ORIGINAL ARTICLE

Psychosocial Aspects of Mothers of Malnourished and Well-Nourished Children

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ABSTRACT In order to determine whether differences in sociopsychological environment and related factors exist between malnourished and well-nourished children, a study on 126 underfive children was carried out in Bogor, West Java, Indonesia. The children were grouped into severely malnourished, mild-moderately malnourished, and well-nourished children. Each group consisted of 42 children, and they were selected from the same surrounding which have fairly same housing condition, age, and sex. Differences were found between the three groups on parent's education, the birth order of the child, the expenditure per capita, and breast feeding history. However, there was no significant difference on knowledge about health and nutrition, mother and child relationship. It was observed that children who were never breastfed had a tendency to be severely or moderately malnourished. The mothers who were doing only household chores were worried about the future of their children; on the other hand, the mothers who have more contact with community (monthly welfare movement meetings, and other activities outside homes) have a tendency to have well-nourished children. The proposed hypothesis that mother and child interaction affects the level of the nutritional status of the children requires more testing in a more comprehensive study. **[Paediatr Indones 1996; 36:248-257]**

Introduction

Most investigators recognize that causality in severe protein-calorie malnutrition (PCM) as being complex and multifactorial.[1] The major cause of PCM is generally placed in factors of the physical, biological, and psychosocial environment. Studies on physical

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and biological aspects have been conducted in many areas, however studies in the area of psychosocial is still scarce, particularly in Indonesia.

The purpose of the present study was to explore whether differences in specific component of maternal behavior, maternal and child relationship, and other related factors could be detected between severely malnourished, mild-moderate malnourished, and well-nourished young children. Factors studied included adequacy of food intake, income, multiparity and space of pregnancies, weaning age, houses, education, and family types.

Subjects and Methods

The study was conducted in Bogor area (rural and urban), West Java-Indonesia, using in-depth interview method, observation during home visits, and anthropometric measurements.

The study's sample consisted of 42 severely malnourished children, most of them were outpatients of the Nutrition Clinic at the Nutrition Research and Development Center (below 60% of median weight for age of Harvard standard), 42 mild-moderately malnourished children (60-80% of weight for age of Harvard standard), and 42 well-nourished children (above 80% of weight for age of Harvard standard). Firstly, severely malnourished children according to anthropometric measurements (weight for age) were looked for from the clinic data at the Nutrition Research and Development Center and several Posyandu in Bogor. After discovering the severely malnourished children, then the mild-moderately malnourished and well-nourished children were selected from the same surroundings which have fairly same housing condition, age and sex.. Therefore there are three subjects index groups, namely, the families with severe malnourished children, families with mild-moderately malnourished children, and families with well-nourished children.

The following data were obtained from each child and his or her respected family: (a) anthropometric measurements (weight, height, arm circumference, and chest circumference), (b) socioeconomic status (education, occupation, expenses, housing), (c) pattern of children care taking, (d) mother's condition (health status, psychological condition, mother and child interaction, knowledge on nutrition and health, habits of preparing foods, and external information), (e) father's condition (background, his perception on mother-father interaction), (f) leadership in the family, (g) relationship with communities, (h) using available health facilities, and (i) food intake.

The food intake of each family and each child was recorded using the method of 24 hour recall. The anthropometric measurements were made according to the techniques recommended by Jelliffe.[2] The collection of information on the pattern of child care taking, and mother and child relationship were conducted by using the methods of in-depth interview and observation during home visits. Data were then grouped into

ranking with scoring system.

The investigating team comprised of nutritionist assistants, midwives, and public health nurses and supervised by nutritionist, psychologist and pediatrician. During the orientation phase the team was briefed on objectives and methodology of the study, characteristics of the sample population, and factors in developing productive relationship with the respondents. The team gained practical experience during the training period.

In comparing data of the three groups of samples, chi-square, analysis of variance and Kruskal-Wallis non parametric analysis were performed.

Results

Out of 126 children studied, 42 were severely malnourished, 42 were mild-moderately malnourished, and 42 were well-nourished. The children consisted of 40.5% females and 58.5% males. Table 1 shows that 11.9% of subjects belonged to 10-11 months, 71.4% belonged to 12-36 months, and 16.7% were over 36 months of age.

Table 1. Distribution of children according to age, nutritional status and sex

Age (months)	Nutritional Status							
	I		II		III		Total	
	M	F	M	F	M	F	n	%
< 12	1	4	1	4	1	4	15	11.9
13-18	2	6	2	6	2	6	24	19.0
19-24	6	6	6	6	6	6	36	28.6
25-36	5	5	5	5	5	5	30	23.8
> 36	3	4	3	4	3	4	21	16.7
Total	17	25	17	25	17	25	126	100.0

*I = severe PCM II - mild moderate PCM III - well-nourished; M**= male; F= female

As shown in Table 2, the averages weight for age for severely malnourished, mild-moderately malnourished, and well-nourished children were 51.2%, 75.1%, and 86.8% of the median of the Harvard standard, respectively. There was a significant difference ($p < 0.05$) of weight for age between this three groups. Also significant differences were observed for height for age, weight for height, mid-upper arm circumference (MUAC), head circumference, chest circumference, and skinfold thickness.

Table 2. Mean of anthropometric index of children according to nutritional status

Measurement	Nutritional status*					
	I		II		III	
	X	SD	X	SD	X	SD
Weight/A (% standard)	51.2	9.93	75.1	5.32	96.8	4.87
Height/A (% standard)	86.1	5.79	92.1	3.26	94.9	4.32
Weight/A (% standard)	74.5	7.00	86.1	6.80	94.6	5.60
AC/A (% standard)	67.5	7.5	82.1	5.9	90.6	5.8
Head circumference (cm)	43.4	7.3	45.1	1.8	46.4	1.9
Chest circumference (cm)	42.2	3.0	45.2	2.7	48.3	3.2
Skin fold (mm)	4.6	1.3	7.2	1.7	8.1	2.2

* I = severe PCM; II = mild-moderate PCM; III= well-nourished

Table 3 indicates that there was none of the respondent (mothers) background such as age, age when she got married, age when delivered the child (subject index), number of marriage was significantly different between the 3 groups, except for the level of education where mothers of well-nourished children on the average had significantly higher educational level than those of severely malnourished children.

The mean age of the fathers was 33.5 years, 32.8 years, and 32.7 years, the mean father's age on their marriage was 21.9 years, 22.5 years, and 22.6 years, the mean numbers of father's marriage was 1.4 times, 1.3 times, and 1.3 times, respectively for those groups severely malnourished children, mild-moderately malnourished children, and well-nourished children. There was no significant difference between the three groups of the above father's background, except for the level of education, where the fathers of well-nourished children had on the average 4.8 years of schooling which was significantly ($P < 0.05$) higher than the fathers of mild-moderately malnourished children (3.6 years) and the fathers of severely malnourished children (3.6 years).

Table 4 shows the children on the basis of birth order. The mean of the birth order for children who were severely malnourished was 4.3, mild-moderately malnourished children was 3.2, and well-nourished children was 3.4. Although there is no significant difference between the birth order and nutritional status, however the severe one shows the highest birth order.

The mean expenditure for the family and per person in the family per month were Rp. 87.494,- and Rp. 16.652,- for the group of severely malnourished children, Rp. 86.084,- and Rp. 17.606,- for the group of mild-moderately malnourished children Rp.

106.646,- and Rp. 20.095,- for the group of well-nourished children. There was a significant difference (P <0.05) between the nutritional status and the family's food expenditure.

Table 3. Respondent background related to the nutritional status of the children

Background	Nutritional status*					
	I		II		III	
	Mean	SD	Mean	SD	Mean	SD
Age (year)	29.9	7.9	26.8	7.9	28.0	5.5
Age of first-marriage (year)	16.9	2.4	16.7	2.9	22.6	3.7
Age of child born (year)	28.0	7.9	24.7	7.9	26.0	5.5
Number of marriages	1.3	0.6	1.1	0.5	1.1	0.3
Average educational level (year)	2.2	0.9	5.2	1.5	5.6	1.7

I = severe PCM; II = mild-moderate PCM; III = well-nourished

Table 4. Birth order of the children

Birth order	Nutritional status			Total	
	I*	II	III	N	%
1	9	9	8	26	20.6
2	7	9	9	25	19.8
3	2	10	6	18	14.3
4	4	5	4	13	10.3
5	14	7	10	31	25.5

I* = severe PCM; II = mild-moderate PCM; III= well-nourished

The average score for the health status of the mothers of severely malnourished children was 276.8, for mothers of mild-moderately malnourished children was 314.2, and for mothers of well-nourished children was 414.1. There was a significant different between the three groups (P < 0.05). The tendency of mothers of low score will likely to have children with poor nutritional status.

The mothers who always worry about the future of the children, not satisfied with

present condition have a tendency of having malnourished children. Mothers Of severe malnourished children had a mean score of 295.2, with mild-moderate malnourished children 304.7, and with well-nourished children 395.8, and the differences between the three groups was significant ($p < 0.05$).

From the observation on psychological status of mothers, it was found that the mothers of severely malnourished children had the score of 395.8, the mothers of mild-moderately malnourished had the score of 407.6, and the mothers of well-nourished children had the score of 433.1. There was a significant difference ($p<0.05$) between the three groups. There was no significant differences between the three groups for nutrition and health knowledge, ways of food preparation for family, and mother and child relationship. The scores of the mother and child relationship was 442.7 for mothers of severely malnourished children, 459.2 for mothers of mild moderately malnourished children, and 446.9 for mothers of well-nourished children.

The mothers of well-nourished children have a highest score of the relationship with community. Activities include mother's relationship with their neighbor, participation in the PKK (women welfare movement) organization, religious meeting, and monthly weighing activities. The score for mothers of severely malnourished children was 272.2, mild-moderately malnourished children was 337.9, and well-nourished children was 370.9, the differences between the three groups was significant ($p<0.05$).

For the relationship with health facilities, the data was based on variables collected regarding the place for consultation of child, mother and father are sick, reason for choosing the place, the monthly weighing program, and where the child get vaccination. Each of those variables were scored. Families with severe, mild-moderate, and well-nourished children have score of 280.9, 283.2 and 289.0, respectively. There was no correlation between the three groups of the families.

The data collected for father's condition was based from the perception of the mother regarding husband and wife relationship, and father and child relationship. Father with severe, mild-moderate, and well-nourished children have the score of 359.7, 377.2, and 362.3, respectively. Using the Kruskall-Wallis test, there was no significant difference.

For leadership in the family, data collected regarding the head of the family was based from the interview. The variables taken were, who makes division in the family when they have financial problem, who decides to bring the child or other members of the family when they get sick to the health facilities, who manages the household budget, and who determines the foods and menu for the family. Each of these were then scored. The scores for the families with severe, mild-moderate, and well-nourished children was 380.9, 375,0, and 380.7, respectively. There was no significant differences between the three groups.

From the total of 126 children studied, 57 of them still breastfed. Thirteen (18.8%) children never had breastfed, and 12 of them were suffered from severe malnutrition.

Eight (11.6%) stopped breast milk at the age of below 3 month, while 2 (2.9%), 1 (1.4%), 42 (61.0%) children were weaned from breast milk at the age of 6-8 months, 9-11 months, and above 42 months, respectively. The children who never had breast-fed, or had early weaning end to be severely malnourished.

Table 5. Characteristics of the psychosocial aspects

Characteristics	Scores			Differences
	I*	II	III	
Health status of mothers	276.8	314.2	414.1	P<0.05
Mothers worry about the future of the children	295.2	304.7	395.8	P<0.05
Psychological status of mothers	395.8	407.6	433.1	P<0.05
Knowledge on nutrition and health	660.4	681.4	709.0	NS
Ways of food preparation	207.1	183.1	191.4	NS
Mother and child relationship	442.7	459.2	446.9	NS
Relationship with community	272.2	337.9	370.9	P<0.05
Using health facilities	280.9	283.2	289.0	NS
Father's condition	359.7	377.2	302.3	NS
Leadership in the family	380.9	375.0	380.7	NS

I* = severe PCM; II = mild-moderate PCM; III = well-nourished

The majority of the respondent's reason for stopping breast milk was due to another pregnancy (33.4%). Thirteen (18.9%) because of there was no more breast milk, eight (11.6%) children did not like the breast milk anymore. Collection of data on the consumption of severely malnourished children was taken after 4 weeks of intervention on severe infection. Calorie consumption of most of the children was very low. For severely malnourished, mild-moderately malnourished, well-nourished children, mean calorie intake was 59.5%, 59.3% and 71.1% of the Indonesian RDA, respectively.

The protein intake (80% from plant sources) for severely malnourished, mild-moderate malnourished, and well-nourished children was 77.8%, 75.9% and 86.4% of the Indonesian RDA, respectively. The iron intake for severely malnourished, mild-moderately malnourished, and well-nourished children was 25.6%, 57.1%, and 30.6% of the Indonesian RDA. The vitamin A intake for severely malnourished, mild to moderately malnourished and well-nourished children was 66.9%, 45.6% and 71.2% of the Indonesian RDA, respectively.

Table 6. Age of stopping breast milk

Age (months)	Nutritional status			Total	
	I	II	III	N	%
0	12	-	1	13	18.8
3	6	2	-	8	11.6
3 - 5	2	1	-	3	4.3
6 - 8	1	1	-	2	2.9
9 - 11	-	1	-	1	1.4
12 - 17	2	3	5	10	14.5
18 - 23	5	5	7	17	24.7
≥24	4	5	6	15	21.8

Table 7. Reasons for stopping breast milk

Reasons	Nutritional status			Total	
	I	II	III	N	%
Another pregnancy	6	9	8	23	33.4
No more breastmilk	12	-	1	13	18.9
Child were already old enough	1	1	6	6	11.6
The child doesn't like	4	1	-	5	7.2
Worker	2	-	-	2	2.9
Less breastmilk	1	1	-	2	2.9
The sick child	-	1	-	1	1.4
Other's	6	5	4	15	21.7

I* = severe PCM; II = mild-moderate PCM; III = well-nourished

In general, calorie, iron, and vitamin A intake were very low or below 75% of the RDA, except for the protein intake was above 75% of the RDA. These deficits not only found in malnourished children but also in well-nourished children.

Discussion

In the present paper we have studied sociopsychological environment and factors related, in order to determine whether differences exist between malnourished and well-nourished children. In this study although there is no significant difference between the birth order and nutritional status, however the severe one shows the highest birth order. This finding is in agreement with reports from other developing countries. A study of 22 cases of typical marasmus in Peru gives evidence that 41% were sixth or later born, and all of these were the last born of the family. Of 55 cases of Kwashiorkor, 88% were third or later born.[3] In Colombia, 49% of 145 children with protein-calorie malnutrition were sixth or later born.[4] Children with severe malnourished often show to be late-born children of grandmultiparous women.

This present study also demonstrates that children who had never breastfed or had early weaning tend to be severely malnourished. A few reports also show early weaning in severe malnourished children. Based in his experience in Jordan, McLaren[5] reported that marasmus has a more complex basic etiology with a monotonously constant pattern of early weaning. In the Peruvian study of 22 cases of typical marasmus, an average duration of only 2.0 months of exclusive breast feeding was recorded; in Kwashiorkor it was 7.8 months.3 Malnutrition appears to develop slowly as breast feeding ends, and the diet there after fails to meet the need nutritional requirements of the infant.

Other reports demonstrate a close association between preschool malnutrition and closely spaced pregnancies of the mothers. In Jordan, 78% of mothers of malnourished children weaned their babies because of new pregnancies.[5] In this study a similar evidence was found where the majority of mother's reason for stopping breast feeding was due to another pregnancy.

Bell[6] has brought out that parent and child together constitute a social system wherein the response of each is a stimulus to the other. Early weaning of severely malnourished children might be a maternal response to ineffectual sucking and lethargy of the infant. Also declining breast milk output from decreased pituitary prolactin might be due to inadequate nipple stimulation.[7] In this study we found that factors such as status of mothers, mothers worry about the future of their children, and psychological status of mothers, were significantly lower in the mothers of severe malnourished children. Those factors support the assumption that psychosocial factors affect the nutritional status of the children.

Most mothers breast feed their children every time when the child cries.[8] The frequency of cries in infant correlated positively with the frequency of mother's contact with their infants.

A casual sequence in mother-child relationships apparently exists when the cry instigated maternal intervention.[7] Another evidence on mother-child interaction shows

that a mother's engagement in feeding her young child depended upon the level of infant activity. The mother would not rouse an infant for feeding if the child was asleep.[7]

However, this study fails to show the differences of mother and child relationship between the three groups of nutritional status. The information on mother only for a limited number of activities (working outside homes, activities during staying at home, feeding the child, and feeling during pregnant and delivery of this child) was unlikely adequate to assess the condition of relationship. In order to improve the analysis, variables such as number of children, average span in months between births, months to the next older sibling, health status of mothers, psychological status of mothers should be included in a composite score as an index for mother and child relationship.

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