ORIGINAL ARTICLE

Factors Influencing Malnutrition in Children at the Out Patient Clinic of the Pediatric Nutrition Sub Division, Dr. Pirngadi Hospital Medan in 1985 - 1989

by

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Abstract

A retrospective study on the incidence of malnutrition and the influencing factors had been carried out on 1081 children attending the outpatient clinic of the Pediatric Nutrition, Dr. Pirngadi Hospital Medan during 1985-1989.

Mild and moderate malnutrition were found in 69.96% of the children, severe malnutrition in 33.77% while wellnourished children were found in only 0.27% of cases. The highest incidence of malnutrition was in 12-24 months age group (43.76%) ($p<0.05$). About half (49.08%) of cases were breastfed, and in 85.66% of them breast feeding were given until 6 months old.

Most of the malnourished children were given very diluted milk (63.4%), while low protein supplementary feeding was given to 62.89% of children, and both types of food mentioned above were given to 52.52% of cases. The most prevalent accompanying diseases in malnourished children were gastroenteritis (58.25%), followed by respiratory tract infection (52.59%). The majority of father's occupation was seasonal workers (60.12%).

Factors associated with malnourished children in this study were early weaning, low protein supplementary feeding and accompanying diseases especially diarrhea.

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Introduction

Malnutrition remains a public health problem in some developing countries, including Indonesia. This condition is still a major cause of high mortality and morbidity in infants and children, besides infection [1,2].

Many factors are associated with malnutrition such as low socio-economic status, ignorance of nutritious food and infectious diseases [3,4]. In early childhood malnutrition may cause disturbances in growth and development, low learning potency and lack of creativity. These conditions will usually be a burden in their families or communities [1].

Under-five-year children, especially beyond 6 months old, is a high risk group for malnutrition as during this weaning period they usually don't get proper supplementary food [4,5].

Before PELITA III, the prevalence of malnutrition was 30% among children 0-6 years. According to the nutritional Integrating Data in the Susenas (National Socio Economic Survey), 1986 in 9 regions in Indonesia, the prevalences of mild moderate malnutrition and severe malnutrition were 12.8% and 1.6% respectively [1,4].

The purpose of this study is to know the incidence of malnutrition and factors associated with malnutrition in children attending the outpatient clinic of the Pediatric Nutrition Sub Division, Dr. Pirngadi Hospital Medan from 1985 to 1989.

Materials and methods

This study was done retrospectively on 1081 children attending the outpatient clinic of the Pediatric Nutrition, Dr. Pirngadi Hospital Medan from 1985 to 1989.

The data were collected and reviewed from the medical records of patients, comprising age, sex, body weight, feeding pattern, accompanying diseases and occupation of parents (father's job).

The nutritional status was based on the body weight for age parameter and classified according to Klasifikasi KKP Rekomendasi Lokakarya Anthropometri 1975 and PusLitBang Gizi 1978.

The history of feeding pattern was documented including duration of breastfeeding, dilution of formula feeding and the composition of supplementary feeding. Feeding pattern was classified into three groups according to Tarigan (1978).

- Group I : Diluted formula milk with the dilution of less than 3/6 or less than the normal dilution.
- Group II : Low quality supplementary feeding which consists of rice with vegetables, poor in protein.
- Group III : Combination of group I and II i.e. diluted formula feeding and low quality supplementary feeding.

The father's occupation was classified as follows :

employers; seasonal workers; farmers and merchants.

Results

During five-year-period (1985-1989), there were 1081 children attending the outpatient clinic, Pediatric Nutrition Sub Division of Dr. Pirngadi Hospital. Of these, 490 (45.33%) were boys and 591 (54.67%) girls.

Most of the cases were of the 12-24 months old group (43.76%), followed by 6-12 months age in 294 (27.22%) (Table I). The youngest was 1 month old and the oldest 13 years old.

According to their nutritional status there were mild and moderate malnutrition in 713 (65.96%) and severe malnutrition in 365 (33.77%). The highest incidence was in the 12-24 months old group and only 3 (0.27%) were well-nourished (Table II).

Table III showed that 511 (49.08%) got breastfeeding, while 415 (39.86%) got breastfeeding as well as formula feeding and 115 (14.33%) got only formula feeding.

The duration of breastfeeding in this present study was mostly six months in 926 (85.66%). Twelve months breastfeeding duration was found in 56.76% , and 24 months in 23.68% of cases (Table IV).

Table V showed the relationship between nutritional status and feeding pattern. The incidence of mild-moderate malnutrition and severe malnutrition among children who got diluted milk formula was 63.41% and 36.59% respectively, while in children who got low protein supplementary feeding there was 62.89% and 37.11%. In those who got diluted milk formula as well as low protein supplementary feeding there were 52.52% severely malnourished children and 47.48% had mild-moderate malnutrition.

The most prevalent accompanying disease in children with mild-moderate malnutrition was gastroenteritis (58.25%), followed by respiratory tract infection (52.59%). Among the accompanying diseases, measles was the least frequent, however it caused more severe malnutrition (Tabel VI).

Father's occupation in the present study was seasonal workers (60.12%), employers (18.96%); merchants (19.92%) and farmers (3.97%) (Table VII).

Discussion

In this study, about two third of children attending the outpatient clinic of Pediatric Nutritional Sub Division, Dr. Pirngadi Hospital, were diagnosed as malnutrition and the highest percentages was in the age group of 12-24 months (43.76%).

This is similar to the study by Sitepu et al.(1981) in the same place, who reported that out of 492 malnourished children, 40.07% was in the 0-1 years age group and 47.15% in the 1-3 years age group [5].

Tarigan (1978) reported that among 160 children there were 61.3% mild-moderate malnutrition and 38.7% severely malnourished children, with most cases in the age group of 1-3 years old [2].

Lubis et al. (1979) studying some plantations in North Sumatera, found that out of 315 children of 1-5 years old, 15.14% suffered from severe malnutrition and 48.80% from mild malnutrition [6]. It was in accordance to Jelliffe (1966), describing that most cases of malnutrition was in the age group of 1-4 years [7].

Almost on half (49.08%) of children were breastfed, and 14.33% got formula feeding. A study by Djatnika and Samsudin (1987), found that of 270 children attending the outpatient clinic, Dr. Cipto Mangunkusumo Hospital Jakarta, 46.6% were breastfed while mixed feeding

(breast and formula feeding) was noted in 16.6% and formula feeding only in 36.6% . Greater percentage of formula fed children in Djatnika's study was probably caused by more mothers in the city worked outside the house [8].

Breastfeeding was commonly given till 6 months old (85.66%). This is similar to Sitepu's finding (1981), while Enoch in Jakarta in 1982, found that only 58.3% of 184 under three years old children got breast feeding until 4-6 months old [3].

Early weaning is common in the city. The impact of modern technology and a better socio economic status on the behaviour and feeding pattern of the community, is imitated modern life style such as shorter breast feeding and giving bottle feeding instead.

Inadequate feeding was found in 82.62% of our cases; this finding was lower than that found in the previous studies by Tarigan (1978) and Sitepu 1981. Djatnika (1987) in Cipto Mangunkusumo - hospital reported that 8.9% his cases were given very diluted formula feeding, while Enoch (1986) in a sub urban area of Jakarta reported higher result (46.8%).

The diluted formula feeding and low protein supplementary feeding, may result in low energy intake and afterward failure to thrive.

Malnutrition is often associated with infectious diseases such as diarrhea, pneumonia and measles, while in tropical areas there were also malaria and parasitic infection [10].

In this study the most prevalent accompanying disease was diarrhea, this is similar with the study by Sitepu (1981) in the same place, and Syamsul (1987) in Dr. Sutomo Hospital [11].

One of the contributing factors to diarrhea was bottle feeding in infants aged three months old or less (Jelliffe, 1966).

The majority of the parent's occupation was seasonal workers. It was similar to the study by Sitepu who reported a figure of 65.8% . This showed that the families came from low socio-economic status and subsequently, it would influence the household expenditure.

This study suggested that factors influencing malnutrition in children under five years old were : breastfeeding until 6 months (early weaning), low protein energy supplementary feeding, diarrhea and low socio-economic status.

Conclusions

During 1985-1989 there were 1081 patients attending the outpatient clinic Nutrition Sub Division, Dr. Pirngadi Hospital. It consisted of 60.96% mild-moderate malnutrition and 33.76% severe malnutrition.

The most prevalent age group of malnutrition was 12-24 months.

This study suggested that factors associated with malnutrition were early weaning, low protein/energy supplementary feeding and some accompanying diseases, especially diarrhea and low socio-economic status.

Table I. *Distribution of cases by age and sex*

Age (month)	Boys	%	Girls	%	Total	%
0 - 6	50	4.62	34	3.14	84	7.76
- 12	122	11.30	172	15.92	294	27.22
- 24	212	19.62	261	24.14	473	43.76
- 36	36	3.30	52	4.82	88	8.15
- 48	15	1.38	27	2.49	42	8.87
- 60	22	2.03	13	1.20	35	3.23
> 60	33	3.05	32	.96	65	6.01
Total	490	45.33	591	54.67	1081	100.00

Table II. *Distribution of cases by age and nutritional status*

Age (month)	Well nourished	%	Mild & moderate malnutrition	%	Severe malnutrition	%
0 - 6	1	0.09	51	4.71	32	2.96
- 12	1	0.09	208	19.24	85	7.86
- 24	1	0.09	288	26.24	184	17.02
- 36	-	-	55	5.08	33	3.05
- 48	-	-	31	2.86	11	1.01
- 60	-	-	29	2.68	6	0.55
> 60	-	-	51	4.71	14	1.29
Total	3	0.27	713	65.96	365	33.77

Table III. *Distribution of cases by type of feeding*

Type	Total	%
Breast feeding	511	49.08
Mixed feeding	415	39.86
Formula's feeding	155	14.33
Total	1081	100.00

Table IV. *Duration of breast feeding*

Age (months)	Total	%
0 - 6	926	85.66
- 12	613	56.76
- 24	256	23.68
- 36	65	6.01
- 48	12	1.11
Total	1081	100.00

Table V. *Relationship of nutritional status and feeding pattern*

Feeding pattern	Total	Mild & moderate malnutrition	%	Severe mal - nutrition	%
Group I	235	149	63.41	86	36.59
Group II	407	256	62.89	151	37.11
Group III	219	104	47.48	115	52.52
Adequate composition	181	175	96.64	6	3.31
Total	1042	684	65.64	358	34.31

Note : Group I Diluted formula feeding
Group II Low protein content of supplementary feeding
Group III Mixed I and II

Table VI. *Relationship of nutritional status and accompanying diseases*

Accompanying diseases	Total	Mild & moderate malnutrition	%	Severe mal-nutrition	%
G E	285	166	58.25	119	41.75
U R I	270	142	52.59	128	47.41
Fever	99	57	57.57	42	42.43
Congenital anomaly	15	7	46.66	8	53.34
Measles	7	3	42.85	4	57.16
Total	676	375	55.47	301	44.53

Table VII. *Occupation of the father*

	Total	%
Seasonal workers	650	60.12
Employers	205	18.96
Merchants	183	19.92
Farmers	43	3.97
Total	1081	100.00

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