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Bringing Together Viewpoints of Mothers and Health Workers to Enhance Monitoring and Promotion of Growth and Development of Children: A Case Study from the Republic of Congo

Félicité Tchibindat[1], Yves Martin-Prevel[2], Patrick Kolsteren[3], Bernard Maire[2], and Francis Delpeuch[2]

[1]Unité de Recherches en Nutrition et Alimentation Humaines, Brazzaville, The Congo, [2]UR106 Nutrition (WHO collaborating centre), Institut de Recherche pour le Développement, Montpellier, France, and [3]Nutrition Unit, Institute of Tropical Medicine, Antwerp, Belgium

ABSTRACT

In 1996, the Government of the Republic of Congo launched a pilot project to improve the child growth and development component of primary healthcare. The present study was carried out (i) to explore perceptions and practices of mothers and health workers regarding child growth, health, and development, and (ii) to design culturally-appropriate tools to enhance their monitoring and promotion. The study was carried out in two randomly-selected health centres in Brazzaville. Qualitative data collected included 16 focus-group discussions with 174 mothers, two focus-group discussions with 18 health workers, and 20 individual interviews with paediatricians or psychologists. The health workers reported that the main indicator of child growth was weight, while the mothers used broader concepts for evaluating growth and development of their toddlers. A strategy encompassing anthropometrics, developmental milestones, and acquisition of social skills was elaborated to enhance communication between health workers and mothers. A new growth chart was designed, and a new calendar of systematic visits, including key tasks and messages, was established. However, these new tools derived from the formative research still need to be carefully tested.

Key words: Infant growth; Infant development; Child growth; Child development; Nutrition; Health system; Perceptions; The Congo

INTRODUCTION

Most growth faltering that leads to underweight and/or stunted children occurs in a relatively short time, from birth to about two years of age. In 2000, it was estimated that 32.5% and 26.7% of children aged less than five years were, respectively, stunted and underweight in developing countries (1). Mild and moderate forms of malnutrition are not only a serious associated cause of death (2) but also impair the development of infants and young children and hamper socioeconomic development of nations (3). Despite an overall improvement in the health sector in developing countries, the goal set at the UNICEF World Summit for Children (held at the United Nations, New York, USA, on 29-30 September 1990) for reduction in severe and moderate malnutrition among children, aged less than five years, by half of 1990 levels is far from being reached.

Correspondence and reprint requests should be addressed to: Dr. Félicité Tchibindat
c/o Dr. F. Delpeuch
Nutrition Unit R106
Institut de Recherche pour le Développement
BP 64501–34394 Montpellier Cedex 5
France
Email: Francis.Delpeuch@mpl.ird.fr
Fax: +33 4 67 41 63 30

This situation can be partly attributed to the relative failure of conventional health programmes to promote child survival and development. Given its complex causality, involving political, environmental and social factors, malnutrition cannot be prevented and controlled by isolated vertical approaches. The need for the promotion of more integrated and comprehensive approaches, especially at the household level, has frequently been stressed (4). Comprehensiveness is now widely accepted as a key element of successful child-health programmes, but the way it has been implemented varies from one sector to another. Growth-monitoring and promotion programmes, for instance, were originally conceived as a means to enhance communication between health workers and mothers. However, they were actually more often used as screening and referral tools for identifying children to be referred for nutrition rehabilitation (5). With the Integrated Management of Childhood Illness (IMCI) programme, a more global approach for the control of major diseases, was recently implemented. The initial aim was to improve skills of health workers and family and community practices. Unfortunately, the initial implementation of IMCI focused mainly on improving technical skills of health workers rather than strengthening their communication skills towards parents and the community (6).

In 1996, the Government of the Republic of Congo started to review the impact of the health-sector reform initiated in 1987 on the nutritional status of children aged less than five years. Data, based on representative samples, drawn from the same four districts of Brazzaville that were surveyed from 1986 to 1996, showed that the prevalence of stunting had increased from 12.4% to 16.7%, and the prevalence of wasting had increased from 3.2% to 5.1% (7). Moreover, the attendance rate at health centres dropped considerably between 1991 and 1996, especially for children aged more than one year.

Based on these findings, the Ministry of Health and donors launched a pilot project aimed at improving the child growth and development component of primary healthcare services in the Republic of Congo. To implement this project, a task force of 20 members was formed with various specialists from the Ministry of Health, the Ministry of Scientific Research, the Faculty of Sciences, other government departments (people with a sociological, psychological or communication background), and NGOs, and representatives of local communities. This group first decided to use formative research to explore perceptions, beliefs, and behaviours of both mothers and health professionals regarding child health and development. The main research questions were: What are the perceptions of child growth and development among mothers and health workers? What strategies do mothers preferably use to ensure the good health of their children? Which critical phases during early childhood do mothers and health workers identify? The task force then analyzed and compared the perceptions and behaviours of mothers/caregivers and health workers. Similarities and differences were used for developing culturally-sensitive tools to promote child growth and development with the intention of increasing mothers' attendance at health-centre activities and of addressing the main causes of growth faltering. Health workers and community representatives participated in all stages of the process from the exploratory phase to the implementation of the project. This paper presents the main results of the formative research and design phases.

MATERIALS AND METHODS

The research team chose qualitative data-collection techniques to gather information on perceptions, beliefs, knowledge, attitudes, and priorities of caregivers and health workers.

Study sites

The participatory research was conducted in Brazzaville, the capital of the Republic of Congo, from 1997 to 2000 (Because of the civil war in 1997 and 1998/1999, the research was interrupted for one and a half years). The population of the city was estimated to be 850,000 at the beginning of the research. Brazzaville is divided into seven health districts that correspond to administrative districts. Health facilities in each district include several primary healthcare centres and a district hospital. Each health centre covers a specific geographical area. All 24 health centres in the city were classified as either 'central' or 'peripheral', and to gather a range of different viewpoints, one centre in each category was randomly selected (the health centres of Bacongo and Nganga Lingolo respectively).

Subjects

In 1997, a nutritional survey was carried out in Brazzaville on a randomly-selected sample of 2,219 children aged 0-59 month(s). A sub-sample (n=192) was drawn from this survey by selecting all mothers who lived in the health area of the two selected health centres

and who had a child aged less than two years. All the mothers were asked to participate in the present study, and 174 participated. Eighteen health workers of the two health centres were also enrolled in the study.

Data collection

Focus-group discussions were used as the main data-collection technique during the formative research phase. A focus-group discussion is a guided but open discussion within a group of specially-selected people. The discussion is focused on a specific topic. The technique is based on the concept of social group dynamics. Two trained facilitators conducted the focus-group discussions. The first stimulated the discussion on the basis of a prepared but flexible outline, and the second took detailed notes (8,9).

A first series of 12 focus-group discussions was held during the formative research phase. Each focus-group discussion included 10-12 mothers and lasted between 45 and 90 minutes. At the end of the discussion, participants received cold drinks and a return ticket. After the departure of mothers, the two facilitators reviewed the notes taken and added a general appraisal of discussions and any other relevant information. The topics discussed with mothers included perceptions of growth, health, and development of children, how to keep the child in good health, and opinions about current and optimal feeding practices. All the nurses (n=18) of the two health centres participated in two additional focus-group discussions. These latter focus-group discussions addressed the relations between growth and development and health/diseases of children.

A second series of four focus-group discussions was held with 36 mothers during the design phase to explore their opinions on developmental milestones. In addition, 20 individual in-depth interviews were held with experts to determine standard developmental milestones. These experts comprised 12 paediatricians, heads of paediatrics or neonatal departments in the main hospitals of the country (whose names had been provided by the Congolese Paediatrician Association), and eight psychologists from the Psychology Department of the University of Brazzaville and from the Psycho-Pedagogical Centre of the Ministry of Health. Three of the paediatricians and three of the psychologists were also members of the task force.

The facilitators of the focus-group discussions wrote detailed reports after each discussion. The contents of the reports were then discussed by assistants and senior researchers before a final inductive analysis was carried out by the latter. Responses given in focus-group discussions were grouped in five major categories: perceptions about growth and development; perceptions about health and illness; measures to ensure good health and growth; child-feeding practices; and critical periods of child development. Subsequently, sub-categories were created and responses were further categorized. Responses were examined for patterns and trends, and divergence and convergence of views were highlighted. A report was prepared for each health centre detailing the findings by type of respondent and by topic categories of the focus-group discussions.

RESULTS

Formative research

Characteristics of respondents

The main characteristics of mothers who participated in the focus-group discussions are given in Table 1. The age of respondents ranged from 19.9 to 39.7 years (mean age ±SD=29.3±6.9 years). All mothers had attended at least elementary school, and half had no income from a job. Those with jobs were mostly informal. These figures are comparable with those of the whole sample of the cross-sectional survey carried out in Brazzaville in 1997.

Table 1. Main characteristics of respondents (n=74 mothers of children aged less than two years)

Characteristics	Percentage
Place within household	
Head	6.0
Spouse of head	72.0
Other	22.0
Education	
Primary	28.0
Secondary	72.0
University	0.0
Economic activity	
Formal	4.0
Informal	44.0
Inactive	52.0

Child growth and development

Health workers generally evaluated child growth and development through anthropometric indicators, such as weight and height. Only a few of them added some indicators of motor development (sitting and crawling). By contrast, mothers used many different indicators to

evaluate the growth of their children: gross motor development (when the child sits, crawls, or stands), physical changes (the child is strong or plump), development of language and concepts (the child understands simple orders, responds to sounds, and starts talking). Putting on weight was one of the parameters used, but not the only one, nor the most important component of their evaluation. Mothers valued psychological milestones highly, i.e. "What is the advantage of a child putting on weight and being tall if s/he cannot speak or understand what you are telling him/her?" and social skills, i.e. "If I notice that my child smiles at 2 months, this means that s/he is in advance compared to other babies of his/her age, and that makes me proud." Mothers perceived the growth and development of their children as a continuous process of change during which the children increase their capacity for movement, thinking, physical growth, and interaction with people and objects.

Critical periods for children aged under two years

Results of comparison of mothers' and health workers' assessment of the critical periods for children aged less than two years gave three major periods: 0-4 month(s), 5-12 months, and 13-24 months (Table 2).

From birth to four months: Mothers and health workers agreed on the easiness of the first months of life after birth mainly because of the protective value of breastmilk. Mothers added that, during this period, the child is kept in the house and protected against the outside world until s/he is ready to go outside. In Congolese society, a child is kept inside the house during the first months of life. When the mother goes outside and is obliged to take the baby with her, she wraps him/her up completely. Only when the child reaches the age of three months is s/he assumed to be old enough to have contact with the outside world. A ceremony with family members, neighbours, and friends is performed to bring the child out.

From five to twelve months: According to the mothers, the infant enters a very difficult period after the peaceful first three or four months of life. The diet changes rapidly with the introduction of complementary foods, and the child also undergoes rapid physical and psychosocial development. Mothers reported that these changes have an impact on child health, i.e. "The child is often ill. S/he suffers from worms and has no appetite"; or "When the child starts teething, s/he gets a fever or diarrhoea." During this period, mothers feel particularly concerned about feeding, diseases, and psychosocial development of their children.

From thirteen to twenty-four months: Children suffer from various diseases from one to two year(s) of age. Mothers commented that the child is often weak and prone to domestic injuries, i.e. "one to two year(s) of age is a very difficult period because the child does not talk, s/he may be ill but you cannot guess what is wrong, it is not easy to know what hurts. You also have to constantly keep an eye on him/her to make sure s/he does not go out into the street or to the toilets, and that s/he does not swallow medication or paraffin oil".

Health workers shared most of the above concerns but they categorized them differently (domestic injuries between 4 and 11 months for instance), and they added other risks, such as tuberculosis, poliomyelitis, a new pregnancy, and the fact that the mother may go back to work.

Table 2. Critical periods and associated risks for children of <2 years, according to mothers and health workers

Period	Mothers	Health workers
From birth to 4 months	No risk (child is protected against the outside world, s/he is breastfed)	No risk (child is breastfed)
From 5 to 12 months	Contact with the outside world Diarrhoea Worms Fever	Worms Infections Measles Skin lesions Home accidents (fire, drugs, paraffin oil)
From 13 to 24 months	Various diseases (cough, malaria, cold, fever, worms, measles, and chicken pox) General weakness Home accidents (swallowing drugs, paraffin oil, burning with wood fire)	Tuberculosis Poliomyelitis New pregnancy of mother Mother going back to work

Measures to ensure good health

Mothers identified three key means to ensure the good health of their children. First, they valued good feeding practices, such as breast-feeding and providing nutritious foods, such as vegetables, fish, and fruits. Mothers reported that breastmilk is the best food for the newborn, i.e. "If you breastfeed your baby, you are giving him/her part of yourself" and is a cheap and convenient way of feeding. However, most mothers did not follow the advice of avoiding water before six months because "breastmilk is hot and warms the child who needs water to cool down."

Second, mothers stressed the importance of a healthy and safe environment for the child: cleaning the house, bathing the child regularly, keeping his/her clothes clean, giving him/her safe water, i.e. "If you don't want your child to have diarrhoea, give him/her boiled water", washing hands before giving food, and making sure that s/he does not play with things that are dirty. Mothers also stressed the importance of peace and the absence of worries in the household, i.e. "If parents want their children to be healthy and grow well, they should avoid fighting." The father was expected to give affection to the child, play with him/her, and take care of him/her, i.e. "The role of the father is not only to make the woman pregnant, he should keep an attentive eye on the child and on the foods the mother is giving. You know, some children get sick because the father is absent."

Third, mothers valued the adequate use of healthcare services, such as immunization, i.e. "The vaccination kills the strength of the disease", deworming, and being able to take the child to the health centre when s/he is sick. However, even when mothers know they should take a sick child to the health centre, they sometimes try cheaper alternatives, i.e. "You know, life is now very difficult. We are short of money, so before going to the health centre, I try to cure the disease myself. I buy medication from the market if my child has a fever or a cough. Sometimes, I use medicinal plants, especially for fever and diarrhoea. If the child does not get better after three days, I go to the health centre." Another point that came out is the lack of interest in health-promotion activities, such as growth monitoring, i.e. "I stopped going to growth-monitoring sessions when my child was one year old because he had already had all the vaccines." Sometimes, the attitude of health workers was responsible for the reluctance of mothers to continue coming to the health facility, i.e. "I stopped bringing my child to the growth-monitoring sessions when he was 15 months old because nurses were reluctant to receive bigger children."

Similarities were found in the health responses of workers. They also valued good child-feeding practices, attendance at the health centre, appropriate treatment of child diseases, and immunization as a means of ensuring good health of the infant. In contrast to mothers, health workers mentioned the value of growth-monitoring. However, they appeared to have a very simple approach to the causes of growth failure in the Congolese context. They had been trained to deliver stereotyped educational messages, i.e. "If a child does not put on weight after two consecutive weighing sessions, we should check if s/he is sick. If this is the case, we should treat the illness. If not, we advise the mother to improve child-feeding practices." Moreover, they often thought that mothers do not follow their advice, i.e. "Well-educated mothers complained that they have no time to follow our advice. Multiparous mothers stated that they know how to take care of children since they have had more than one." Some of the health workers blamed cultural beliefs or informal communication networks, i.e. "Women are attached to their traditions, it is hard for them to adopt new behaviours"; or "People around mothers, particularly mothers-in-law or next-door neighbours, have a big influence on behaviour of mothers."

Design phase: strategy to implement research results

The task force reviewed the data and results of the analysis. They compared the perceptions of mothers and health workers and used similarities and differences to design culturally-sensitive tools to promote child growth and development.

Their main conclusions were that mothers of children aged less than two years used broader concepts than health workers for evaluating the growth and development of their toddlers: they combined psychomotor, psychological and physical indicators. Their attitude varied with the age of the child as a function of age-specific concerns about feeding (the introduction of new foods), development (milestones, psychomotor and psychological development), home care (domestic injuries), or child diseases (especially diarrhoea, malaria, and cough). The views of health workers about child health and development were narrower, and they were mainly concerned with childhood diseases and child-feeding practices.

To incorporate views and interests of mothers and to improve communication between health workers and mothers, the task force decided to design a new strategy for monitoring and promoting child growth and development to be implemented at health facilities and at the community level. This strategy included, among others, the design of a new child-growth and development chart; the development of health and nutrition cards to deliver key messages on exclusive breast-feeding—appropriate and timely complementary feeding—home and health facilities and the management of childhood illnesses—a safe and healthy home environment (educational materials in French are available from the authors on request); and the design of training modules for health workers to help them acquire the new skills. During the whole process, to put international recommendations into a cultural context, as far as possible, the worries and words of mothers were used as the starting points for educational messages.

The main features of the design of the new child-development chart are briefly described below.

First, the task force examined how the previously-used growth chart dealt with the concerns of mothers. It was found that it contained only basic health data, whereas mothers were interested in broader information on physical growth and milestones and psychological development. Next, focus-group discussions with mothers and in-depth interviews with experts (paediatricians and psychologists) were used for identifying sound development milestones to be incorporated in the new chart (Table 3). Concerns of mothers were taken into account when designing the new chart; for instance, there are drawings of a baby from birth to 24 months to show the continuous change in child growth and development; some key psychosocial and developmental milestones are shown in a box beside the classical growth curve; and advice on optimal infant feeding as a function of age is also included (Fig.).

Table 3. Development milestones according to mothers and experts

Milestone	Mother (month)	Expert (month)
Head straight	1-4	3-6
Sitting	3-6	6-9
Crawling	5-9	6-9
Walking (first steps)	8-15	9-2
Hold something	3-8	6-9
First teeth	3-10	6
Smile	1-4	1-3
First syllabus	5-9	6-9
Bring something in the mouth	5-9	6-9
Throw something away	8-18	12-15
Answer when called	11-24	12-15
Execute simple orders	12-18	12-18

The task force also stressed the importance of systematic check-ups to prevent childhood diseases and promote better growth and development. The best times for these systematic check-ups were determined using the critical periods identified by mothers and health workers. A new calendar was proposed for monitoring child growth, including six check-ups during the first two years of life (at the age of 3, 6, 9, 12, 18, and 24 months). For each of the check-ups, key tasks to be performed and key messages to be delivered incorporated views of mothers and concerns of health workers (Table 4). When there were discrepancies between health workers or experts and mothers, the age for specific development milestones or the acquisition of social skills was taken from international scales. The scope of growth-monitoring was broadened by adding to the usual measurement of weight, the measurement of height, examination of the teeth, hearing and eyesight, assessment of the child's gross motor development, language, capacity for emotion, social relations, attention-span and autonomy; preventive tasks, such as immunization, information on optimal diet, supplementation of vitamin A, and deworming were included based on international recommendations (Table 4).

DISCUSSION

Conciliating the viewpoints of mothers and health workers has become a growing concern in child-health programmes. Reasons for the limited success of selective health programmes are frequently due to lack of attention so far to sociocultural issues and to comprehensiveness (10). Considerable research has been done on cultural aspects of specific topics, such as breast-feeding, complementary feeding practices (11,12), or the prevention of diarrhoeal diseases (13). Most of these studies have agreed on the importance of integrating '*emic*' beliefs and practices in the design and implementation of actions (14).

Despite the above considerations, most interventions continue to focus on educating mothers and getting them to share viewpoints of health workers (15,16). This is one of the reasons for poor communication between caregivers and health workers. In the Republic of Congo, a study on the quality of care in healthcare services found that poor communication between health workers and

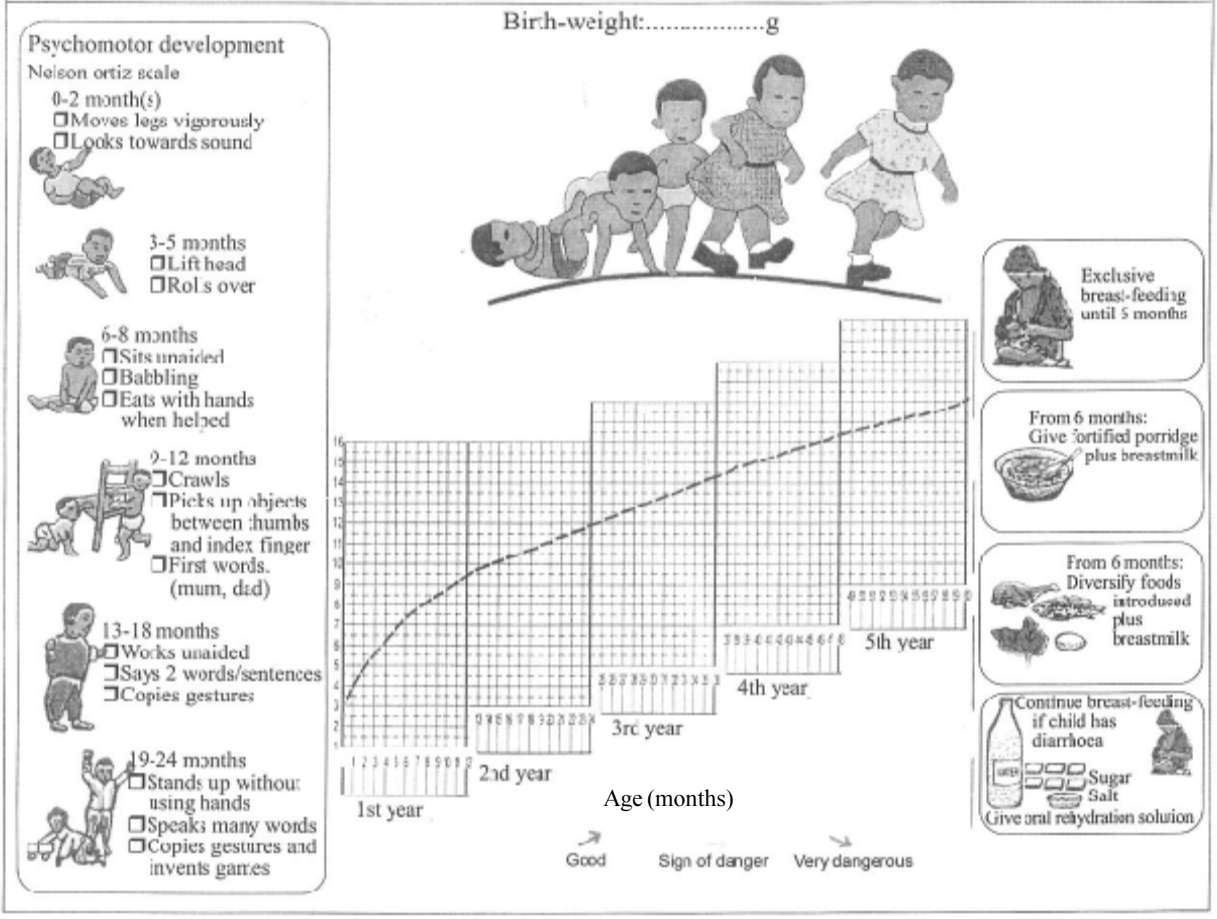
mothers was one explanation for the decreased use of public-health facilities (17).

Our research took into account both viewpoints and practices of mothers and health workers concerning child growth and development. The use of qualitative data helped identify the roots of their beliefs and better understand their behaviour. Although both health workers and mothers are concerned about the well-being of the children, they defined the key concepts of health, illness, and growth differently. While mothers interpreted health concepts from a social standpoint, health workers defined them in relation to their technical knowledge. This conceptual discrepancy can lead to conflicts between mothers and health workers (18).

one of the main ways of taking views of mothers into account. Nevertheless, in the case of disagreement between the viewpoints of mothers and health workers about milestones, the team felt that it was important to provide relevant information about internationally-recognized standards to both the parties. The comprehensiveness of the activities included in the new calendar for monitoring growth and development is another important output of the research. Less-frequent but more in-depth systematic check-ups that do not only focus on physical growth are likely to help renew the dialogue between mothers and health workers.

The same kind of comprehensive tools (including growth-monitoring and milestones) has already been

Fig. Assesment of child growth and development



The main output of the research was the design of an integrated biological and social skills chart aimed at identifying at-risk children and at improving communication between mothers and health workers. Incorporating developmental milestones in this chart was

used elsewhere, for example, in China, India, and Thailand (19). A similar approach was employed in Indonesia with remarkable results: a child-development chart used in conjunction with conventional growth assessment has proved to be so popular among mothers that attendance

Table 4. Information on new child-development monitoring

3 months	6 months	9 months	12 months	18 months	24 months
Weight, height	Weight, height	Weight, height	Weight, height	Weight, height	Weight, height
Cranial perimeter	Cranial perimeter	Cranial perimeter	Fontanel closed	Teeth	Teeth
Head (straight)	Teeth	Teeth	Teeth	Plays with ball, dolls	Plays with ball, dolls
Plays with hands	Sitting	Crawling	Walking	Climbs stairs	Runs without falling
Follows with eyes	Passes an object from one hand to another	Puts his/her foot in mouth	Takes objects between thumb and index finger	Says at least 10 words	Says at least 20-30 words
Vision, hearing	Says DA-BA-MA-PA	Takes objects between thumb and another finger	Throws objects away	Expresses his/her refusal (says no)	Executes simple orders
Vaccination	Recognizes familiar figures	Says PAPA-MAMA-TATA	Says PAPA-MAMA-TATA and three other words	Executes simple orders	Imitates adults
Diet	Vision, hearing	Can drink him/herself from a cup	Expresses his/her emotions (anger, joy, anxiety, sadness)	Imitates adults	Can put on him/herself simple clothes
	Vaccination	Vision, hearing	Vision, hearing	Turns pages of a book or an exercise book	Is clean during the days
	Diet	Vaccination	Vaccination	Draws lines on paper	Vision, hearing
	Vitamin A supplementation	Diet	Diet	Vision, hearing	Vaccination
	Deworming	Vitamin A supplementation	Vitamin A supplementation	Vaccination	Diet
		Deworming	Deworming	Diet	Vitamin A supplementation
				Vitamin A supplementation	Deworming
				Deworming	

at growth-monitoring and promotion sessions increased considerably (20). From a more general standpoint, it should be noted that more and more research studies are investigating integrated models of biological and social interactions (21).

In our study, the implementation of the tools derived from the formative research still needs to be carefully documented in terms of output (attendance rate, knowledge), outcomes (changes in practices of health workers and mothers), and impact (nutritional status of child). The new strategy is currently being tested in seven health centres in Brazzaville (one centre in each administrative district) and in four rural health centres.

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