Improving Young Child Feeding in Eastern and Southern Africa

Household-Level Food Technology

Proceedings of a workshop held in Nairobi, Kenya, 12-16 October 1987
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Editors: D. Alnwick, S. Moses, and O.G. Schmidt

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Abstract

The weaning period, that is the period in a young child's life when supplementary foods are introduced to complement breast milk, poses great nutritional risk to children in developing countries. By the end of the second year of life, one-third of children in eastern and southern Africa are chronically malnourished. The following factors contribute to the growth faltering commonly observed in weaning-age children: low nutrient intake, high incidence of diarrheal disease (often caused by contaminated weaning foods), and recent declines in duration and intensity of breastfeeding.

Food scientists, nutritionists, and health planners working in Africa and South Asia met in an international workshop to examine household-level food technologies that hold promise for improving nutrition of infants and young children. After reviewing current knowledge of breastfeeding and weaning practices in eastern and southern Africa, participants discussed the use in weaning diets of fermented foods and germinated flour, for both improved nutrient intake by young children and decreased risk of food contamination. Research that should be conducted into the effectiveness of the food technology was identified and its diffusion at the community level discussed.

This publication contains the proceedings, conclusions, and recommendations of the workshop. It is directed at scientists and health planners who are involved in nutrition research and developing programs to improve feeding of infants and young children in developing countries.

Résumé

Le sevrage, c'est-à-dire la période où l'on commence à donner des aliments solides à un jeune enfant en complément du lait maternel, présente de graves risques nutritionnels pour les enfants dans les pays en développement. Dès la fin de leur deuxième année, le tiers des enfants en Afrique orientale et australe souffrent de malnutrition chronique. Les facteurs suivants sont à l'origine du retard de croissance que l'on retrouve couramment chez les enfants en âge d'être sevrés : carence nutritionnelle, forte prévalence des maladies diarrhéiques (qui s'expliquent souvent par la contamination des aliments) et diminution récente de la durée et de l'intensité de l'allaitement maternel.

Des spécialistes des sciences de l'alimentation, des nutritionnistes et des planificateurs de la santé travaillant en Afrique et en Asie se sont réunis dans le cadre d'un atelier international afin d'examiner des technologies alimentaires applicables au niveau des ménages qui semblent prometteuses pour améliorer la nutrition des nourrissons et des jeunes enfants. Après avoir examiné les connaissances actuelles en matière d'allaitement au sein et les pratiques de sevrage en Afrique orientale et australe, les participants ont discuté de l'utilisation, au cours du sevrage, d'aliments fermentés et de farine germée, tant pour améliorer l'apport nutritionnel chez les jeunes enfants que pour diminuer les risques de contamination des aliments. Ils ont également discuté des recherches qu'il y aurait lieu d'entreprendre sur l'efficacité des technologies alimentaires et sur leur diffusion dans la collectivité.
Cette publication fait un compte rendu des discussions de l'atelier et présente ses conclusions et ses recommandations. Elle s'adresse aux scientifiques et aux planificateurs de la santé qui participent à des recherches en matière de nutrition et à l'élaboration de programmes visant à améliorer l'alimentation des nourrissons et des jeunes enfants dans les pays en développement.

**Resumen**

El período de destete, es decir, aquel período en la vida de un niño en que se introducen en su dieta alimentos suplementarios para complementar la leche materna, representa un gran riesgo nutricional para los niños de países en vías de desarrollo. Hacia el final de su segundo año de vida, un tercio de los niños en África oriental y del sur muestran síntomas de malnutrición crónica. Los siguientes factores contribuyen al crecimiento vacilante que se observa comúnmente en los niños que se encuentran en edad de dejar la lactancia materna: baja ingestión de nutrientes, alta incidencia de diarrea (a menudo causada por alimentos para el destete contaminados), y nuevas disminuciones en la duración e intensidad de la alimentación proveniente del pecho de la madre.

Científicos del campo de los alimentos, especialistas en nutrición y planificadores de la salud que trabajan en África y en el Sur de Asia se reunieron en un taller internacional para examinar las tecnologías de alimentos que se utilizan en el hogar y que prometen buenos resultados en el mejoramiento de la nutrición de lactantes y niños pequeños. Después de analizar el conocimiento que existe actualmente sobre la alimentación recibida a través del pecho de la madre y las prácticas que se utilizan para el destete en el oriente y sur de África, los participantes discutieron el uso en dietas para el destete de alimentos fermentados y harina germinada para que los niños puedan ingerir nutrientes mejorados y haya una disminución en el riesgo causado por la contaminación de los alimentos. Se identificó la investigación que se debe realizar sobre la efectividad de las tecnologías de alimentos y se discutió su difusión en el seno de la comunidad.

Esta publicación contiene las actas, conclusiones y recomendaciones del taller. Está dirigida a científicos y planificadores de la salud que participan en la investigación nutricional y en programas de desarrollo para mejorar la alimentación de lactantes y niños en los países en desarrollo.
CONTENTS

Preface viii
Foreword ix
Acknowledgments xi
Executive Summary xiii

Session I Issues in Improving Child Feeding 1
Do we now have some real solutions for young child malnutrition? T. Greiner 2
Breastfeeding: a neglected household-level weaning-food resource J. Bradley, S. Baldwin, H. Armstrong 7
The complementary foods problem T. Greiner 34
Sorghum and millets in East Africa with reference to their use in weaning foods M. Seenappa 39
Weaning food provision in refugee situations N.J. Binkin, P. Nieburg, M.K. Serdula, A. Berry 55
Discussion summary 65

Session II Weaning Practices and Promoting Change 69
Traditional weaning practices in Ethiopia G. Abate, C. Yohannes 70
Weaning foods in Kenya: traditions and trends R. Oniang'o, D.J. Alnwick 76
Food processing in Uganda with special reference to infant feeding L. Sserunjogi 81
Weaning foods in Rwanda and the potential of sprouted sorghum M. Ramakavelo 90
Observations on child growth and weaning in Zimbabwe J.R. Mutumba 97
Use of fermented foods in child feeding in Botswana C. Mokwena 101
Weaning practices in Swaziland and social marketing to effect change J.M. Apane, L.K. Nilsson 105
A strategy to improve weaning practices in Mozambique  
A. Lechtig, A. Srivastava  

Reintroducing traditional weaning foods: social marketing considerations  
L. Hendrata  

Discussion summary  

Session III Fermented Foods in Child Feeding  

Fermented foods for improving child feeding in eastern and southern Africa: a review  
A. Tomkins, D. Alnwick, P. Haggerty  

Fermented "ugi" as a nutritionally sound weaning food  
S.K. Mbugua  

Fermentation of maize-based "mahewu"  
A.D. Ayebo, M.P. Mutasa  

Consumption of weaning foods from fermented cereals in Kwara State, Nigeria  

Fermentation of cereal- and legume-based weaning foods  
M.M. Keregero, R.L.N. Kurwijila  

Reducing dietary bulk in cassava-based weaning foods by fermentation  
N.L.V. Mlingi  

Fermented cassava products in Tanzania  
M. Hakimjee, S. Lindgren  

Discussion summary  

Session IV Food Contamination and Lactic Fermentation  

Weaning food hygiene in Kiambu, Kenya  
A.M. Pertet, E. Van Praag, S.N. Kinoti, P. Walyaki  

Fecal contamination of weaning foods in Zimbabwe  
C. Simango  

Formulation and microbiological safety of cereal-based weaning foods  

Bacteriological properties of traditional sour porridges in Lesotho  
A.L. Sakoane, A. Walsh  

Discussion summary
Session V  Experiences in East Africa and Asia

Dietary bulk in weaning foods and its effect on food and energy intake  U. Svanberg 272

High-nutrient density weaning foods from germinated cereals A.C. Mosha, W.S.M. Lorri 288

Child feeding patterns in Tanzania with reference to feeding frequency and dietary bulk Z. Lukmanji, B. Ljungqvist, F. Hedqvist, C. Elisonguo 300

Effect of food consistency on nutrient intake in young children R.P. Kingankono 312

High-energy, low-bulk weaning food development in Zambia F. Luhila, P. Chipulu 322

Bulk reduction of traditional weaning gruels T. Gopaldas, P. Mehta, C. John 330

Malted weaning foods in India N.G. Malleshi, B.L. Amla 340

Weaning foods in Nepal Y. Vaidya 349

Cyanide content of germinated cereals and influence of processing techniques L.O. Dada, D.A.V. Dendy 359

Improved iron availability in weaning foods U. Svanberg, A.S. Sandberg 366

Discussion summary 374

Participants 377
WEANING FOODS IN KENYA: TRADITIONS AND TRENDS

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Abstract Groups of mothers and grandmothers (four to six women in each group) in six districts of Kenya held discussions that focused on the use of fermented porridges in feeding young children. Fermented cereal porridge is widely used and is prepared by first fermenting a slurry of raw cereal flour and water and then cooking the mixture. As reported in the discussions, attitudes toward the use of such porridges in child feeding vary: in Meru, mildly sour porridges are considered suitable for children from 6 months of age; in other districts, however, such porridges are not given until children are at least 1 year old. There was no report of germinated grain being used in the preparation of special foods for young children.

Methodology

In 1986, final-year students of the Department of Home Economics at Kenyatta University College were asked to investigate methods of infant feeding in their home areas. The students were given a brief introduction to the methods of focus-group interviews and were asked to form small focus groups to discuss infant-feeding practices in their own communities. In each community, discussions were held with a group of mothers who had young children and with a group of grandmothers. The mothers were asked to discuss their current views and practices, and the grandmothers to comment on the ways in which these views and practices differed from those of the past. The students were asked to guide the groups toward a discussion of the following issues: introduction of complementary foods; preparation of porridges for young children; use of fermented porridge and of preparations involving germinated grain; and attitudes toward the feeding of sick children. Focus groups were conducted in the districts of Machakos, Kiambu, South Nyanza, Uasin Gishu, Meru, and Kakamega.

Findings

Feeding of Children under 4 Months

Breastfeeding was generally acknowledged by all the groups of new mothers to be the best way of feeding young babies. Other foods are
introduced between 1 and 4 months: this supplementary feeding is said to take place when the "baby [is] not satisfied and still cries after breastfeeding," and when there is "not enough milk." The supplementary food commonly given at the time of these discussions was diluted cow's milk - a dilution of 1 part milk to 1 part water.

The discussions with the grandmothers revealed two interesting points relating to traditional early feeding practices: at one time, supplementary feeding was begun immediately after birth; and breastfeeding was continued until the child was 4 or 5 years old. The Meru grandmothers believed that breast milk alone could not satisfy newborn babies - that the diet of these babies had to be supplemented with something that would "hold longer" in the stomach.

The first solid food given to babies in Meru used to be "tuu tuu." This was prepared from a special variety of small, sweet banana, peeled and roasted in hot ashes. The outer layer was then removed, and the banana chewed well by the mother to ensure that it was thoroughly mixed with her saliva. This paste was then introduced into the baby's mouth with the mother's finger. Yams were prepared in a similar way. For slightly older children, "tuu tuu" was prepared in advance and stored in a special calabash fitted with a lid; older children could then feed this to the baby. In the discussions, the grandmothers described the preparation of "tuu tuu" for groups of babies. An almost identical preparation of masticated bananas was described by the Kiambu groups. The practice of masticating food for young children was at one time discouraged (principally by the missionaries) and is now considered to be a "dirty practice." The interviewers felt, however, that although they were reluctant to admit it, some mothers in Meru still prepare "tuu tuu" in the old way.

In parts of Kakamega district, very thin, plain sorghum or millet porridge used to be given to children immediately after birth; in other parts of the district, however, porridge was not given until much later, when the baby had begun to reach for food. The Meru grandmothers said that in the past, babies had been better nourished: "One could not see a baby's joints" (i.e., the babies were very fat!). Breastfeeding was continued for 5 or 6 years: "If another baby came, they could still breastfeed together, and it was only through the younger child scratching or pinching the elder one that the latter gave up."

In Uasin Gishu, the first supplementary food to be given to babies is fermented cow's milk ("mursik"). Milk is fermented in a cleaned gourd, the inside of which is rubbed with a special charcoal prepared from a type of wattle tree wood. The milk is then left to sour for up to 3 days. Milk that is very sour is not, however, given to babies. Bread dipped in tea is also a common supplementary food for young children.

**Weaning**

Respondents were asked at what point children require supplementary food (apart from cow's milk and predigested banana). The grandmothers offered three indicators for this timing: the child begins to reach for food that the mother is eating; the child grows a bottom tooth; or 6 lunar months elapse from the time of birth.
Most groups described a cereal porridge (usually unfermented) as the first weaning food. The most popular cereals are varieties of sorghum (Sorghum vulgare, Swahili "mtama"), finger millet (Eleusine coracana, Swahili "wimbi"), or bulrush millet (Pennisetum typhoidenum, Swahili "uwele"). In Mbita, South Nyanza District, dehulled red sorghum used to be considered ideal, being preferred to white sorghum because "it gave children less stomach problems and made them grow plump." Nowadays, "wimbi" porridge is preferred because "the passage of stool" is easier than in children fed sorghum porridge. Over the last 30 years or so, maize has become increasingly popular as a porridge ingredient, either alone or mixed. Because, in Meru, millet is considered "too rich," maize is preferred for making porridge. In some parts of Kenya, dried cassava flour is added to a mixture of cereals.

In several districts, raw hens' eggs are added to the porridge. This technique has been widely encouraged by health workers: the addition of a raw egg to very hot porridge is a quick and convenient way of lightly cooking the egg. There might perhaps be a danger of the overzealous use of raw eggs with porridge that is not very hot: raw egg whites are known to contain avidin, a substance that complexes biotin; there may also be a risk of bacterial contamination from improperly stored eggs.

Fermented Porridge

The discussions revealed that fermented porridge is popular and widely consumed by adults and older children in all districts except Uasin Gishu. In most districts, fermented porridge is considered especially beneficial for mothers who have just given birth and for lactating mothers in general: the porridge is said to aid recovery and to help stimulate breast-milk production. In Meru district, it used to be believed that those lactations lasting 5-6 years were made possible by the mothers' consumption of fermented millet porridge. In several districts, bottled fizzy drinks, concentrated blackcurrant juice (available commercially), and cocoa are now believed to facilitate lactation.

In Meru district, fermented porridge was once a most prestigious food and is still a necessary part of important ceremonies, such as the payment of a dowry. It is said that to prepare good porridge, careful attention to cleanliness is important. Not all batches of porridge ferment well, and a woman whose porridge does not ferment well is scorned.

With regard to the use of fermentation for the preparation of weaning foods, it is only in Meru that fermented porridge is given, and here it must be "lightly fermented" or diluted. In the other districts, fermented porridge is considered bad for children under 12 months: it is said to cause complaints ranging from constipation, indigestion, and heartburn to diarrhea.

Preparation

All recipes described, except that from Uasin Gishu, were similar. A mixed cereal flour is first prepared - today in a hammer mill, but previously by hand grinding a wet slurry between two stones. (The latter method is still believed in Meru to make better porridge.) In hand grinding, careful attention is paid to particle
The best porridges are obtained from a slurry that is neither too coarse nor too smooth. The slurry is then heated (but not boiled) and the hot mixture transferred to gourds and left overnight. The clear liquid that separates out on top of the porridge is removed. The mixture is then stirred and is ready to eat. The washings from the pot in which the porridge has been cooked are used to make a thirst-quenching, acidic drink known as "rurima."

In Meru, no "starter" is used in preparing millet porridge; in preparing porridge from dehulled red sorghum, fermentation is assisted by the addition of raw, sweet-potato juice or the juice extracted from the leaves of a plant called "rung'oo." (The botanical name of this plant was not ascertained.)

Fermented porridge is also prepared from maize. The maize is first dehulled by wet pounding, then mixed with finger-millet flour and left to ferment up to 5 days. Portions of this fermenting batch are taken as required and cooked. In South Nyanza, cereal flour (a mixture of sorghum, millet, maize, and perhaps cassava) is mixed with warm water and left to ferment overnight. The mixture is then poured into boiling water and cooked.

A different method of fermentation is used in Uasin Gishu. A dough is made from raw maize flour and water and left to ferment in a covered pot for 1 week, during which a mould develops on the surface and the dough becomes very sour. This dough is broken up and added to boiling water to make a thick porridge that can be served with margarine, milk, or sugar. This porridge, known as "musarek ce kikimindili," is not given to children.

Use in Child Feeding

Fermented porridge was never reported as being prepared specifically for feeding young children. The porridge is prepared for the whole family, and children over a certain age are encouraged (or allowed) to eat it. In parts of Meru and Kakamega, infants from about 6 months are encouraged to eat fermented porridge; in the other districts, it is not believed to be a good food for children under 1 year of age; some respondents stated that children should be considerably older - over 5 years - before being given the porridge.

Views of Consumers

Because it is tastier and can be eaten without sugar, fermented porridge was reported by most groups to be preferred over plain, untreated porridge. The sweetness of fermented porridge was important in the old days when cane sugar was unavailable; sugar or sugar and lemon juice are modern flavourings, as is tea. The Kakamega group reported an additional advantage in the good storage capability of fermented porridge.

Three disadvantages were mentioned: time needed for preparation; unavailability of ingredients; and potential problems (heartburn, indigestion, constipation, and diarrhea) for young children eating fermented porridge.
Influences on Use

The Kakamega groups reported that the predominant church, the Society of Friends, had previously discouraged the preparation of sour porridge because of the belief that this porridge contained alcohol. Earlier discussions in Meru had already revealed a similar attitude on the part of the missionaries. These difficulties, however, were not reported by any of the other groups.

Although sour porridge was once extremely popular in the Kakamega district, it is now prepared only rarely. Very little sorghum or millet is grown in this area, these grains having been almost totally replaced by maize. People in this district are said "to lack the will and the interest" to prepare traditional fermented porridges.

Germinated Grain

All groups were asked to mention any knowledge of the use of germinated grain in the preparation of nonalcoholic foods. No specific practices were mentioned in any district. In Kakamega, the solids filtered off during the preparation of opaque "bussaa" beer are mixed with cereal flour and used in the preparation of a porridge that is said to be extremely palatable.

Conclusions

People in many parts of Kenya prefer the sharp, acidic flavour of sour, fermented cereal porridges. (Lemon juice is used to make nonfermented cereal porridges more palatable.) Although fermented porridges are still widely consumed in rural areas, their popularity appears to be declining in favour of supposedly modern alternatives, such as tea or fizzy soft drinks.

Except in the Meru district, sour, fermented cereal porridges are not routinely given to children under 1 year of age: although these porridges may at one time have been fed to infants, fermentation is currently associated with the production of alcohol. Considerable efforts would be required, therefore, to popularize or to reintroduce fermented porridge as a food that is suitable and safe for young children.