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Will introducing the new WHO growth reference to Australia reduce breastfeeding rates: why not a RCT first?

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Abstract

The WHO has recommended the universal use of its new Growth Reference. However in the first six months of life, the critical period for the maintenance of breastfeeding, the New WHO Reference is heavier than the reference previously used in Australia.

This may mean that more infants are classified as having poor growth. It is likely that these infants will be given additional feeds or even may cease being breastfed.

Maintenance of breastfeeding is important for short, medium and long term risk. Before the introduction of a new growth reference is contemplated a randomised controlled trial should be conducted to be sure that there will be no adverse effect on breastfeeding.

Key Words:

Growth Reference

Breastfeeding

Randomised Controlled Trial

What is already known on this topic

Growth monitoring is widely used to assess breastfeeding adequacy.

A new growth reference was developed by WHO partly because the one in use was thought to be too heavy in the first months of life, reflecting the growth of formula fed infants.

Breastfeeding is fundamental to health and development of infants.

What this paper adds

The new WHO growth reference is actually heavier during infancy than the reference currently in use in Australia.

There is a risk that using the new WHO growth chart will decrease breastfeeding rates.

Given that growth charts are the most commonly used paediatric intervention, it is important that a RCT be conducted of the new growth reference to assess whether its use decreases breastfeeding rates.

Introduction

The early nutrition and growth of infants has an important effect on early morbidity and mortality and there is increasing evidence of the medium and long term effects on health. Infant growth is now recognised as one of the influences on health and longevity later in life and breastfeeding is the backbone of early nutrition. There have been many reviews of the benefits of breastfeeding or the consequences of not breastfeeding, and the main benefits have been summarised in the NHMRC Infant Feeding Guidelines [1]. Evidence continues to accumulate about the role of early growth and breastfeeding in the development of adult disease [2]. Of particular topical evidence is the high rate of obesity in modern western societies in all age groups. When reviewing the early origins of obesity Monasta and colleagues summarised current understanding and concluded that “breastfeeding may be a protective factor for later overweight and obesity” [3]. The White House Report on childhood obesity included the estimate of Harder that breastfeeding offered 22% protection against childhood obesity and that this protection increased with duration until it plateaued at 9 months [4, 5].

When discussing animal models of early dietary influences Patel notes that “dietary practices for infants have undergone vast changes in the past 50 years. Extrapolation of the results from the rat model to the human scenario suggests that feeding practices currently implemented for infants could be one of the contributing factors to the obesity epidemic. A decline in breastfeeding rates has been recorded and concomitantly, there has been an increase in formula feeding coupled with early introduction of supplemental foods (carbohydrate-enriched) for babies [6]. It is postulated by Patel that the early introduction of carbohydrate-rich supplemental foods exposes the infant to increased

carbohydrate during the critical period of organ development. Such a situation could have deleterious long-term consequences for these infants in terms of eventual development of obesity and metabolic syndrome, as observed in the rat model [6].

For all of these reasons the promotion of breastfeeding is of paramount importance to the health of the individual and to the overall burden of public health. Exclusive breastfeeding to around 6 months and then for a longer period accompanied by appropriate complementary foods is the best way to feed all infants [1]

The growth of infants is determined by the type and quantity of food received (ideally breastmilk). But the relationship can also work in reverse, with the growth of the infant influencing the type and amount of foods given. During the first few months of life infants are weighed frequently and growth rates influence decisions on method of feeding made by the parents, community nurses and family practitioners. Growth patterns frequently determine the continuation of breastfeeding and the introduction of complementary foods [7]. If an infant is determined to be growing too slowly, a decision may be made to supplement breastfeeding with other foods (eg infant formula) or even to stop breastfeeding altogether. Breastfeeding (preferably exclusive breastfeeding) for six months generally results in a rate of growth compatible with the best life course outcomes. Early introduction of infant formula or complementary foods may increase the proportion of adipose tissue in the infant.

The new WHO Growth Reference [8]

The study of growth has fascinated scientists for many years and the history of its study has been documented by Garn [9]. The growth reference most widely used around the world is the NCHS 2000 reference, which was previously endorsed by the World Health Organisation [10]. The development of the NCHS/CDC growth references has been described in detail and included the use of several sources of growth data, cross sectional and longitudinal [11]. Growth charts based on this reference, or on the earlier version of this reference, have been included in personal health records in many countries, including Australia [12, 13]. In 2000, the US charts were revised to eliminate some minor anomalies around two years of age, the data used for infants was updated and the calculation of some percentiles was revised [10].

It was recognised that the old WHO (NCHS) reference includes a high proportion of formula fed infants and may not accurately reflect the growth of breastfed infants. Exclusively breastfed babies grow at a slightly lower rate than the NCHS reference and concern was expressed that the existing growth reference was too high and might lead mothers to introduce complementary foods unnecessarily [7]. However it was thought that if the charts were used as a reference (and not as a standard) the difference was not all that important [14]. De Onis expressed concerns about the existing growth reference: *“the NCHS curves are inappropriate for healthy, breastfed infants. Recent research shows that infants fed according to recommendations by the WHO and who live under conditions that favour the achievement of genetic growth potentials grow less rapidly than, and deviate significantly from, the NCHS reference. The negative deviations are large enough to lead health workers to make faulty decisions regarding the adequate growth of breastfed infants, and thus to mistakenly advise mothers to*

supplement unnecessarily or to stop breastfeeding altogether. Given the health and nutritional benefits of breastfeeding, this potential misinterpretation of the growth pattern of healthy breastfed infants has great public health significance. The premature introduction of complementary foods can have life-threatening consequences for young infants in many settings, especially where breastfeeding's role in preventing severe infectious morbidity is crucial to child survival". [7]

The concerns expressed by the WHO and others led to the development of a new growth reference by WHO [15]. The development process has been described in great detail and included longitudinal growth data from [15-17]. The new WHO growth reference pools longitudinal growth data from 0-2 years (over 2 years cross sectional data is used) from six countries, none from Asia or Australia. After a decade of work the WHO published their results, with the following description: The new standards adopt a fundamentally prescriptive approach designed to describe how all children should grow rather than the more limited goal of describing how children grew at a specified time and place [18]. Previously WHO had used the term reference, but now felt confident enough about the new growth study to refer to it as a standard for breastfed infants.

However the new WHO growth reference is actually heavier for the first six months of life than the previously used reference. Ziegler has summarized the ways that the new WHO growth reference differs from the NCHS reference [19]. In particular they noted that "during the first 6 months of life, WHO weight and length at all percentiles are

larger than weight and length by any other chart.” When compared to the NCHS and CDC 2000 references, the new WHO reference is heavier for the first six months of life as can be seen in the weight-for-age comparisons in Figure 1 [15, 18] [20].

Breastfeeding patterns are usually established while the mother is in hospital or soon after. Weight monitoring by the mother and community health services is commenced after the infant is discharged from hospital. At this point in time there are no further opportunities to begin breastfeeding. If growth patterns are to influence breastfeeding in the first six months of life, it can only be in one way; by reducing breastfeeding rates, ‘exclusive’ or ‘any’ breastfeeding. It is important to determine if the new WHO growth reference could influence breastfeeding rates, particularly for the first six months infants

As a result of using the new, heavier WHO reference under the age of six months, an increased number of infants will fall below the percentile lines usually used to assess adequacy of growth and be diagnosed as underweight, a point acknowledged by WHO and the Royal College of Physicians [18, 21]. The exact proportion of infants falling below the 5th percentile (or --2Z scores or whatever cutoff point is used) will depend on the infant’s age and the overall nutritional status of the population being studied. Since growth faltering is the most common reason for advising the cessation of exclusive breastfeeding, this is a real risk, a risk acknowledged by Cataneo, in spite of his support of the new growth standard [22]. The risk of lower rates of exclusive breastfeeding and increased exposure to unnecessary complementary or supplementary feeds is a risk of using the new WHO growth reference instead of the CDC2000 reference. The introduction of complementary foods unnecessarily before six months of age may

reduce the mother's breastmilk supply and could lead to the cessation of any breastfeeding, an unfortunate outcome for the future health of the infant.

Before the WHO Growth reference is introduced in Australia the most important question that has to be answered is:

Will the introduction of the new WHO growth reference reduce breastfeeding (exclusive and any) rates?

If it is possible that the introduction of a new growth reference will reduce breastfeeding, can education for health professionals and mothers eliminate or mitigate the damage?

It is surprising given the almost universal use of growth charts, that such a major change to the most common method of infant monitoring would be introduced without first conducting a randomised controlled trial. No trials have been reported in the literature, but a small pilot study, a randomised controlled trial (n=537) in Hangzhou PR China comparing the effects of two growth charts on breastfeeding rates has indicated that the risk may be real. In this study the full breastfeeding rates at three months were 26% in the heavier (WHO) chart group and 30% in the lighter (CDC) group [23]. This suggests that a full scale randomised controlled trial is needed.

An increasing number of countries are expressing concerns about the new WHO reference and are recommending that it not be used [24, 25]. In the UK a decision has been made to use the new reference, but the first 2 weeks have been removed from the chart, the 50th percentile (median) has been de-emphasised and the chart includes lower percentiles (0.4 and 2 percentiles) that have not previously been included in growth

charts prepared for general use. Including these lower percentiles gives the UK the opportunity to educate health workers to use a lower percentile to assess the adequacy of the growth of infants. Providing that growth is proceeding above the 2nd percentile and velocity is satisfactory this is the equivalent of the 5th percentile on the previous growth charts.

Conclusion

Using the new WHO reference in the first six months of life could impact on breastfeeding rates. A basic question remains to be answered. If there is a risk to one of the most important components of public health nutrition, how could a change to the growth reference be contemplated without first conducting a randomised controlled trial? Such a move would not be accepted for any other paediatric intervention, such as vaccination. Why take the risk with a nutrition factor as important as breastfeeding?

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