Profile of Mother's Knowledge and Behavior Toward Stimulation and Their Babies' Development in an Urban Poor Area in Jakarta

Titi S Sularyo, Ulynar Marpaung, Arwin AP Akib

(Department of Child Health, Medical School, University of Indonesia, Cipto Mangunkusumo Hospital, Jakarta)

ABSTRACT This was a field study carried out in all Posyandus located in Pulo Gadung, a poor urban of East Jakarta from April until October 1998. Three hundred and fourteen mothers and their babies were recruited. Most of the mothers (67.2%) aged from 20-29 years old, with low education level (42.4%) and a low income (19.4%). Almost all respondents were housewives and the average number of children was two (34.7%). The most important source of information for the respondents was the electronic media. Almost half of mothers behaved well toward stimulation of their babies development (49.4%); however, 64.3% had low knowledge especially about the time baby could sit upright with a good head control. Those who behaved fairly and poorly comprised 35.7% and 15%, respectively. It seems that fine motor sector was neglected. There was no significant association between mother's knowledge and behavior towards stimulation and the development of their respective babies (p< 0.5722). It revealed also that the income per capita had significant association with development of the babies (p=0.033). [**Paediatr Indones 1999; 39:278-286**]

Introduction

The National Development Program, especially in the Second Long-term Development Program is essentially the development of human resources. The endeavor should starts as early as the prenatal and the underfive period. It is unquestionable that the quality of human resources is very much determined by growth and development of the child since early life, event prenatal. A previous study in Marunda, North Jakarta, revealed that there was a lack of early mental stimulation among underfive children.[1]

Author's address: Titi Sularyo, MD, Department of Child Health, Medical School, University of Indonesia, Jalan Salemba 6, Jakarta 10430. Tel 62-21-3907742, Fax 3907743.

Study on early detection of growth and developmental deviation of underfive children in West Java 1991-1992 reported that 3.2% of 8351 underfives had developmental problems.[2] Those problems were found trough a pre-screening examination. The main problem in this study was that the mothers did not have enough source of information regarding child development. The purpose of this study was to determine mother's knowledge and behavior about stimulation and the baby's development.

Methods

This was an analytic, observational field study, conducted at all posyandus located in the subdistrict of Pulo Gadung, a poor urban area. The study was done from April 1998 until October 1998. The subjects of the study consisted of mothers and their babies of 0-12 months old. All babies had the "Kartu Menuju Sehat", and lived in the location of the study. The inclusion criteria were: (1) infants aged 0-12 months, based on the birth certificate or "Kartu Menuju Sehat"; (2) the infants were clinically healthy; (3) the mother and father were both biological parents. We excluded (1) infants whose one or both parents had died or were divorced; (2) mothers with a high level of education (associate degree or above), (3) infants with abnormality that could cause developmental problems such as physical problem or severe illnesses, genetic or congenital anomaly, low birth weight, had prenatal or perinatal problem such as asphyxia, hyperbilirubinemia, sepsis, etc.

Each mother was given a questionnaire regarding her knowledge and behavior about stimulation in infant development. The mother's knowledge on infant stimulation was classified as good, fair, and poor according to methods described by Wawolumaya[3] and Kerlinger,[4] while the mother's behavior toward infant stimulation was classified as good, fair, and low using Manual for Early Stimulation of Child Development published by WHO and Ministry of Health, Republic of Indonesia.[5] Maternal education was considered low if the mother was preliminary school graduate or less, and moderate if she was junior or senior high school graduate. Each baby who came to the "posyandu" was screened for their development using Denver II method. Data were analyzed using SPSS program; 95% confidence intervals were supplied. The level of significance was p <0.05.

Results

Characteristics of the study subjects

There were 314 pairs of mother and their babies. The age range of the mothers was 17-40 years old, with a mean of 26 years. Thirty six respondents (11.5%) had no

formal education or illiterate, 97 respondents (30.9%) had junior high school education (finished or unfinished). Sixty-one respondents (19.4%), based on their income per capita, were categorized as under poverty line. The average number of child in a family was 2 (SD 1.3). The infant's age range was between 1-12 months with the mean of 6.5 (SD 3) months. From 314 babies, 161 (51.3%) were boys, while 153 (48.7%) were girls. See Table 1.

Table 1. Characteristics of study subjects

Mother (N=314)	n	%
Education		
▪ Low	133	42.4%
▪ Moderate	181	57.6%
Knowledge		
▪ Poor	202	64.3%
▪ Fair	108	34.4%
▪ Good	4	1.3%
Behavior		
▪ Poor	47	15.0%
▪ Fair	112	35.7%
▪ Good	155	49.3%
Socioeconomic level		
▪ Below poverty line	61	19.4%
▪ Above poverty line	253	80.6%
Infants (N=314)		
Sex		
▪ Male	161	51.3%
▪ Female	153	48.7%
Developmental status		
▪ Normal	271	86.3%
▪ Delayed	43	13.7%

Range of infants' development

Table 1 depicts that 13.7% of infants showed delayed development, while the rest (86.3%) showed normal development. If we trace infant's developmental status according to development sector, it shows that fine motor development was the most frequently observed development delay. See Table 2.

Table 2. Distribution of babies development by infant's developmental status

Variable	Normal	%	Delayed	%
Gross motor	273	86.9	41	13.1
Language	289	92.0	25	8.0
Fine motor	238	75.8	76	24.2
Personal social	296	94.3	18	5.7

Association among maternal characteristics and infant's developmental status: univariate analyses

The association between maternal characteristics and the infant's developmental status is summarized in Table 3. These bivariate analyses show that age of mothers, number of children, maternal education and knowledge level, maternal behavior level, or working status of the mothers did not show significant association with infant's developmental status. The only significant association was between per capita income with infant's developmental status, i.e., more infants from lower per capita income had delayed development.

Association among maternal characteristics and infant's developmental status: multivariate analysis

After bivariate analyses were performed to see the associations between each of independent variable with dependent variable (development), multivariate analysis was performed by using logistic regression model to find out the relationship between independent variables with babies development after excluding confounding factors. The independent variables were maternal characteristics, including: 1) age; 2). level of education; 3). job; 4). income per capita 5). number of children 6). activities 7). source of information; 8). level of knowledge; and 9). level of behavior.

Logistic regression analysis was done by using SPSS release 6.0 with stepwise backward method and Wald statistic. The results of the regression logistic model are presented in Table 4. The model confirms the bivariate analysis that the only significant determinant was income per capita.

Table 3. Bivariate analysis among maternal variables and infant's developmental status

Mother's characteristics	Normal n	Normal %	Delayed n	Delayed %	Total	p	OR
Age group (yr)							
▪ <20	12	4.4%	1	2.3%	13	0.699	0.48
▪ 20-29	180	66.4%	31	72.1%	211		1,00
▪ >30	79	29.2%	11	25.6%	90		0.81
No. of children							
▪ 1	114	42.1%	17	34.5%	131	0.572	
▪ 2-3	133	49.1%	20	46.5%	153		
▪ >3	24	8.9%	6	14.0%	30		
Knowledge							
▪ Poor	99	36.6%	13	30.2%	112	0.529	1.33
▪ Fair + Good	172	53.5%	30	69.2%	202		1.00
Behavior							
▪ Poor	42	15.5%	5	11.6%	47	0.106	0.97
▪ Fair	91	33.6%	21	48.8%	112		1.87
▪ Good	138	50.9%	17	39.5%	155		1.00
Socioeconomic level							
▪ Below poverty line	47	17.3%	14	32.6%	61	0.033	2.30
▪ Above poverty line	224	82.7%	29	67.4%	253		
Working status							
▪ Working	14	5.2%	3	7.0%	17	0.71	1.38
▪ Not working	257	94.8%	40	93.0%	297		1
Source of information							
▪ Health providers							
▪ Electronic mkedia	42	15.5%	6	14.0%	48	0.429	0.58
▪ Printed media	97	35.8%	10	23.3%	107		
▪ Health center	12	4.4%	2	4.7%	14		
▪ Posyandu	35	12.4%	9	20.9%	44		
▪ Relatives / friends	37	13.7%	7	10.3%	44		
	48	17.7%	9	20.9%	57		

Table 4. Logistic regression analysis of maternal characteristics and infant's developmental status

Variable	B	SE	Wald	df	p	Exp (B)
Knowledge	0.1689	.3780	0.1996	1	0.6550	1.1840
Behavior	0.0911	0.2384	0.1459	1	0.7025	1.0953
Education	0.3758	.4196	0.8023	1	0.3704	1.4562
Income per capita	0.82	0.38	4.6671	1	0.0307	2.2640
Source of information	-.0333	.1826	0.0333	1	0.8552	0.9672
Activities	-.1878	.1896	1.0099	1	0.3149	0.8288
Sum of child	.1601	.2515	0.4053	1	0.5244	1.1736
Job	0.53	0.68	0.6056	1	0.4365	1.6966
Mother age	-0.37	0.34	1.2058	1	0.2722	0.6910
Constant	-2.4	0.76	9.9637	1	0.0016	

Discussion

This observational study involved mothers with their infants with the focus to determine the influence of maternal knowledge and behavior on infant's development. We realized in advance that the questionnaire technique used in the study had a significant recall bias. To minimize it, we developed scoring method and used clear operational definitions. The validity of the questionnaire used in this study had been tested in previous studies.[3,4]

Most of the respondents were between 20-29 years old. It means that they were in the reproductive age. More than 90% of respondents had 1-3 children; only a few of the respondents (9.6%) had more than three children. According to population survey in 1990 women 16-45 years old comprised 23.6% and from SKRT 1995, woman in reproductive age in the cities were more than in the village.[5]

According to Central Statistical Bureau in 1995,[6] the percentage of illiteracy among women between 25-29 years old was 3.79% in 1990 and 1.66% in 1995. In women between 30-34 years old, the figures were 5.12% in 1990 and 3.74% in 1995. These figures were less than those reported by Sularyo in Marunda, North Jakarta, in 1990, i.e. more than 20% out of 102 mothers were illiterate.[7] This difference might be explained by age factor, time, and place of the studies.

A progress of a nation is determined by the degree of the community education level. An educated house wife will always try to up grade their quality of education and

loving care of their children. Education of woman can influence the development of a nation, specially in health sector, by decreasing of baby and underfive children mortality. According a report from the World Bank in 1980 on the effect of education towards health, parent's education can influence children's mortality and nutritional status.[8]

Our data show that most of the respondents (94,6%) did not work outside the home. According to women situation analysis in Jakarta in 1995,[9] around 39% from total woman population were house wife. If we look upon the level of education, as high as 40.2% of them had low education level, meaning that it is very unlikely for them to get a proper job. This study also shows that 19.4% of respondents was under poverty line. Economy crisis that beat Indonesia has made the number of population that under poverty line increased four fold (from 22 million to 80 million in 1998).[10]

If we look at the growth and development interrelation model form UNICEF 1992, the basic potential human resource is economic structure which can also influence political and ideology structure, which in turn also determine the existence and control of family, human resources, economy and organization resources. This can influence family education, which indirectly will influence the practice of child rearing and children growth and development.

Our data show that both in bivariate and multivariate analyses, per capita income was the only factor that showed significant association with infant's developmental status. This underlines the importance of socio-economic status on the child's growth and development. If the crisis continues for 15-20 years, then Indonesia will have a 'stupid generation' due to undernutrition and malnutrition, including deficiency of micronutrients needed for human intelligence development..

The other results of this study shows that the mothers had a very low activities. This is understood because of low education level. The most important information resource for the respondents was electronic media (34,5%), followed by relatives and friends, health officials, posyandu, and primary health centers. Only 14% respondents stated that information resource that came from the posyandu was most impressive. This was the consequence of the fact that practically no information or education about stimulation was given to the mothers.

Our data show that 64.3% of mothers had low knowledge about babies stimulation development. There was a significant association between mother's education level with mother's knowledge about stimulation development; i.e., the higher the level of mother's education, the better the knowledge on stimulation in the infant's development. See Table 5.

Delay of fine motor adaptive development was found in 24.2%, or ranked the first in four aspects of development. If we see about mother behavior with seduce fine motor adaptive move ability generally only 50% or less than mothers who give stimulation to seduce fine motor movement. The same thing we got from Sularyo et al study about child ecology in Marunda North Jakarta. This happened because of fine motor

development quite dependent with stimulation from environment. Example was toys for educative and creative purposes.

Table 5. Association between mother's level of knowledge and level of education about stimulation in infant's development

	Level of knowledge				
	Low	Fair	High	Total	p
Level of education					
■ Low	93	40	0	133	< 0.0001
■ Fair	109	68	4	181	

Delayed of speak and language development was found in 8% of the infants. Results of the questionnaire shows that more than 99% mother always talked to her babies. We found in this study delayed of gross motor about 13.1% or occupied 2nd ranking delayed from four aspect of development. We had assumptions this could happened because of the babies environment were narrow area, so there were no place for exploration

In Purnamawati study by using quantitative indicator it was found that about 70% of mothers with low level of stimulation. Statistical test found a significant correlation between the knowledge of the respondent and their behavior toward stimulation of babies within babies age 0-12 month.[11]

There was no significant correlation between knowledge and behavior and babies development. The only answering options "yes" or "no" in the questioner may explained the result. Besides that home visit was done only once by the investigator, and the behavior pattern was only observed once and in the limited time.

From this study we see that babies development was not merely influenced by mother levels of knowledge and behavior, but income per capita also influence babies development. By having money mothers can afford buying toys and good nutrition support for their babies development.[12] Especially in urban poor area they need not only a knowledge and behavior about stimulation but they need money to fulfill their need for life. Based on that consideration we recommend the government to give emergency aid by enhancing their welfare besides the continuous commitment in supporting BKB program.

References

1. Sularyo TS, Sudjarwo SR. Ekologi anak balita di Kelurahan Marunda Jakarta Utara. Jakarta : Bagian Ilmu Kesehatan Anak FKUI, 1990.

2. Kanwil Departemen Kesehatan Prop. Jawa Barat Dukungan lembaga swadaya masyarakat dalam kegiatan deteksi dini tumbuh kembang balita di Jawa Barat. Pertemuan Nasional Review Kegiatan Deteksi Dini Tumbuh Kembang Balita. Februari 1993.

3. Wawolumaya C. Metodologi riset kedokteran: Survei epidemiologi sederhana. Jakarta: Bagian Ilmu Kedokteran Komunitas FKUI, 1997; 27-9.

4. Kerlinger FN. Asas-asas penelitian behavioral; third ed. Yogyakarta: Gajah Mada University press, 1990; 829-999. [Terjemahan].

5. Badan penelitian dan pengembangan kesehatan Departemen Kesehatan dan Biro Pusat Statistik. Survey kesehatan rumah tangga (SKRT) 1995. Laporan akhir 1995. Jakarta, 1997.

6. Kantor Statistik Biro Pusat Statistik DKI Jakarta. Pendidikan. In : Analisa situasi wanita daerah khusus ibukota Jakarta. Jakarta, 1995; 33.

7. Sularyo TS. Mother s profile and the infant and underfive mortality in Marunda North Jakarta. Med J Indones 1996; 5:210 7.

8. Coch Rane SH, O Harn DJ. World Bank Staff Working Paper. The effect of education on health. The World Bank, 1980.

9. Kantor Statistik Biro Pusat Statistik propinsi DKI Jakarta. Ketenagakerjaan. In: Analisa situasi wanita daerah khusus ibukota Jakarta. Jakarta, 1995; 42.

10. Implementasi ICPD di Indonesia terhambat krisis ekonomi. Kompas 1999. 10 Februari, 1999 halaman 10.

11. Purnamawati SP. Corak asuh dan kaitannya dengan tumbuh kembang anak sampai usia 2 tahun di RSCM. Tesis, Jakarta: Bagian Ilmu Kesehatan Anak FKUI, 1990.

12. Direktorat Bina Kesehatan Keluarga. Pedoman deteksi dini tumbuh kembang balita. Departemen Kesehatan RI. Jakarta: Departemen Kesehatan RI, 1997; 7.