

Promoting growth and development of infants by a multidisciplinary team, in the community of Paraisópolis

Promoção do crescimento e do desenvolvimento do lactente realizada por equipe interprofissional, na comunidade de Paraisópolis*

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ABSTRACT

Objective: To present the results of a Health and Nutrition Promotion Program for Infants carried out by the Program Einstein in the Community of Paraisópolis. **Methods:** Application of a program based on strengthening mother-infant bonding, promoting exclusive breastfeeding up to six months of age, and educational actions performed by a multidisciplinary team. **Results:** The team followed up 318 mother-infant dyads. Among the beneficiaries, 61.6% were enrolled in the program with less than 30 days of age. Exclusive breastfeeding rates were 82.8%, 63.6%, and 56.1% at 2, 4 and 6 months of age, respectively. The weight gain observed represented a mean weight of the infants above the 50th percentile of NCHS standard from immediately after enrollment in the program to 6 months of age. **Conclusions:** The results obtained effectively contributed to promoting health and improving nutrition status of the infants who were followed in the Program.

Keywords: Patient care team; Child welfare; Child development; Health promotion

RESUMO

Objetivo: Apresentar os resultados de um Programa de Promoção da Saúde e Nutrição do Lactente realizado pelo Programa Einstein na Comunidade de Paraisópolis. **Métodos:** Aplicação de um programa embasado no estreitamento do vínculo mãe-filho, estímulo ao aleitamento materno exclusivo até o sexto mês de vida e em ações educativas realizadas por equipe interprofissional.

Resultados: Foram acompanhadas 318 díades mãe-filho. A inscrição no programa de 61,6% de seus beneficiários foi realizada antes de completar 30 dias. Conseguiu-se obter índices de aleitamento materno exclusivo de 82,8% aos 2 meses, 63,6% aos 4 meses e 56,1% aos 6 meses de idade. O ganho ponderal observado colocou a média de peso dos lactentes do Programa acima do percentil 50 do NCHS logo após o ingresso no programa, até completar 6 meses de idade. **Conclusões:** Os resultados obtidos contribuíram efetivamente na promoção da saúde e melhoria das condições de nutrição dos lactentes acompanhados.

Descritores: Equipe de assistência ao paciente; Bem-estar da criança; Desenvolvimento infantil; Promoção da saúde

INTRODUCTION

Performing Health Promotion activities in the first year of life, by means of educational activities, is extremely necessary and even compulsory. For satisfactory growth and development, care given by pediatricians is not sufficient because they are not able and have not enough background to carry out such a complex activity alone. Several professionals should work together in a team, including dietitians, psychologists, social workers, nurses, educators, among others⁽¹⁾.

A multidisciplinary approach enables early identification, discussion and resolution of the most

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common difficulties faced and anxieties experienced by mothers, as well as strengthen mother-infant bonding aiming at infant health.

The Program on Promoting Growth and Development of Infants - PPGDI - is a program of educational actions directed at mothers of newborns, conducted by a multidisciplinary team. It complements infant primary care provided by Public Healthcare Units. These services perform distinct activities and have different goals, but they complement each other and both are performed aiming to improve the health conditions of our infantile population.

The program is based on three pillars: promoting breastfeeding, recovering and strengthening mother-infant bonding, and educational actions performed by a multidisciplinary team.

PPGDI was implemented in October 2000 for mothers of children aged under 12 months living in the Community of Paraisópolis. Its objectives are to strengthen mother-infant bonding; to promote exclusive breastfeeding up to the sixth month of age; to clear up any doubts of the participating mothers on aspects related to health and nutrition promotion of their children; to establish a system of growth and development surveillance in order to prevent and detect early nutritional disorders and avoid their consequences; and to instruct mothers on aspects related to child hygiene and food preparation.

PPGDI is a novel program and it took two years to test its new methodology and to fully implement it.

OBJECTIVE

To present the preliminary results of a Health and Nutrition Promotion Program for Infants carried out by the Program Einstein in the Community of Paraisópolis.

METHODS

The sample comprised 318 mother-newborn dyads, enrolled in PPGDI in 2003. Procedures: PPGDI was divided into blocks per infant age group. The blocks were independent but were conducted in sequence (chart 1). The work comprised group activities with an average participation of 20 mothers. We enrolled children aged under 45 days of age, either by spontaneous demand or referred by groups of pregnant women seen at the Health Promotion Center (CPAS/PEC-P).

Upon enrollment in PPGDI, each mother was given information about the Program, the child medical chart was completed, infant weight and height were measured

and recorded and they participated in the first meeting of the group.

Chart 1. Distribution of Program on Promoting Growth and Development of Infants - PPGDI blocks

Ppgdi - 1	0 - 2 Months
Ppgdi - 2	> 2 - 4 Months
Ppgdi - 3	> 4 - 6 Months – exclusively breastfed
Ppgdi - 4	Improving cooking 6 - 8 Months – exclusively breastfed up to 6 months > 4 - 6 Months – Not Exclusively Breastfed
Ppgdi - 5	Up to 12 months
Ppgdi - 6	Infants born with insufficient weight

Each educational meeting lasted two hours, and the activities carried out were targeted at the needs of each age group. The following activities were conducted: answering questions and clearing up doubts, improving neuromotor development, evaluation of speech and hearing, strengthening mother-infant bonding, discussion of a technical issue, and improving cooking. Each activity was performed by one type of professional, who spent a certain period of time in these educational meetings depending on the needs of each age group (chart 2).

Chart 2. Time distribution in Program on Promoting Growth and Development of Infants PPGDI activities

Activity	Duration	Professional
Clarifying doubts	20 min.	Pediatrician
Improving neuromotor development or Speech and hearing evaluation	20 min.	Physiotherapist or Speech therapist
Strengthening mother-infant bonding	40 min.	Psychologist / Educator
Discussion of a technical issue	60 min.	Variable

Clarifying doubts: this activity was carried out by the pediatrician, nurse or dietitian with the purpose of clearing up any doubts, answering questions posed by mothers, and instructing them on the main aspects of breastfeeding, infant health and nutrition.

Strengthening mother - infant/child bonding: this task was performed by the psychologist and educator in order to learn about and strengthen mother-infant bonding, to provide pleasant moments for the mother-infant dyad, so that mothers could increasingly understand the reactions of infants, to create a repertoire of nursery rhymes and lullabies and to develop a massage technique for mothers to give to their babies.

Improving neuromotor development: the physiotherapist conducted this activity to improve skills at this period of development. In addition to stimulation, all babies were assessed according to the Alberta Infant Motor Scale⁽²⁾, at 4 months. This scale

analyzes motor development and provides a score that could be compared with a normative sample, the result being neuromotor development delay or no delay.

Speech and hearing evaluation: this was conducted by the speech therapist and addressed auditory development, explaining about the first hearing experiences of babies, the auditory development phases, and the auditory follow-up program in the first year of age.

Improving cooking: in a kitchen, the mothers were given practical orientation about food preparation for their children and families. The objectives were to learn about the groups of foods; to combine food in order to obtain greater amounts of nutrients, as well as to practice upon information received; to facilitate understanding; and to prevent intestinal diseases by adopting correct food manipulation practices.

Team participation: after the activities described above, each member of the multidisciplinary team presented the following selected topics:

- PPGDI 1 - Basic care of infants/Nurse; Breastfeeding/Dietitian; Growth and Development/Nurse; Mother-infant: first months of age/Psychologist; Protection and Attention/Social worker.
- PPGDI 2 - Women's rights/Social worker; Self-esteem/Psychologist; Contraceptive methods/Nurse; Mobiles/Educator.
- PPGDI 3 - Maternal attitudes and development/Psychologist; Child citizenship/Social worker; Introduction of complementary foods/Dietitian; Shantala Massage/Educator.
- Improving cooking - Fruit juice/fruit puree; five recipes of vegetable, meat and cereal purees; Preparing bottles;
- PPGDI 5 - Respiratory diseases/Pediatrician; Prevention of accidents at home/Nurse; Growth and Development II/Pediatrician; Playing/Educator; Diarrhea and Intestinal Parasitoses/Pediatrician; Setting limits to your child/Psychologist; Skin problems/Pediatrician; Food for children aged > 12 months/Nutritionist.

Activities performed during the program

Growth surveillance

Upon admission to the Program and up to completing one month, the babies were weighed every week. From 1 to 3 months, they were weighed every 15 days, except for those with inappropriate weight gain who were weighed weekly. As of 4 months of age they were weighed every month. In all cases, height was measured once a month.

In order to evaluate birth weight we considered weight > 3000 gram appropriate and = 3000 grams inappropriate; in this group, we considered low birth

weight as < 2500 grams and insufficient (or sub-optimal) as 2500-3000 grams.

Developmental surveillance

The objective of following-up the phases of infant development was to early detect any alteration, and provide interventions for child to recover. This assessment was carried out at 4, 6, 9 and 12 months by means of the Alberta Infant Motor Scale⁽²⁾, which evaluates child motor development.

Prevention and treatment of iron deficiency anemia

It involved the prophylactic use of iron and evaluation of hemoglobin levels in these children. Blood collection for hemoglobin was performed at 6 and 12 months^(3,4).

Vitamin A and D supplementation

For term newborns: vitamin D 400 UI + vitamin A 2.000 UI as of 21 days of age.

Low-birth weight and preterm babies: vitamin D 800 UI + of vitamin A 4.000UI as of 15 days of age.

Supplementation with iron and vitamins complied with the recommendations of the Nutrition Department of the Sociedade Brasileira de Pediatria⁽⁴⁾.

Diet recommended

One of the main objectives of PPGDI is to maintain all participating children exclusively breastfed up to the age of 6 months. All mothers of the newborns enrolled in PPGDI at less than 1 month of age and formula-fed, were encouraged to relactate. If it were not possible, a fortified formula was indicated⁽⁵⁾.

Supplementation for malnourished infants or those at risk of developing malnutrition

As mentioned above, surveillance and prevention of nutritional disorders are top priorities in PPGDI. The children identified as malnourished or at risk of developing malnutrition received special attention in a weekly group meeting.

One of the measures to prevent malnutrition was to supplement by means of distributing a formula to preterm or low-birth weight babies whose weight gain was <150 grams/week, breastfed twins with weight gain <150 grams/week or who presented insufficient weight gain with a descending curve, which was close to or under the 10th percentile in the growth follow-up chart adopted by PPGDI⁽⁶⁾.

RESULTS

Up to the end of August 2003, 318 mother/infants dyads participated in PPGDI, with an average of 35 infants enrolled per month.

As to birth weight, 11.1% of babies had a low weight (< 2500 g), 29% had insufficient weight (2500-3000 g) and 59.9% were within normal weight values.

Table 1 shows the age of infants at enrollment for the first educational meeting in PPGDI.

Table 1. Age of infants at enrollment in PPCD (January to August 2003)

Age at enrollment (days)	Number	%	Accumulated frequency
Up to 15	50	15.7	15.7
15-29	146	45.9	61.6
30-44	91	28.6	90.2
≥ 45	31	9.8	100.0
TOTAL	318	100.0	

The data on accumulated frequency showed that 15.7% of infants were participating in PPGDI at less than 15 days of age; 61.6% at less than 30 days of age and 90.2% at less than 45 days of age.

Figure 1 shows the type of diet given to 107 infants seen by PPGDI in 2003 at 6 months of age. Upon enrollment, 82.2% of infants were exclusively breastfed and this figure did not change by the age of 2 months; at 4 months, it dropped to 63.6%, and at 6 months, 56.1% of the infants were still on exclusive breastfeeding. The combination of breast milk and another type of milk or formula was observed in 4.7% of infants on enrollment in PPGDI, and at 6 months, it increased to 28.0%.

The main reasons for weaning were mother’s work and studies.

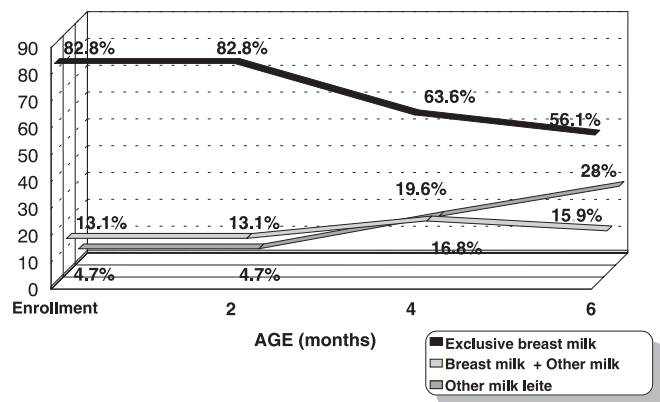


Figure 1. Type of diet given to infants in Program on Promoting Growth and Development of Infants – PPCD by age group

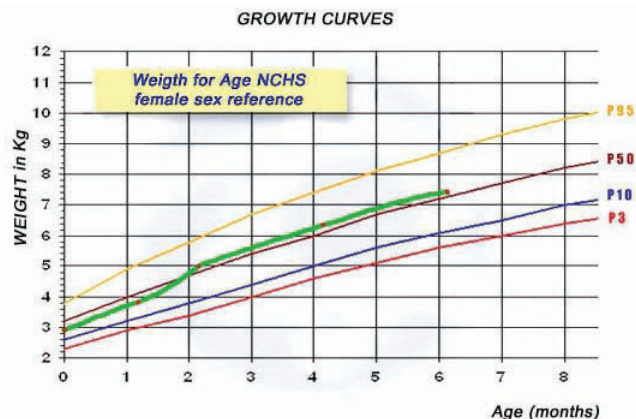


Figure 2. Growth curves, female sex, NCHS reference

The mean weight of each infant (total of 107 babies) followed up to 6 months of age was calculated at birth, enrollment in PPGDI, 2, 4 and 6 months of age, by sex. The mean weights were plotted on a growth evaluation curve by sex, according to the NCHS standard used by PPGDI (figures 2 and 3). The green line represents the curve with the mean weight of the infants enrolled in PPGDI.

In the first two measurements – at birth and enrollment in PPGDI, we observed that the mean weight of the infants, both males and females, was below the 50th percentile in the NCHS charts. Soon after their enrollment in PPGDI, both curves changed to an ascending slope and achieved a percentile > 50, and remained so up to the age of 6 months.

At birth, 40.1% of infants presented some degree of weight deficit. At 6 months, it dropped to 16.8%.

DISCUSSION

PPGDI was implemented in the Community of Paraisópolis, which is the second largest deprived community in the City of São Paulo, with an estimated population of 60,000 inhabitants. Thirty-four per cent of this population lives

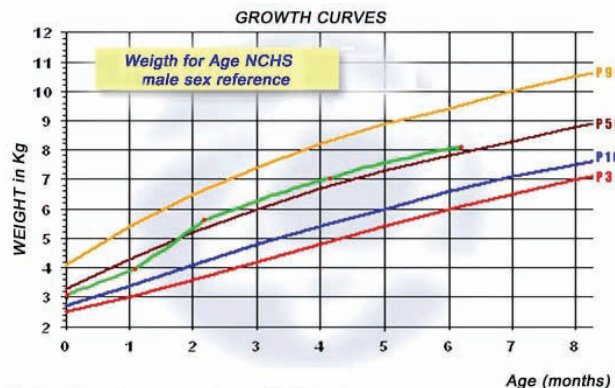


Figure 3. Growth curves, male sex, NCHS reference

below the poverty line, 31% are adolescent mothers and the unplanned pregnancy rate is 54%.

The main indicator of the precarious living conditions of this population is that 40.1% of newborns of this community have an insufficient birth weight (11.1% of low birth weight and 29.0% of insufficient or sub-optimal weight).

PPGDI has been implemented for three years and complements the services rendered by the Public Health System. During this period, the program has been very well accepted by the population of Paraisópolis. It expected to enroll approximately 500 infants and to hold 3800 group meetings in 2003.

One of the main features of PPGDI is early enrollment of infants (at the age of 45 days, 90.2% of newborns were already participating with their mothers in educational meetings). This enabled the team to identify and deal with problems the mothers experience and face immediately after delivery: depression, anxieties, doubts, and self-esteem. As a result, babies grow and develop with good achievement.

Early enrollment of babies (62% at less than 30 days of age) contributed to promoting and maintaining breastfeeding and relactating mothers who had given up breastfeeding at an early stage. In PPGDI, breastfeeding achieved rates never observed in other programs in our country: 82.8% at 2 months, 63.6% at 4 months and 56.1% at 6 months of age. Taking into account combined breast milk and formula feeding, we observed that at 6 months of age, 84.1% of the infants seen were exclusively breastfed or were fed with other milk or formula.

The results of the work conducted by the multidisciplinary team were almost immediately observed. The infants recovered weight immediately after enrollment in the program, which was represented by being above the 50th percentile in the NCHS charts⁽⁷⁾. These data are comparable to the average of infants in developed countries as of the age of 2 months 10 days.

The greatest achievement of PPGDI might be its ability to enroll its beneficiaries at an early age, thus enabling early resolution of any event. Unfortunately, the Public Healthcare Units are not able to do the same,

since the first medical appointment is made at the age of 2 or 3 months. Therefore, the early work initiated by PPGDI with mother-infant dyads effectively improved the health and nutrition conditions of infants up to their first medical appointment.

CONCLUSIONS

PPGDI serves as a complementary service to that rendered by the Public Healthcare System and enrolls infants at an early age. Its actions are based on three pillars: promoting breastfeeding, recovering and strengthening mother-infant bonding, and educational actions performed by a multidisciplinary team. The program has effectively contributed to the promotion of infant health and nutrition.

The exclusive breastfeeding, growth and development rates achieved are comparable to those of infants in developed countries and put the Program Einstein in the Community of Paraisópolis in the vanguard of infant health and nutrition promotion programs.

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