ORIGINAL ARTICLE

Benefits of Infant Calendar Action Poster to Improve the Compliance of Growth and Development Monitoring

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ABSTRACT A community based study was conducted among infants between 0-12 months old about the compliance of growth and development monitoring, with the provision of infant calendar action posters. The subjects of study residing at Cipinang Cempedak areas, were followed-up from March 1997 until March 1998. One hundred infants provided with the action posters comprised the intervention group, and 100 infants not provided with the action posters comprised the non intervention or the control group. Twenty infants of the control group and 18 infants of the intervention group dropped out because they moved out areas or didn't show up at the subsequent visit. More than half of the parents has middle income with Rp 134,832.35 - Rp 1,664,733.75 per month, 75.3% the fathers were employees of private enterprises. Eighty two of the intervention group (36 male infants or 43.9% and 46 female infants or 56.1%) and 80 of the non intervention group d (39 male infants or 48.8 % and 41 female infants or 51.2%) participated in this study. The results showed that the compliance of periodical visits of growth and development monitoring of the intervention group was significantly better than that of the control group. Other results show that the intervention group got proper feeding, had adequate nutritional status, and had complete immunizations as recommended. And sustained contraceptive practice by the mothers. **[Paediatr Indones 1999; 39: 29-37]**

Introduction

To improve the quality of human resources, quality of life, prosperity of family, and being healthy were the objectives of health development on Pelita VI.[1] Human resources was the most important to ensure The Second Long-term National Development

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Program to be a success. Children are among the target in human resources advancement.[2] Proper growth and development monitoring of infants and children are very important to ensure quality of Indonesia's children physically, intellectually, and socially.[3] Proper growth and development monitoring with sustained and complete periodical visits will also make early detection and prompt treatment of any developmental delay or abnormality possible.

WHO suspected 1-3% population suffer from mental retardation, 80% of them have light mental retardation which is difficult to detect.[4] Data from Dr. Sutomo Hospital, Surabaya from 1988 until 1991, showed that 76.8% delayed development cases among children came to hospital at the age more than one year which was considered too late to manage.[5] The action poster is an instrument designed to ensure the compliance of growth and development monitoring.[6] The action poster has the measurement of around 40 cm in width and 55 cm in length, on which the main words and pictures of message, recordings, notes, marks, chart will be clear enough to be read from around 2 meter distance.

The action poster is hanged on a wall so that the mother, the father and other adults could look and know about her child's weight curve, length curve, head circumference curve, proper feeding, immunization record, contraceptive record, the date of next visit for advice and other necessary services. This may minimize or even avert the disruption of continuity of child care, and therefore may ensure the continuity of child care. To monitor the child's development, there was development column in the action poster. The key words and illustration are development, tender loving care, health, mental stimulation, and illustration of fine and gross motor development. To monitor the physical growth there is the weight chart, body length chart, and head circumference chart. There are other columns for proper feeding, proper immunization, recording of illness, injuries and congenital abnormalities, as well as contraceptives practices. The mother or someone else in the family should fill and com poster by transferring all records from infant health card or booklet done and completed by the health worker after each visit.

There are multifactorial factors influencing growth and development. Graham,[7] report that gender, and socioeconomic status contributed for slight mentality retardation. Hariyono,[8] in his study he found no correlation between child development and parent's education and employment. Sularyo,[9] in her study found that's child development related with feeding pattern, mother's education, and nutritional status. Satoto's study found that there was no correlation between child growth and development and child order number.[10] This study aimed to evaluate the benefits of infant calendar action poster on the compliance of child development monitoring, and the assessment of developmental delays, feeding pattern, nutritional and immunization status, contraceptive practice by the families, causes of morbidity, social and economic backgrounds of the families.

Methods

The study was conducted at Posyandu in Cipinang Cempedak areas, Jatinegara, Jakarta Timur from March 1,1997 to March 31,1998. To be included in this study, subjects had to fulfill the following criteria : (1) child age 0-12 months residing in Cipinang Cempedak areas, (2) not suffering from congenital malformation.

At the beginning, we provided general information about growth and development, how to monitor child's growth and development, and how to give early stimulation, and how to fill and complete the action poster. We collected data base from the subject. The study subjects were monitored monthly. At the end of this study, in one year period we evaluated the results. Data were analyzed by Epi-Info v.6.0 programs. Analyses were conducted : (1) a descriptive study about subject characteristics, (2) results of the provision of action poster.

Results

Subjects' characteristics

During the period of March, 1, 1997 to March, 31, 1998, 162 infants was included as subjects of the study. They were divided into two groups. The first group was 80 infants as non- intervention or control group, consisting of 48.8% male and 51.2% female infants. An other group of infant was intervention group, 43.9% male and 56.1% female infants. Sex and age distribution at enrollment for study is seen in Table 1.

Table 1. Distribution of subjects by sex and age for enrollment

Characteristics	Intervention group		Control group	
	n	%	n	%
Sex				
Male	36	43.9	39	48.8
Female	46	56.1	41	51.2
Age (month)				
0-3	30	36.6	41	51.2
4-6	28	34.1	18	22.5
7-13	24	29.3	21	26.3

Most of the infants were born normally (95.0%), with normal birth weight (79.6%), and 82.1% was assisted by nurses. Most of the fathers worked as employee of private enterprises (75.3%), 17.9% of mothers had jobs. They had 9 years schooling (61.8%). Most of them had monthly income of 134,832.35 - 1,664,733.25 rupiahs per month. Mothers was the majority in rearing and caring the infants. The mostly place to hang the action posters was in the living room (91.8%), the other places were parent's room (5.6%), and child's room (2.6%).

Results of the intervention

Good routine visits, meaning that the subjects complied with the recommended periodical visits, in the intervention group was 43.9% while in the control group was 10.0%. Completed immunization schedule according to recommendation was also significantly better in the intervention group. However, there was no significant difference in feeding patterns between the two groups (Table 2)

Table 2. Correlation between subjects in intervention and no intervention group with routine visit, immunization, and feeding pattern

Characteristics	Intervention		Non intervention			
	n	%	n	%	*p*	RR
Visits						(95% CI)
Less	28	34.1	44	55.0		
Enough	18	22.0	28	35.0	<0.0004	
Good	36	43.9	8	10.0		
Immunization						1.68
Completed	55	67.1	32	40.0	0.0005	1.23;2.28
Not completed	27	32.9	48	60.0		
Feeding patterns						
proper	57	69.5	49	61.2	0.27	1.13
improper	25	30.5	31	38.8		0.91;1.42

The nutritional status of the subjects was good in (66.0%), undernutrition type II (3.7%), undernutrition type I (4.1%) over weight (3.7%), and mild obese (2.5%0. Statistical analyses showed that there were no significant difference between the nutritional status of infants in the intervention and in control group (Kruskal-Wallis H=0.868; p=0.352) (Table 3).

Table 3. Association between intervention and nutritional status

Group	Nutrition status			
	Undernutrition type II&I	Good	Over weight & mild Obese	Total
Intervention	25 (30.5%)	53 (64.6%)	4 (4.9%)	82
Control	20 (25.0%)	54 (67.5%)	6 (7.5%)	80
Total	45	107	10	162

Delayed development was detected in 11 children (6.8%), in the areas of language, gross motor, fine motor, and delayed development. Statistical evaluation showed no significant difference
tervention and control groups (Table 4). There was also no correlation between parent's education, and order of the child with delayed developmental cases in the intervention and the control groups (Table 5)

Table 4. Association between subject in two groups with delayed development

	Developmental status		
Group	Delayed	Normal	Total
Intervention	6	76	82
Control	5	75	80
Total	11	151	162

Most of the families in this subject practiced contraceptives (75.9%) Statistical evaluation showed no significant difference between the two groups (p=0.78; RR = 0.78; 95% CI: 0.86;1.22) (Table 6).

Discussion

This subjects of this study were adequately representative as it concern infants from 8 Posyandu in the Village administration unit of Cipinang Cempedak. Their families were of the low, average, and high socio-economic level. The majority of the families (78.0%) had a moderate income. Three quarters of the fathers worked in the private

sector, whereas only 17.9% of mothers had a job outdoors. The education level of both father and mother plays an important role in the growing up period of children.

Table 5. Association between subject in two group with multifactorial contributed for delayed development

Characteristics	Language & delayed development	Gross and fine motor delayed	*p*
Mother's education			
Low	1	3	0.72
Middle	2	5	
Father's education			
Low	1	2	1.0
Midle-high education	2	6	
Order of child			
1-3	2	6	1.0
4-7	1	2	

Table 6. Correlation between two group subject with participate in family planning

Group	Contraseptives partisipating	No contraceptives partisipating	Total
Intervention	63 (76.8%)	19 (23.2%)	82
Control	60 (75.0%)	20 (25.0%)	80
Total	123	39	162

Hopefully through parents' good upbringing the child will grow up properly. Besides good food, proper health and illness care, one of the most important components concerning taking care, which is well connected with the development of the psychomotor, is providing the child with mental stimulation. Giving early mental stimulation to the child means that it starts learning and training itself.[11] Lots of researchers conclude that mother's education, too, determines the success of child care.[12] Low mother's education and taking care of the child with poor mental stimulation is still

rampant. Above-mentioned condition often causes deviation of the child's growing up, especially of the under 5 years old and brings about disadvantageous consequences. In this study notes are made regarding those taking care of the children, mostly was the mother.

There were 162 subjects involved in the study, of whom 20 infants in the control group and 18 in the intervention group were dismissed from the study, because they have changed address or were absent on the second visit. Female infants were slightly more than male infants, and most of the subject were recruited at the age of 0-3 months (see Table 1). The prevalence of disease morbidity found in this study concerned respiratory infection (49.4%), diarrhea (8.0%), and skin diseases. Concerning mode of birth, 95.0% of the study subjects were born spontaneously, and those full-term born represent 79.6%, most of them born with the nurses (see Table 2). According to SKRT (Survei Kesehatan Rumah Tangga) in 1995,[1] 95.4% babies were full-term and attended by the nurse. This indicates that on the average socio-economic class, nurses are the first choice for helping delivery.

The prevalence of delayed development in this study was 3.4%. This result was less than Tridjaya's study[13] in 1991, who found delayed development in 10.8% of children with Kuesioner Pra Skrining Perkembangan. In other study, Sularyo and Sri Rochani in 1986 found delayed development in 36.27% of children at Village administration unit of Marunda with DDST method. Most of them had language and fine motor adaptive delay.[9]

The intervention of using action poster for compliance growth and development monitoring in this study showed good result (see Table 4). The results agree with the direction for action poster as a material for the family to monitor growth and development.[6]

Immunization in intervention group was more better than the other group. In the intervention
group (see table 4). Whereas Sudiyanto[6] got the same result for completed immunization in 78.2% subject. SKRT 1992,14 reported that 26.1% children did not have immunization, and 43.7% had completed immunization. In this study immunization based on PPI-DepKes such as BCG, DPT, OPV, Measles, and Hepatitis B.[15]

Analysis of feeding pattern given for infants and children usually includes the age at which breast milk, milk formula, and solid food are introduced.[16] Our data showed that in most of the subjects the feeding pattern agreed with the age. There was no correlation between feeding pattern and action poster intervention. According to weight for height index, the anthropometric value for nutritional status at the Division of Nutrition, Department of Child Health, Medical School, University of Indonesia[17] good nutritional status was found in 66.0%, and the difference between two group was not significant (see Table 5). SKRT 1995[1] reported good nutritional status in 63.9% of the children.

Delayed development detection was based on graphic developmental in action poster, and confirm with DENVER II test. Eleven children (6.8%) were found to have delayed development. Two children had an organic causes as a cerebral atrophy and subdural collection. The results were smaller than those of other studies (Tridjaya[13] and Sularyo[9]). There was no significant difference between the proportion of delayed development in the two groups. Parent's education contributes for early detection of delayed development; this was the case in this study. Multifactorial influences for growth and development, including parent's education and the number of children in the family. In this study there was no correlation between parent's education, number of children and detection of delayed development (see Table 7). These were consistent with Hariyono's study, but different with Sularyo's.

Family planning is, among others, directed for increasing family prosperity with decreasing birth of child. The National Health Survey (Susenas)[18] in 1992 reported that 60.86% family contributed with family planning. In this study 75.9% family contributed in family planning (see Table 8).

In conclusion, our study shows that action poster increases compliance for growth and development monitoring, increases immunization schedule compliance. Parent's education and number of child show no correlation for delayed and development detected in this study. Action poster could be instrument for mother or family to growth and development monitored.

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