

Growth charts for children-Which ones to use in post Covid era?

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Abstract

A practical review compares growth chart standards and references for pediatric monitoring after the COVID era. It advises on selection, interpretation, and equity considerations in diverse populations.

Introduction

Covid 19 is on the wane in most countries and the post-Covid era is on the horizon, thereby meaning the emergence of after effects of the pandemic. The Covid lockdowns, job losses, migration, effect of disease itself have resulted in increased burden of malnutrition in children in many ways specially in low to middle income countries (LMICs). It is the triple burden i.e. under nutrition (stunting, wasting and underweight), obesity and micronutrient deficiency. As per a report in the Lancet, wasting is likely to increase by 14% post-Covid¹. In a report by us from Maharashtra India, an increase in severe acute malnutrition(SAM) and occurrence of neural tube defects was observed a year after pandemic.²On this backdrop, it is important that one takes a critical view of anthropometric measurements in children to detect stunting, wasting, under weight and obesity. Weight for height below -2SD,height for age below -2SD,and weight for age below -2SD on WHO growth charts is used to detect wasting, stunting and underweight respectively.

It was in 2006³ that WHO released its multicentric growth reference charts to be used by countries to judge the status of their children and gave reference standards about how children should grow in ideal circumstances. This was to give universal reference standard. 6 countries participated in the multicentric growth reference studies viz. India, Brazil, Ghana, Norway, Oman and USA. Prior to this NCHS charts were used. In 1978 World Health Organization (WHO) had adopted growth charts which had been constructed by the National Center for Health Statistics (NCHS) of the United States of America. Those charts were known as the NCHS/WHO growth charts.⁴ From 2006 onwards, after the multicountry study; WHO has

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recommended prescriptive growth charts for children. They provide a single international standard that represents the best description of physiological growth for all children from birth to five years of age and to establish the breastfed infant as the normative model for growth and development³. These growth standards are universal and are adopted by many countries. UK and USA use them for under 4 and under 2 years respectively. Canada has adopted them Use of these charts help in suggesting how communities world over compare with each other, how should children grow in ideal circumstances and get an assessment about stunting, wasting and underweight. Nutritional status of the country and comparison with others can be obtained. Many LMICs including India have adopted WHO growth charts. NFHS-5 data on wasting, stunting, underweight released by the Govt of India⁵ is based on WHO growth charts 2006. In an individual child plotting the growth curve may be important to check it's growth trajectory whereas for public health planning and monitoring health of communities, GOI has made use of WHO growth charts.

For the past few years there has been a debate to decide which charts countries should use to detect child malnutrition .In an interesting article by S.V.Subramanian, in The Lancet Regional Health - Southeast Asia⁶ different view point is put forth. The authors have compared multi growth reference charts MGRS by WHO ,2006³ with India specific charts named 'Indian urban middle class (IUMC) growth charts⁷'. They have compared stunting, wasting, underwt. data by MGRS & IUMC and found that stunting by using MGRS is 33 % while the same by IUMC is 24%, the same for wasting is 19% and 9% respectively. Underweight which is free of height measurement has been the same i.e 29% in both. This implies that the country has much less stunting and wasting than what is obtained by using WHO growth charts. WHO charts were generated in ideal circumstances. If lower standards are used, it may not be optimum for the country's children. Standards may need revision over time. This has special relevance during post- covid times ,particularly for LMICs.

WHO charts are generated in ideal circumstances, exclusive and 6 months breast fed babies but it is seen in less than 50% population . It is then likely that any other chart will show less weight and length of the babies as normal. Similarly non anemic mothers with good height will produce babies with good birth weight and who may show better growth, even intergenerational in origin. Other mothers used to generate country specific data may have babies who are less in weight and height. It is due to this that many countries wish to use their own growth charts and lower or alter the standards.. However, when a child is labeled as normal on country specific chart, the same child may be categorized as SAM or MAM using WHO chart. The child may be apparently healthy at the time of measurement but later may develop infections and may succumb which may not be noticed when other charts are used. This is an issue while using country specific charts.

WHO growth charts are idealistic, prescriptive; tell us how babies should grow. Therefore, we should aim at ideal and not lower the standard to decrease stunting and wasting. A social analogy would be to lower the poverty line to bring people out of poverty and not make attempts to increase their income.

Children of SAM detected using WHO growth charts (MGRS) have nearly 9 times the risk of death compared to normal children^{8,9} . Lowering of growth standards from WHO to IUMC is likely to be posed with this risk. Mortality, morbidity data using IUMC charts are lacking. Similar situations are likely to exist in other countries specially in post- Covid scenario. Countries should therefore use a cautious approach if they use their own growth charts and not the ones by WHO. Country specific charts would be descriptive thereby meaning that they give an information 'how the children grew at that place and time'. In that sense they would be reference charts.

It may therefore be desirable to use the ideal WHO MGRS charts, not change and settle down for growth charts that show how children are growing, be descriptive and far from ideal specially in post- Covid era when malnutrition is likely to increase.

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