

Nutritional status of children and adolescents with type one diabetes mellitus attending three diabetic clinics in Dar es Salaam, Tanzania

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Abstract:

Background:

T1DM is the most common endocrinological disease in children. Growth in children with T1DM either is affected directly from insulin deficiency, glycaemic control or indirectly from the acute and chronic complications. Objective: To determine the nutritional status of children and adolescents with type one diabetes mellitus attending diabetic outpatient clinics at three hospitals in Dar es Salaam, Tanzania.

Methodology:

A cross sectional study was conducted at Temeke, Mwananyamala and Shree Hindu Mandal Hospitals. Participants were recruited consecutively. A pre- designed questionnaire was used to collect demographic characteristics and disease history, followed by height and weight measurements using standard tools. Body Mass Index (BMI) and height interpretation was done using WHO charts for age and sex. Percentage of glycated haemoglobin (HbA1C) was measured using immunofluorescent technique.

Results:

A total of 122 participants were enrolled in the study. Males and females were 67 (55%) and 55 (45 %) respectively. Mean age for participants was 16 ± 4 years. Half of participants were stunted with 44(36%) being moderately and 18(15%) severely stunted. Seventy nine participants (65%) had normal BMI while 21(17%) and 13 (11%) had moderate and severe wasting respectively. Overweight and obesity was 3% and 4% respectively. One hundred and ten participants (90%) had poor glycaemic control, 8 (7%) had intermediate and 4 (3%) had good control. Height for age was found to be significantly associated with male gender and short disease duration (fisher's exact test $p = 0.00$ and 0.01 respectively). BMI for age was found to be significantly associated with disease duration and insulin dose (fisher's exact test $p = 0.03$ and 0.03 respectively). Glycaemic control was found to be at a negative significant correlation with BMI [Spearman's correlation test $r_{svii} (120) = -0.21$, $p = 0.02$]. The median HbA1c across age groups was significantly different [Kruskal Wallis test $H (3) = 8.89$, $P = 0.03$]. On pairwise comparison, there was a significant difference between two pairs: 6-10 years and 11-15 years age groups (Kruskal Wallis test = -47 , $p = 0.03$) & 11-15 and 16-19 years age groups (Kruskal Wallis test 24 , $p = 0.01$).

Conclusion:

Growth in children with T1DM in the current study has been proven to be impaired. Factors found to be significantly associated with growth impairment were: the disease duration, gender and insulin dosing. Poor glycaemic control among children and adolescents attending diabetic outpatient clinics in Dar es Salaam was prevalent and persistent and significantly associated with insulin regimen and Body Mass Index. Recommendations: The study recommends that children with type one Diabetes Mellitus be followed up more frequently and appropriate insulin doses should be calculated and escalated in adolescents since there is a high demand for anabolism due to Growth spurt that occurs at that phase. It is recommended to switch to basal bolus regimen as this has been shown to have better glycaemic control.
