these health workers were trained for a week achieving 95% intra and inter observer agreement.

There were no significant differences between the mean weights of the children using two different methods of weighing (*Table I*), and showed a high correlation (r= 0.99). To conclude, in field conditions where SECA scales are difficult to maintain, there is no electricity, walking distances are more or

TABLE I–*Weight Measurements in Children Using Two Scales for Measurement*

Age category	Spring balance weight (Kg) Mean ± SD	SECA weight. (Kg) Mean ± SD	Difference in weight (Kg) Mean ± SD	Correlation Mean ± SD
5 - 11 months (n =549)	6.75 ± 0.95	6.74 ± 0.96	0.008 ± 0.15	0.988
12 - 23 months (n =1074)	7.87 ± 1.08	7.84 ± 1.08	0.03 ± 0.16	0.989
24 - 36 months (n =559)	9.60 ± 1.34	9.58 ± 1.35	0.02 ± 0.18	0.990
>36 months (n = 99)	10.9 ± 1.20	10.9 ± 1.2	0.03 ± 0.08	1.0

electronic scales are not available, spring balance with a little modification could provide a good alternative in taking the weight of children aged 5 months to 36 months. For clinical trials or investigations which need to weigh preschool children older than 6 months in developing country settings, spring balance can be used without loss of precision. Also, spring balance is cheaper and more convenient with higher uptime and less requirement for maintenance.

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P. Dhingra,
S. Sazawal,
Center for Micronutrient Research,
Annamalai University,
M-30, Left basement,
Lajpat Nagar-II,
New Delhi 110 024,
India.
E-mail: pratibha_dhingra@yahoo.com

Body Composition of Pre-adolescents by Skinfold Measurements and Body Stat 1500 Analyzer

Body composition is a basic feature of the machinery of the human body. Knowledge on body composition provides valuable information for apart of clinical and research settings. Several studies have suggested relations between one of the accepted methods of determining body fat and a simpler technique, which could be widely applied. The present is aimed to describe the body composition of Pre-adolescents (9-12 years) by age, gender and to compare the agreement of BSA (Body Stat 1500 Analyzer) with the derived from Skin fold Thickness.

A total number of 450 children were selected and grouped in 3 age groups *i.e.*, 9-10 years age group, 10-11 years age group and 11-12 years age group. Each age group consists of 75 girls and 75 boys. The subjects were recruited from schools of Hyderabad and Secunderabad. Skinfold thickness was measured to the nearest 0.05 mm on the left side of the body from sites *i.e.*, triceps, biceps, sub scapular and suprailliac by using Harpenden's caliper. The percent body fat was calculated by using the formula: Fat (%) = [(4.95/density) – 4.5] +100(1). Later body composition was analyzed using BSA unit which works on the principle of Bioelectrical Impedance Analysis (BIA) and the parameters included are fat (% and kg), Fat free mass (% and kg) and water (% and liters).

Sex related differences in body composition were observed in boys and girls. The mean fat (% and kg) was significantly ($p>0.005$) higher in girls (42.2% and 12.3 kg) than boys (35.2% and 9.8 kg) where as the mean fat free mass was higher significantly ($p >0.005$) in boys (64.7% and 20.1 kg) than girls (53.6% and 18 kg)(2). The mean water levels (% and liters) were also higher in boys (74.2% and 22.9 liters) than girls (68.4% and 20.3 liters).

The correlation results also showed that skin fold thickness strongly correlated with body weight (0.01%) (r.0.208) and a negative correlation (0.01%) (r.0.208) was observed between BSA fat mass (%), water (% and liters) and body weight. There was a positive