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TRACKING of BODY COMPOSITION in PRE-ADOLESCENT THAI CHILDREN

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Background: Childhood obesity is one of the global malnutrition problem. To assess body composition, stable isotope has been widely used for total body water (TBW) and body fat assessments. In the year 2008, Thailand involved in the IAEA Technical Cooperation Project (TC project) which aimed to develop and validate tools for Thai children to assess obesity in 247 pre-adolescent children aged 8 to 10 years. Later in the year 2011, only 100 children were agreed to be tracked for their body composition assessment.

Objective: To explore the changes of body composition and to compare the changes between gender in 3 years period.

Materials and methods: A total of 100 children (49 boys and 51 girls), who involved the project in 2008 (P1) and later in 2011 (P2) were measured for their body composition. BMI for age using WHO 2007 cut off was used to identify their nutritional status. TBW was determined by deuterium oxide dilution technique. Fat-free mass (FFM) and fat mass (FM) were estimated.

Results: Out of 100 children, 87 children (41 boys and 46 girls) provided the completed data of TBW at P1 and P2. They all grew up with significantly increased in weight, height, BMI ($p < 0.001$). Their body composition in terms of %TBW, %FEM and %FM were not changed in both genders. Boys had significant higher %FFM than girls in P1 (71.5% in boys and 67.4% in girls, $p < 0.05$) while %FM were significant lower than girls (28.5% in boys and 32.6% in girls, $p < 0.05$). However, after 3 years, no significant different between boys and girls was observed.

Over the 3 years period, based on BMI for age, the proportion of overweight and obese children increased from 36.6% to 48.8% for boys, and from 32.6% to 41.3% for girls. Around 17% of normal boys became overweight and obese, and for girls only 8.7% was found. Less than 5% of overweight and obese boys became normal, and none for girls.

Conclusion: The obesity problem was inevitably increased when children are advance in age. However for Thai children, boys have more tendency to become overweight and obese than girls. This is a baseline information to be considered for the lifestyle modification early in life.

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