

## ORIGINAL ARTICLE

## Clinical Features of Severe Malnutrition at the Pediatric Ward of Dr. Pirngadi Hospital Medan

by

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### Abstract

A retrospective study on severe malnutrition concerning children hospitalized at the Pediatric ward of Dr. Pirngadi Hospital, Medan from January 1 to December 31, 1988 was conducted. Patients less than five years old were included in this study. The purpose of this study was to know the incidence of severe malnutrition, its symptoms and signs, the immunization status, feeding pattern and socio-economic factors.

Out of the 3370 hospitalized patients, 2453 (72.78%) were children under five years old. Of these, 312 (12%) suffered from severe malnutrition. It consisted of marasmus 131 (41.9%), marasmic kwashiorkor 94 (30.1%) and kwashiorkor 87 (27.8%).

The highest incidence was found in the age group of 0 - 2 years (58%). Clinical manifestation of marasmus were old man face (131 or 100%), muscular hypotrophy (118 or 71.9%) and decreased subcutaneous fat (116 or 71.1%) in marasmic kwashiorkor children 46 or 50% had their hair easily picked out, 45 or 46.3% showed hyperpigmentation and 48 or 52% had pretibial edema in the kwashiorkor group 29 or 63% had moon face, 52 or 60.4% showed crazy pavement dermatosis, 77 or 51.3% had hepatomegaly and 87 or 48% pretebial edema. Moon face was seen in 29 (63%), crazy Pavement Dermatitis in 52 (60.4%), hepatomegaly in 77 (51.3%), and pretebial edema in 87 (48%) of kwashiorkor cases. The accompanying diseases were mostly diarrhea (95%) and bronchopneumonia (22%). Immunization status showed that BCG comprised 50.6%, while DPT III and OPV III in 13.7% and 10.5% respectively and measles only 0.64%. More than half (59.6%) of them were breast-fed up to 6 months. Most of the parents had elementary education, namely 66.6% of mothers and 52.2% fathers. The majority of the fathers worked as seasonal workers (57.3%).

This study suggested that health problems, as well as socio-economic factors played an important role in the occurrence of severe malnutrition.

### Introduction

Severe malnutrition in children can be identified by using one of the procedures from the Wellcome Trust Working Party. It classifies severe malnutrition into three types, based on body weight according to age using the Harvard Standard, and the presence of edema (Jelliffe, 1966).

Children under five years, particularly at the age of 1-2 years are prone to low intake of protein and calories. When this condition occurred for a long period it may manifest itself as malnutrition. Firstly there occurs body weight loss, then decrease of skin turgor and subcutaneous fat, followed by other clinical signs all suggesting either marasmus, marasmic kwashiorkor or kwashiorkor (Barnes, 1983; Hansen et al., 1976).

Lower respiratory tract infections and gastrointestinal infections such as diarrhea are the most prevalent diseases associated with malnutrition. Severe malnutrition and infection are related synergistically to one another due to immune deficiency

(Hansen et al., 1976; Monckenberg, 1986). duration of breast feeding tends to rise the incidence of malnutrition in children under five years (Jelliffe, 1966). In addition to the socio-economic status, parent's education also has an important role in the occurrence of malnutrition in children under five (Jahari et al., 1988).

Arif et al. (1984) at Surabaya Hospital, reported severe malnutrition cases in 276 under five children. The Socio-economic National Survey of Indonesia (Susenas, 1986) found that the prevalence of malnutrition in children under five in Indonesia was 1.72% whereas in North Sumatera, it was 1.05%.

The purpose of this study is to know the incidence, symptoms and sign, immunization status, duration of breast feeding, supplementary feeding, education and occupation of the parents of severely malnourished children at the pediatric ward of Dr. Pirngadi Hospital, Medan.

### Materials and Methods

Medical records of children under five years old hospitalized in January 1 to December 31, 1988 were reviewed. The nutritional status of the patients was determined according to Road to Health Card (Kartu Menuju Sehat, KMS). Patients with poor nutritional status were studied, and classified into three types according to Wellcome Trust Working Party, namely:

1. Marasmus: body weight less than 60% of P<sub>50</sub> Harvard Standard, without edema.

2. Marasmic kwashiorkor: body weight less than 60% of P<sub>50</sub> Harvard Standard, with edema
3. Kwashiorkor : body weight over 60% of P<sub>50</sub> Harvard Standard with edema.

Clinical manifestations of cases, age, sex, accompanying diseases, duration of breast feeding supplementary feeding, education and occupation of the parents were recorded and analyzed.

## Results

During 1988, there were 3370 children admitted to the Pediatric ward of Dr. Pirngadi Hospital. 2453 out of them were children under five years old. Of these children 312 (12%) suffered from severe

malnutrition. They consisted of marasmus 131 (42%), marasmic kwashiorkor 94 (30%), and kwashiorkor 87 (28%) (Table 1).

Table 1 : Classification of the cases

Nutritional status	Number	%
Marasmus	131	41.9
Marasmic-Kwashiorkor	94	30.12
Kwashiorkor	87	27.88
Total	312	100

Most of the patients were in the age group of 0-1 year (31%), 1-2 years (27%) (Table 2); 56% were males and 44% females.

Table 2 : Age distribution of the cases by type of nutritional status

Nutritional status	Number	Age (year)									
		0-1	%	1-2	%	2-3	%	3-4	%	4-5	%
Marasmus	131	43	33	32	24	32	24	14	11	10	8
Marasmic-kwashiorkor	94	33	35	23	25	20	22	11	12	7	8
Kwashiorkor	87	22	25	30	35	14	16	10	12	11	13
Total	312	98		85		66		35		28	
Percentage	100	31		27		21		11		8.9	

Clinical symptoms seen in the marasmus group were old-man face in 131 (100%), muscular hypotrophy in 118 (71.9%), decreased subcutaneous fat in 116 (71.1%), and irritability in 89 (68.54%). In the marasmic kwashiorkor group, edema was found in 94 (52%), easily picked-out hair in 46 (50%), hyperpigmentation in 45 (46.3%), and hepatic enlargement in 61 (40.7%).

In the kwashiorkor group, moon face was found in 29 (63%), crazy pavement dermatosis in 52 (60%), hepatic enlargement in 77 (51%), and edema in 87 (48%).

The Chief complaints of those children were anorexia and feeding difficulty, found in 220 (71%) (Table 3).

The most prevalent accompanying disease was diarrhea (95%) followed by lower respiratory tract infection (bronchopneumonia, bronchitis, primary TBC) 27.4%, tonsilopharyngitis 6%, Morbilli 4.3%, parasitic infestation (trichuriasis, ascariasis, ankylostomiasis) 4.1% (Table 4). The immunization status of the cases showed BCG 158 (50.6%), DPT I 408 (35%), DPT II 102 (32.6%) and DPT III

43 (13%), OPV I (Oral Polio Vaccine) 95 (31%), OPV II 86 (27.6%), OPV III 32 (10.2%) and Measles 2 (0.64%) (Fig.1).

During the period of study, 68 (21.7%) cases died; 78 (25%) were discharged on parent's request, and 166 (53.2%) discharged with improvement. The educational levels of the mothers were elementary school in 207 (66.3%) secondary school in 68 (21.7%), senior high school in 28 (8.9%) and not recorded in 9 (2.89%). Most of the fathers (163 or 52.2%) had educational levels of elementary school, secondary.

Parent's occupation were seasonal workers 179 (57.1%), merchants in 48 (14.3%), farmer and fishermen in 33 (10.5%), and civil servants in 18 (5.7%),

Table 3 : Clinical manifestation of children with severe malnutrition

Symptoms & sign	Marasmus		Marasmic-kwashiorkor		Kwashiorkor		Total %	
	No	%	No	%	No	%	No	%
1. Anorexia/feeding difficulties	67	30.4	72	32.7	81	36.8	220	70.5
2. Thin sparse hair	96	54.5	27	15.3	53	30.1	176	56.4
3. Muscular hypotrophy	118	71.9	46	28	-	-	164	52.6
4. Decreased Subcutaneous fat	116	71.1	47	28.2	-	-	163	62.2
5. Pretibial edema	-	-	94	52	87	48	181	58
6. Apathetic	22	13.7	62	38.7	6	47.5	90	28.9
7. Hepatic enlargement	12	8	61	40.7	77	51.3	150	48.1
8. Irritability	89	68.5	32	24.6	9	6.9	130	44.7
9. Old-man face	131	100	-	-	-	-	131	42
10. Hyperpigmentation	11	11.3	45	46.3	41	42.2	97	31.1
11. Easily picked hair	-	-	56	50	46	50	102	32.7
12. Stomatitis	31	35.2	25	28.4	32	36.3	98	28.2
13. Crazy pavement-dermatosis	-	-	36	39.5	52	60.4	88	9.9
14. Moon face	-	-	17	36.9	29	63	46	14.7

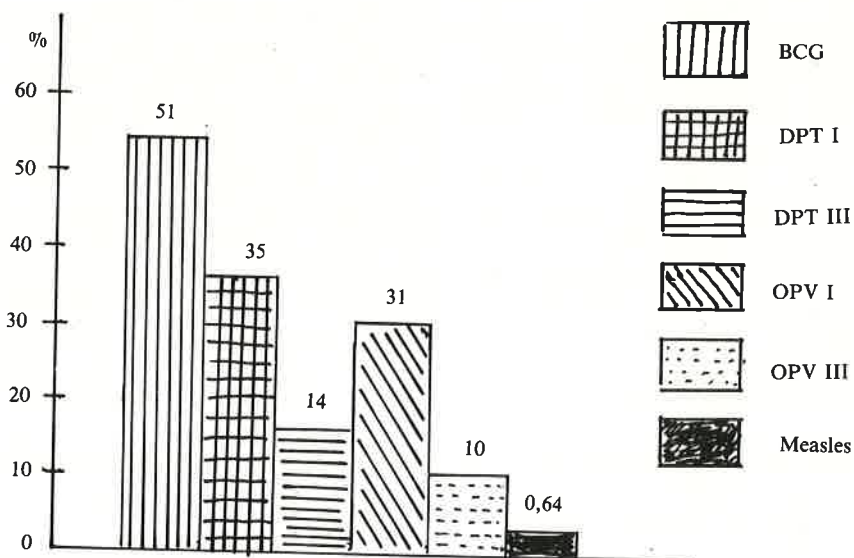
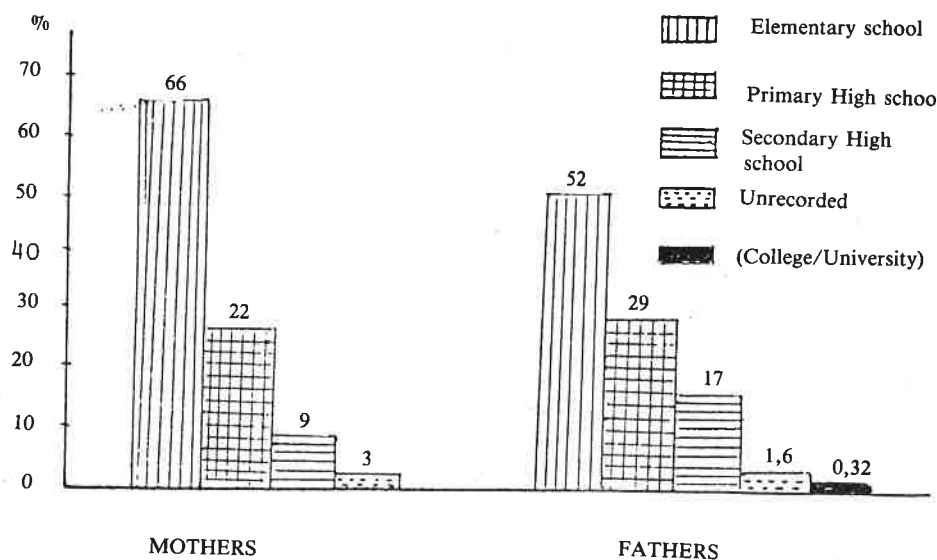


Figure 1 : Immunization status of the cases



and only 1 (0.3%) was a student.

The period of breastfeeding was found to six months in 169 (54.1%), and until 12 months in 71 (22.7%). There were 39 (12.5%) patients who were not breast-fed and only 2 (1.5%) patients were breastfed until 2 years.

Supplementary feeding was commonly given in the age of 5-7 months in 131 (42%), 1-3 months in 38 (12%), 3-5 months in 109 (35%), 7-9 months in 24 (8%). The food was composed of rice porridge with carrot and potatoes. Fish and egg were given at the age of 12 months.

Discussion

In this study, there were 312 severe malnutrition cases. Arif (1984) at Dr. Soetomo Hospital, Surabaya reported severe malnutrition a sum of 422 children under five years consisting of 276 marasmus, 85 kwashiorkor and 61 marasmic kwashiorkor. Bam Suffiar (1983) found 28.2% cases of severe malnutrition at the Outpatient clinic of the Pediatric Nutrition Sub Division, Dr. Pirngadi Hospital Medan, based on body weight for age according the growth short in this KMS. The incidence of severe malnutrition varies. It is may be due to the differences in method, places and samples of the studies.

Sex ratio between male and female was 56% : 44%. Half of those patients with malnutrition had got BCG immunization; while DPT and oral Polio vaccine and measles immunizations were not satisfactory. Jahari et al., (1988) reported the low coverage of immunization especially in Nusa Tenggara, Kalimantan, Maluku, Irian Jaya, Sumatera and Sulawesi.

Clinical signs in marasmus were among others old-man face in 131 (100%), muscular hypotrophy in 118 (71.9%), decreased subcutaneous fat in 116 (71.1%). In the marasmic kwashiorkor group, edema was found in 94 (52%) easily picked hair 46 (50%), and hyperpigmentation in 45 (45.3%). In the kwashiorkor group, moon face was found in 29 (63%), hepatic enlargement in 77 (51.3%), and edema in 87 (48%). Studies by Jackson (1986), Barness (1983), and Pereira (1986), reported the same clinical findings.

The highest percentage of severe malnutrition cases were in the age group of 0-2 years (58%). Marasmus was found predominantly in the 0-1 year group (33%). Kwashiorkor were found mainly in the age group of 1-2 years (35%), while marasmic kwashiorkor in the age group of 0-1 year appeared predominantly (35%). Studies by Hansen et al., (1976) and Mon-

ckenberg (1986) showed that marasmus was found frequently in the age group of 1 year, while kwashiorkor in the age group of less two years. This is similar to the present study.

The most prevalent accompanying diseases were diarrhea (95%) and lower respiratory tract infection (bronchopneumonia, bronchitis, primary TBC) in 26.4%. Arif (1984) and Pereira (1986) reported (1976) stated that gastrointestinal infection in marasmus was the main accompanying disease and the important cause of death. Poey Seng Hin (1957) found that the prevalent disease in kwashiorkor was bronchopneumonia.

Breast feeding was commonly given until 6 months. This is similar to the study by Sjarikat Tarigan (1982) who reported that breast feeding was given until the age of 0-1 year. This is one of the predisposing factors to the occurrence of malnutrition in children under five years old (Jelliffe, 1966). Supplementary feeding was given at 5-7 months (42%) and 3-5 months (32%). The supplementary feeding consisted of rice porridge with vegetables and potato which are poor in protein for the childs growth. Delayed supplementation also produce difficulty in feeding the child (WHO, 1972).

Most of the mothers (65%) had elementary education. Mothers education may influence the feeding method of their babies because education is the most important factor in feeding pattern and child care (Jahari, 1988; WHO, 1972). Most of the fathers had elementary school as their level of education (52.4%), and 57.3% of them were seasonal workers. Low socioeconomic status of the parents affects the nutritional status of children under five years. This study suggested that socio-economic factor as well as health condition played an important role in the occurrence of malnutrition in children under five years.

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