Sir—Caulfield, Bentley and Ahmed recently reviewed the evidence for an association between prolonged breastfeeding and malnutrition in developing countries. They stated that most prior studies had demonstrated a negative association (increased malnutrition or lower mean nutritional status, both in terms of height-for-age and weight-for-height, among prolonged breastfed children), although an absence of a relationship, or even positive relationships have been described.

We agree with the authors that confounding alone cannot explain the negative association between breastfeeding status and nutritional status, and also that ‘reverse causality’ is more likely to explain it. The authors state that according to their knowledge, ‘there is little more than anecdotal support from the scientific literature’ to support the hypothesis of reverse causality. However, at least three papers based on longitudinal studies provide results that suggest that malnourished children are weaned later than other children.

In rural Guatemala, children weaned before the age of 36 months were taller than the children weaned later, and since the height differences existed from infancy, they were not a result of earlier weaning.

In rural Bangladesh, mean weight-for-age of children aged 12–36 months, who were to be weaned during the following month was slightly, but significantly higher than the mean of children who were to remain breastfed, after adjustment for age (70.4% versus 69.6% of the NCHS median, \( P < 0.05 \)).

In a periurban area of Guinea-Bissau in West Africa, children with a very low weight-for-age (\(<-2.5\) z-scores) at 10–17 months were weaned significantly later than other children (24.1 versus 22.3 months, \( P < 0.05 \)). This difference remained significant after adjustment for ethnic group and mother’s age and education.

Conversely, the study cited by the authors, which suggests that the child’s length might influence weaning, does not consider weaning as cessation of breastfeeding, but rather as the introduction of complementary food in addition to breastmilk during infancy; thus, it is not relevant in this context.

We agree that further longitudinal studies are needed to assess whether age at weaning is related to nutritional status at weaning in other settings, and how nutritional status is affected by weaning in different environments. Nevertheless, the evidence that malnutrition is not a consequence of prolonged breastfeeding is already strong enough to promote continued breastfeeding in case of malnutrition, rather than to promote weaning, as has been suggested by some authors.

REFERENCES


Sir—Simondon and Simondon\(^1\) take issue with one point we made in the discussion section of our recent paper,\(^2\) in which we state that there is little more than anecdotal evidence in the literature of a relationship between child size and the decision to wean. We found that differences in nutritional status depending on breastfeeding status varied by age and setting. Survey data from countries in sub-Saharan Africa (SSA) in general indicated poorer nutritional status of still breastfed children at younger ages, with much smaller differences observed among older children. In contrast, data from non-SSA countries indicated small differences in nutritional status depending on breastfeeding status among younger children, but increasingly poorer nutritional status observed for older still breastfed children. Our comment referred to the lack of a body of scientific literature to support one possible interpretation of our findings: that in SSA countries, where the vast majority of children continue to be breastfed well into the second year, the first children to be weaned completely are the largest, whereas in non-SSA countries, where the median age of complete weaning occurs much earlier, the smallest children are weaned last. Thus, our comment was made with respect to the surprising lack of explicit data in the literature on prolonged breastfeeding to suggest that, for example, when mothers stop breastfeeding their children, it is because of considerations of child size or previous growth patterns.

The authors bring to our attention three articles\(^3\)–\(^5\) published over the past 20 years which explore (although not the focus of the papers) the relationship between continued breastfeeding and nutritional status. Mata \(\textit{et al.}\)^\(^3\) presented a graph comparing the growth patterns from birth to 36 months of age by children who were weaned completely at 30–47 months with those of children who were weaned earlier, at 12–29 months of age. Those children who were breastfed longer had grown more slowly during infancy, or conversely, those children who were weaned earlier, had grown faster during infancy. Thus, differences in nutritional status observed in the third year of life between still breastfed and no-longer breastfed children resulted from differences in growth rates during infancy. However, these are descriptive analyses, and no further analytical exploration of the data are provided.

\(\text{Briend and Bari}\)^\(^4\) reported that children who were weaned completely had a slightly higher mean weight-for-age than those who continued to be breastfed; however, these differences are minor relative to the finding that, in this setting in which \(<5\%\) of children were fully weaned by 18 months of age, the first children to be weaned were of much better nutritional status than those who continued to be breastfed (at 12 months: 74\% weight-for-age versus 70\% weight-for-age, taken from Figure 1\(^4\)). In these data, the differences in nutritional status by breastfeeding diminished with age, and by 21 months of age, the differences in nutritional status were similar to those cited by Simondon and Simondon.\(^1\) At 30–36 months of age, when 29\% of children were still breastfed, the nutritional status of these two groups of children began to diverge again, with still breastfed children shown to have worsening nutritional status relative to no-longer breastfed children (at 36 months: 68\% weight-for-age versus 71\% weight-for-age, taken from Figure 1\(^4\)). Interestingly, if the weight-for-age % data presented in Figure 1\(^4\) are re-calculated as actual weights of children, the age-associated differences in weights between still breastfed and no-longer breastfed children resemble the pattern of differences estimated from the SSA data in our paper\(^2\) as exemplified with length data from Nigeria in our Figure 1b.\(^2\) Although these data do not come from an SSA country, the overall pattern of breastfeeding is similar to that reported for SSA countries in the Demographic and Health Survey (DHS) data we analysed in our paper. Thus, we feel that the results of Briend and Bari,\(^4\) with some caveats, provide support for our interpretation of the SSA data.

Only in the paper by Mølbak \(\textit{et al.}\)^\(^5\) is the issue of whether child size prospectively influences weaning examined using multivariate techniques. The authors report that, after adjusting for other covariates, children 10–17 months old with weight-for-age Z scores less than \(<–2.50\) were 0.6 (0.4–0.9) less likely to be weaned than those with weight-for-age Z scores between \(<–2.49\) and \(<–2.00\), and those with Z scores \(\geq 2.0\). The authors could only estimate the relationship between child nutritional status and risk of weaning in this narrow age group; thus we do not know whether the relationship varies depending on the age of the child as would be predicted by our analyses. Jakobsen \(\textit{et al.}\)^\(^6\) examined the reasons for terminating breastfeeding in a subsequent cohort of children in this community, but

\* Departments of International Health and \(\dagger\)Population Dynamics, The Johns Hopkins School of Hygiene and Public Health, Baltimore, MD 21205, USA.
found seemingly contradictory results. They found that children who were weaned because they were ‘healthy’ or ‘old enough’ were breastfed longer, whereas those who were weaned because of ‘illness’ were breastfed for a shorter amount of time. The authors did not examine, however, child size as a determinant of weaning, or how child size related to maternal perceptions of health or illness in this community.

We would like to thank Simondon and Simondon for their interest in our recent paper, and for bringing the findings from these articles to our attention. Although we probably somewhat overstated the lack of evidence of a relationship between child size and weaning decision-making in the literature, the fact that only three articles with relevant results have been published over the past 20 years despite the vast literature on breastfeeding in general published over the same time period, points clearly to a gap in our understanding of this important health behaviour—that is, the factors influencing women’s decisions regarding when to wean the child from the breast in the second year of life and later. Whereas the studies cited above describe relationships between child size and weaning, in none of these papers are data presented relating child size to maternal perceptions of child size, well-being or development, and how they relate to weaning decision-making. This important link is still missing to a large degree.

Simondon and Simondon conclude from this body of work that malnourished children are clearly shown to be breastfed longer. We disagree. However, we do agree that weaning decision-making is complex and multifactorial in nature, and that more research, and in particular, longitudinal studies of growth, mode of feeding and associated decision-making are needed in a variety of settings to disentangle these relationships. Further, we share their general concern that readers may conclude that weaning should be promoted sometime during the second year of life in order to prevent malnutrition. This conclusion should not be taken from our work or from the present body of research on this topic. Briend and Bari argue that even if breastfeeding causes poor growth in children, the reduction in risk of mortality associated with continued breastfeeding during the second and third year of life, particularly for malnourished children, clearly outweighs any associated growth faltering. We support continuing research in this area to define both the reasons why continued breastfeeding is consistently related to differences in nutritional status across various cultural settings, and what the implications of these findings are for breastfeeding promotion and other programmatic efforts for child survival worldwide.

REFERENCES


**Update of Cancer Surveillance of Veterans in Massachusetts, USA**

From RICHARD W CLAPP

Sir—An earlier study of cancer incidence in Massachusetts’ Vietnam and Vietnam-era veterans diagnosed between the years 1982 and 1988 revealed a significant threefold excess of soft tissue sarcoma in those who had served in Vietnam compared to those who had not. The previous study also suggested a slight increase in non-Hodgkin’s lymphoma in Vietnam veterans. Follow-up of cancer in Vietnam veterans was recommended, given the long latency period for development of some cancers.

Recently, in accordance with the ‘Agent Orange Act of 1991’, the National Academy of Sciences updated the scientific evidence for an association between