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Risk approach for reducing malnutrition in children from a privileged community

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RISK APPROACH FOR REDUCING MALNUTRITION IN CHILDREN FROM A PRIVILEGED COMMUNITY

Pages with reference to book, From 59 To 61

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Abstract

Of 279 children, below the age of 5 years, studied from January to March 1984, 30% had some degree of malnutrition. Risk factors like low birth weight, low family income, previous attacks of diarrhoea and absent or inadequate breast feeding were found to have a strong association with' malnutrition. In the "Well Baby Clinic", extra attention was given to the children having those risk factors. Nutritional status determined after 2 years showed that though there was no reduction in the overall percentage malnutrition definitely decreased (JPMA 40: 59, 1990).

INTRODUCTION

Like many developing countries, one Pakistani child in five dies before reaching the age of five. There has been little decline in health rates for 20 years, and almost 2000 under five die every day in Pakistan — four every three minutes. Major killers arc diarrhoea (0.33 million/year) and communicable diseases (025 million/year). Pakistanis not short of food, yet 60% of its children are malnourished[1]. Visible malnutrition is rare and it is only 5-10% of all which is easily recognisable. One of the biggest breakthroughs against child malnutrition and ill health in 80's is the mass use of simple cardboard child growth charts as a stimulus and guide to proper feeding of the preschool children. Regular monthly weighing, and entering up the results, can make malnutrition visible[2]. The different socio-demographic and environmental variables, if studied in children from birth onwards, which expose the child to a greater risk of developing PEM (Protein Energy Malnutrition) are called the risk factors[3]. These, thus identified can guide to the interventions to be initiated and concentrated towards a smaller number of children who are at risk of developing PEM[4]. Various workers[5-8]. have looked at children, specially of underprivileged population for Risk Factors of PEM. This paper attempts to find out the Risk Factors operating in a relatively privileged community residing in a thickly populated area of Karachi, "Kharadar" belonging to an average middle class socio-economic group.

PATIENTS AND METHODS

Out of 450 children (5 years and below) registered with Al-Batul MCH Centre, only 279 were included in the study, who were residing in a well defined, thickly populated area — Kharadar. Majority of people residing in Kharadar are Indian migrants, Gujratis and Memons belonging to an average to middle socio-economic class. Baseline study was done from January to March 1984. Questionnaire regarding risk factors were prepared and mothers were interviewed at their homes by Community Volunteers of MCH Centre. They later brought their children to MCH Centre where weighing was done according to age (either on Baby Scale or Bathroom Scale); the ages being confirmed from Birth Certificates. A "Well Baby Clinic," was established and intervention programmes based on Risk Factors were initiated. Children were again assessed for their nutritional status by of malnourished children but the degree of severity of weight for age parameter in May-June 1986.

RESULTS

Two hundred and seventy-nine children under 5 years of age registered with MCH Centre were studied in 1984. Sixty percent of them were below 2 years with a slight male preponderance (Table I).

TABLE I. Age and Sex distribution of Children.

Age group	Male	Female	Total
0-5 mths	26(9%)	18(6%)	44(16%)
6-23 mths	66 (24%)	56 (20%)	122 (44%)
24-59 mths	63 (23%)	50 (18%)	113 (40%)
Grand Total	155 (56%)	124 (44%)	279 (100%)

Applying the NCHS Standards they were graded for nutritional status by Gomez's System of Classification. Seventy percent were classified as normal, while 20% had grade I and 9% grade II PEM. None had Grade III malnutrition. A definite increase in frequency of protein energy malnutrition was observed with the increase in age. Significant ($P < 0.01$) transition of nutritional status from normal to Grade II, representing severity of PEM also increased with age (Figure 1).

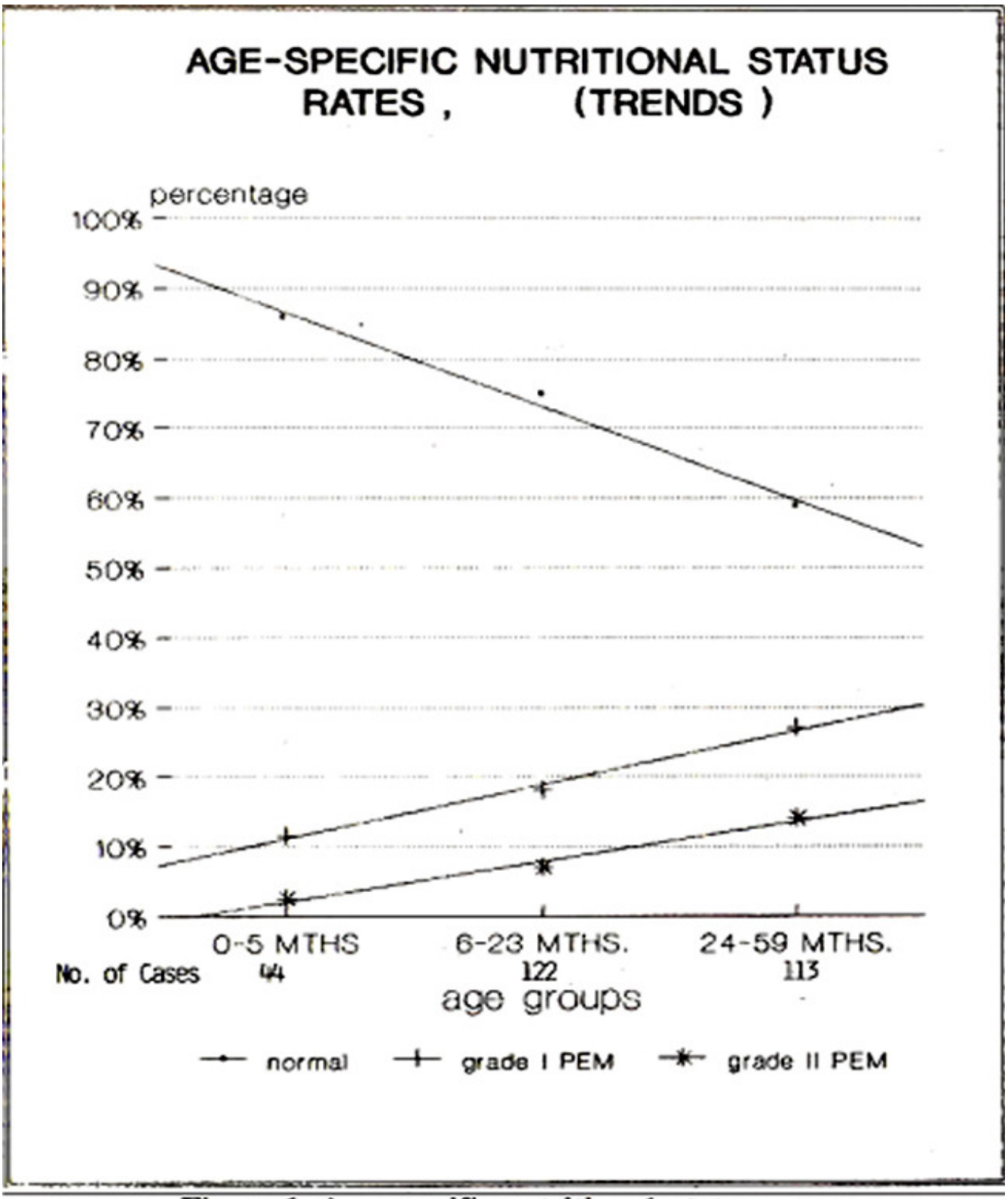

Figure 1. Age specific nutritional status rates.

A difference ($P < 0.05$) in nutritional status was also noted between males and females (Figure 2).

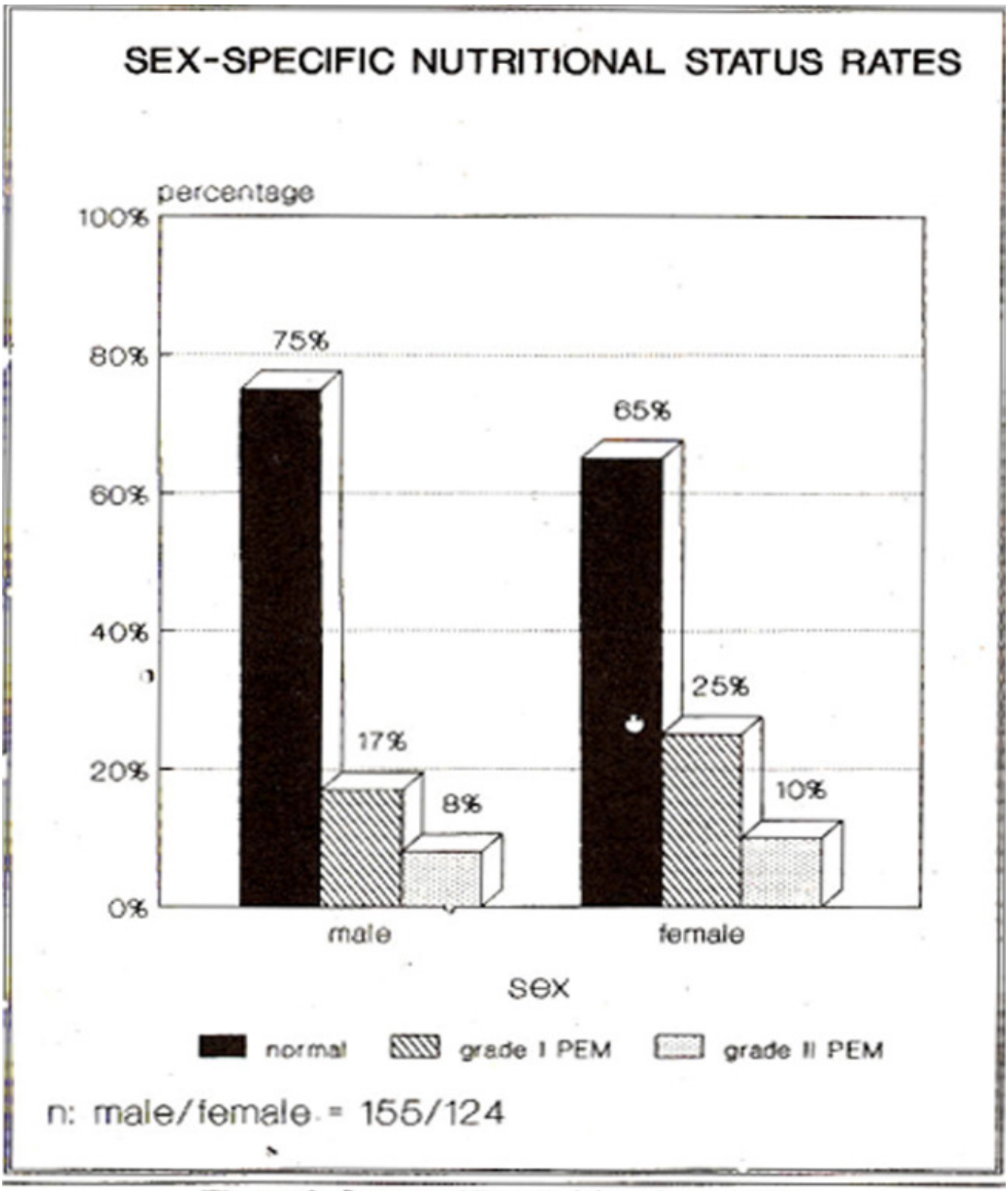

Figure 2. Sex specific nutritional status rats.

Twenty different hypothesized "Risk Factors" were studied, affecting the nutritional status of children. The significance of association of Risk Factors with PEM was obtained using Chisquare Test[9] (Table II).

TABLE II. Statistical association of Risk Factors with PEM.

Risk Factors	P. value
– Low birth Weight	P < .05
– Low Family Income	P < .05
– Previous attack of diarrhoea	P < .2
– No or inadequate vaccination	P < .2

Odds of developing PEM and attributability of risk factors to PEM indicates important socio-economic, demographic, environmental and behavioural factors which lead to PEM in children (Table III).

TABLE III. "Relative Risk" and "Attributable Risks" of PEM in Children.

Sr. No.	Risk Factors*	% of children affected**	Relative Risk***	Attributable Risk (%)
1.	Low birth weight	7.5	2.9	13.0
2.	Low family income	39.4	1.9	26.0
3.	Illiteracy of mother	4.3	1.8	3.1
4.	Previous attacks of diarrhoea	11.5	1.8	8.3
5.	Large family	18.6	1.4	7.4
6.	Environmental insanitation	35.1	1.4	12.3
7.	Absent or inadequate breast feeding	46.9	1.3	12.3
8.	Previous death of sibling	13.6	1.0	12.0

*Risk Factors not listed did not have strong association.

**Some of the children affected by more than one factors.

***Risk Factors has strong association if odds ratio is > 1.

There is no mathematical way to establish the degree of causality, but it is decided indirectly[10], by some pointers. Risk factors considered for interventional strategies according to "degree of causality", were: low birth weight, previous attack of diarrhoea, large family, and absent or inadequate breast feeding (Table IV).

TABLE IV. Degree of Causality of Risk Factors.

Sr.No.	Risk Factors	Strength of Association* [R.R]	Specificity +	Temporal Association +	Consistency +	Biological Plausibility +	Total Scores
1.	Low Birth Weight	(4.5) + + + + +	+ + +	+ + +	+ + +	+ + +	17
2.	Low Family Income	(2.5) + + +	+	+	+ +	+ +	9
3.	Illiteracy of Mother	(2.3) + +	+	+	+ +	+ +	8
4.	Previous attack of Diarrhoea	(2.3) + +	+ +	+	+ + +	+ + +	11
5.	Large Family	(1.8) + +	+ +	+	+ +	+ +	9
6.	Environmental Insanitation	(1.8) + +	+	+	+ +	+ +	8
7.	Absent or Inadequate Breast Feeding	(1.6)	+ +	+ + +	+ + +	+ + +	13
8.	Previous Death of Sibling	(1) +	+	+	+ +	+ +	7.0

Key for Scoring: *Scoring according to logarithm of its relative risk ratios
+ Good + + + (3)
Fair + + (2)
Poor + (1)

In the Well Baby Clinic children found to have the Risk Factors were given special attention. The nutritional status of two hundred ninty one children registered in 1986 with MCH Centre and living in Kharadar was again assessed by weight for age parameter.

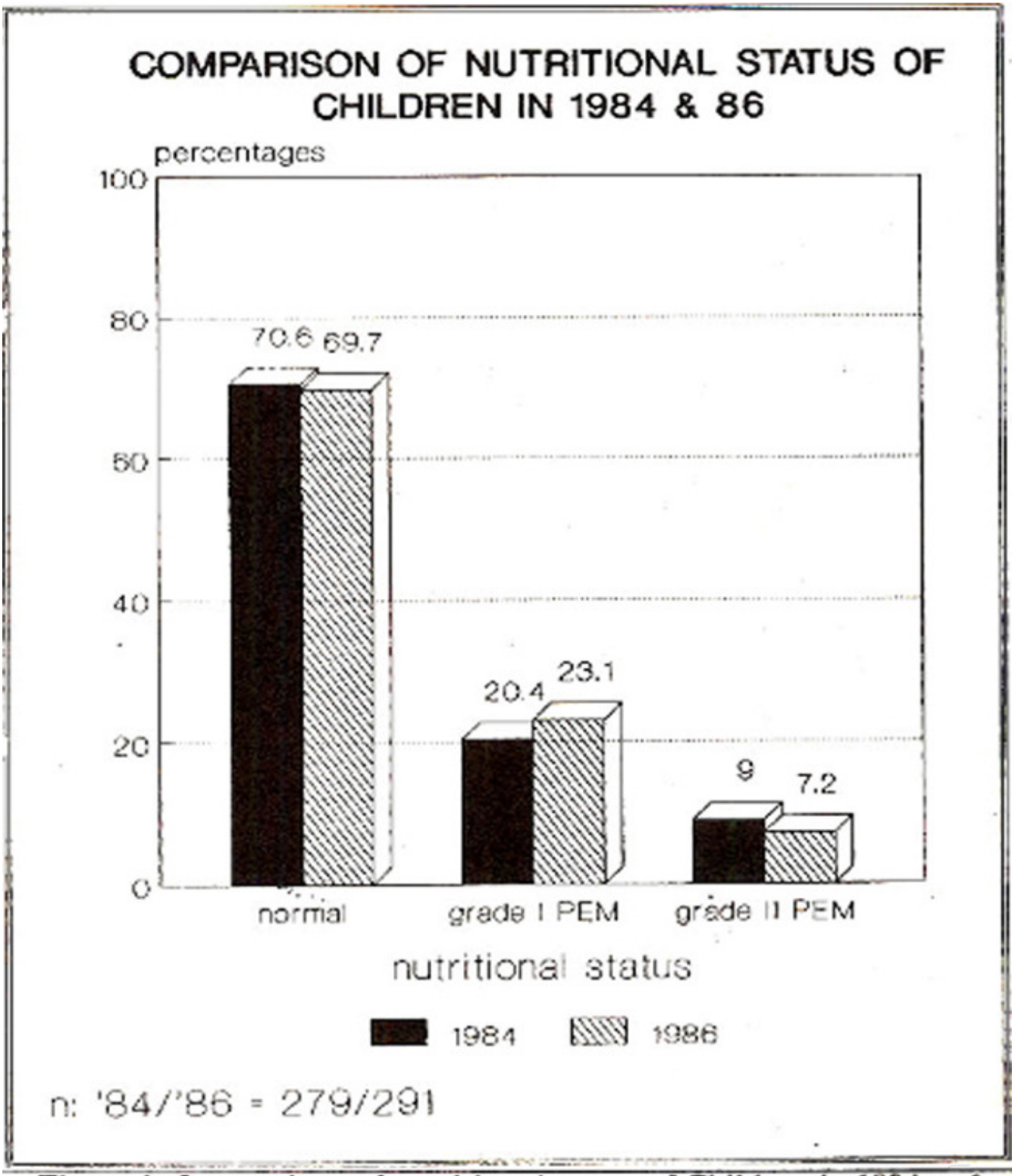

Figure 3. Comparison of nutritional status of Children in 1984 and 1986.

Figure 3 indicates that though overall nutritional status did not change but there was some shift in degree of PEM from II to I; thus representing decline in severity of PEM.

DISCUSSION

This study conducted in Kharadar is different because a relatively privileged population having access to health facilities have been studied. Though only 30% of the children were malnourished, there is a definite increase in frequency and severity of PEM with age, with a female preponderance. This coincides well with other studies conducted in Pakistan[1,11-13], Bangladesh[14] and India[15]. The "Risk Factors' identified also explain this phenomenon, as most of them start operating as the child grows up. Thus PEM in children varies with demo6graphic characteristics[11], socio-economic conditions[11,16] access and availability of health services[12], feeding habits and patterns in the children and of the family[17,18]. Accordingly "Risk Factors" operating would be different, and it would be difficult to standardize them for all Pakistani children. However, "Risk Factors" identified here can be taken for a prototype population having more or less same characteristics. By taking extra care of the children identified as having Causal "Risk Factors", a decline in PEM was not achieved. However, there was a decline in severity of PEM. The explanation could be that the time period for intervention programme is too small to give a significant decline in PEM. Adequate efforts have not been taken in intervention programme for reducing the prevalence of Risk Factors and the Risk Factor intervenlion approach needs to be modified in terms of preventing it, rather than acting upon when once identified. There may be a definite dietary pattern of this community specially the supplementary foods which has not been taken into account as regards Risk Factors. A high attributability (26.0%) of low socio-economic conditions leading to PEM in children is playing an important role in that community. Failure to achieve a decline in PEM rates may be due to stable socio-economic conditions of the study community.

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