Nutritional Status of
1-5 Years Children in Field Practice Area of RHTC Naila, Jaipur

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Abstract:
Research Question: To assess the nutritional status of children 1-5 years in the field practice area of RHTC Naila in Jaipur district of Rajasthan.
Materials and Methods: A community based cross sectional descriptive type of observational study was carried out in the field practice area of RHTC Naila in Jaipur district of Rajasthan. 30 Cluster sampling technique was used to cover whole field practice area of RHTC. 330 children 1-5 years were selected from clusters were. These children were examined and their mothers were interviewed. Information about nutritional status of children with relevant socio-demographic data was also collected. To find out associating factors chi-square tests of significance were used.
Results: Out of total 330 children it was observed that 13.6% of children were found to have under-nutrition. It was also revealed in the present study that 62.73% were anemic (35.76% were mild anemic, 26.36% were having moderate anemic and 0.61% were severely anemic). Nutritional status of children was associated with Socio-economic status and child birth order whereas it was not associated with type of the family, family size and age of child
Conclusion: About one tenth of children were undernourished and about two third were having anemia. Nutritional status of children was associated with Socio-economic status and child birth order whereas it was not associated with type of the family, family size and age of child.

Key words: Nutritional status, Birth order, Socio-economic status, Milestones

1. Introduction

Nutrition is the cornerstone that affects and defines the health of all people and it paves the way for us to grow, develop, work, play and resist infection. Giving the child a solid nutritional start has an impact for life on her or his physical, mental and social development. Malnutrition continues to be a cause and consequence of disease and disability in the children who survive. Malnutrition plays a major role in half of the 10.4 million annual child deaths in the developing world.[1] globally, prevalence of wasting and severe wasting in 2012 estimated almost 8 percent and just less than 3 percent respectively.[2]

In India, around 46 per cent of all children below the age of three are too small for their age, 47 per cent are underweight and at least 16 per cent are wasted. In India as per NFHS-3, 2005-6)[3] 48% stunted, 20% wasted, and 43% underweight among children under 5 years. More than half (54%) of all deaths before age of 5 years in India are related to malnutrition.

Rajasthan carries one of the highest burdens of undernourished children in India and according to National Family Health Survey (2005-2006)[3] in Rajasthan, 44 percent of the children under the age group of 3 years are reported to be underweight.

Hence, the present study was conducted in rural area to assess the nutritional status of 1-5-year-old children and socio-demographical factors associated with nutritional status.

2. Materials and Methods
A community based cross-sectional descriptive study was carried out to find out nutritional Status of children (1 to 5 year of age) residing in field practice area of RHTC Naila, attached to SMS Medical College, Jaipur. Thirty cluster sampling technique was use to cover whole field practice area. Data collection for this study was carried out from on 01.08.12 to 28.02.13.

2.1. Calculation of sample size
Sample size was calculated 328 subjects at allowable error of 20% at 95% confidence interval and design effect of two, assuming 38.38 % of children (1-5 years)[2] having low weight for age. (i.e. P=38.38%).
- Sample size = $4PQ/L2$, here Q = 100 - P = 61.6%, L = Error (20% of P) = 7.6%
- Therefore, 4*38.38*61.6/7.6*7.6 = 164 but Design effect=2 so SS= 164 * DE = 164*2 = 328

So for the study purpose, 11 children 1-5 years having low weight for age 5 mothers from each clusters i.e. total 330 of children 1-5 years ((child whose 1st birthday has gone and child whose 5th birthday is awaited) having normal term, normal delivery and normal birth weight and parents are willing to participate were surveyed from 30 clusters All the children were interviewed using a predesigned, pretested, semi-structured interview schedule.

Data thus collected was entered into Microsoft excel 2010 worksheet in the form of master chart. Then data were classified and analysed as per the aims and objectives with help of appropriate statistical software. Chi-square test was used wherever necessary.

3. Results
In the present study it was observed that maximum children were in 2-3years of age (35.15%) and minimum were in 4-5 year of age group (18.48%). Mean age of children observed was 34.13 months with standard deviation 10.22 months. Total male children were 188 (56.97%) and female children were 142 (43.03%) with M: F ratio 1.32 and sex ratio was 755 females per 1000 males. This study also reveals that mean value of mid upper arm circumference (MUAC) is 14.29 ± 1.13.

In the present study it was observed that 13.6% of children were found to have under-nutrition. It was also revealed in the present study that 37.27% children were non- Anemic (normal hemoglobin level) whereas 62.73% were anemic (35.76% were mild anemic, 26.36% were having moderate anemic and 0.61% were severely anemic).

In the present study it was found that proportion of females with under nutrition were more than males i.e. 21.83% v/s 6.38% and this difference was found significant (p<0.001). Likewise in children under nutrition was highest (i.e. 62.5% of class V children) in class V, followed by class III (18%). There was no child with under nutrition in class! & Class II. This this difference was found significant (P<0.001)

It was also revealed in this study that as the birth order increases the proportion of children with under nutrition increases (P<0.001).

In the present study children with under nutrition were almost equally distributed in joint and nuclear families. (P>0.05). Likewise although maximum children with under nutrition was in 2-4 year and in families with larger family size but nigher the age nor the family size was found to associated with nutritional status of children (p>0.05)

So it was revealed in the present study that among socio-demographic factors, sex, socio-economic status and child birth order was found to be associated whereas type of the family, family size and age of child was not found to be associated with nutritional status.
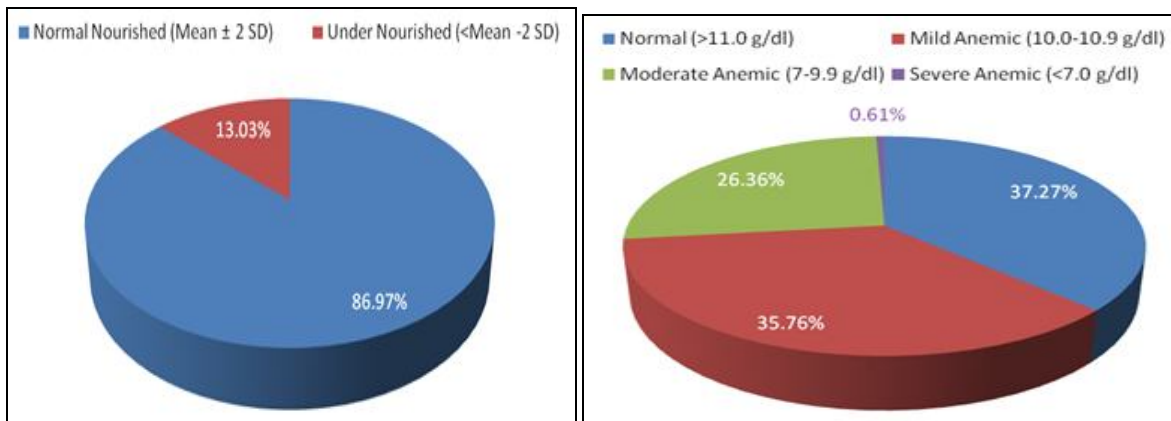

Figure 1: Nutritional Status wise Distribution of Study children
Figure 2: Anemia Status wise Distribution of Study children

S. No.	Variables	Normal nourished		Under nourished		Total
		No.	%	No.	%	
	Age –wise					
1	1-2 year	65	91.55	6	8.45	71
2	2-3 year	97	83.62	19	16.38	116
3	3-4 year	67	81.71	15	18.29	82
4	4-5 year	58	95.08	3	4.92	61
	Total	**287**	**86.97**	**43**	**13.03**	**330**
	Chi-square = 8.008 with 3 degrees of freedom; P = 0.059 LS:NS					
	Sex-wise					
1	Male	176	93.62	12	6.38	188
2	Female	111	78.17	31	21.83	142
	Total	**287**	**86.97**	**43**	**13.03**	**330**
	Chi-square = 15.7 with 1 degrees of freedom; P<0.001 LS: S					
	Birth Order–wise					
1	1	110	94.83	6	5.17	116
2	2	106	89.83	12	10.17	118
3	3 & 3+	71	73.96	25	26.04	96
	Total	**287**	**86.97**	**43**	**13.03**	**330**
	Chi-square = 21.524 with 2 degrees of freedom; P < 0.001 LS: S					
	Family Size-wise					
1	3-9	186	87.32	27	12.68	213
2	10-18	77	88.51	10	11.49	87
3	>18	24	80.00	6	20.00	30
	Total	**287**	**86.97**	**43**	**13.03**	**330**
	Chi-square = 1.491 with 2 degrees of freedom; P = 0.475 LS: NS					
	Type of Family-wise					
1	Nuclear	102	86.44	16	13.56	118
2	Joint	185	87.26	27	12.74	212
	Total	**287**	**86.97**	**43**	**13.03**	**330**
	Chi-square = 1.611 with 1 degree of freedom; P = 0.204 LS: NS					
	Socio-economic status-wise					
1	Class I	9	100	0	0.00	9
2	Class II	89	100	0	0.00	89
3	Class III	123	82.00	27	18.00	150
4	Class IV	60	90.91	6	9.09	66
5	Class V	6	37.50	10	62.50	16
	Total	**287**	**86.97**	**43**	**13.03**	**330**
	Chi-square = 53.408 with 4 degrees of freedom; P<0.001 LS: S					

Table 1: Association of Socio-demographic factors with Nutritional Status of children

4. Discussion

In the present study it was observed that 13.6% of children were found to have under-nutrition and mean value of mid upper arm circumference (MUAC) was found 14.29 ± 1.13 Well comparable observations were of World Bank Child Malnutrition Database 2012[4], National Family Health Survey (NFHS-3)[3] and Das et al (2012) [5] who reported under nutrition 11%, 20% and 17% respectively.

In contrast to it, some other Indian studies reported more under nutrition than the present study whereas most of studies of other countries observed low proportion of Children with malnutrition. Studies reported more under nutrition were like C.K. Dolla et al (2005)[6], Jyothi Lakshmi A. et al (2003)[7], Paramita Sengupta et al (2010) [8], SP Mitra (2007)[9], Saiprasad Bhavsar et al (2012)[10] found pre-school children under nutrition rate 35%, 29.5%, 42% and 40.2% respectively. This difference may be because most of authors study group was of slums i.e. more poorer children than the present study. Most of other studies[11-14] reported 2.8 % to 7% proportion of under nutrition in children.

In the present study it was observed that 62.73% were anemic These findings are well synchronised with the observations of other surveys like National Family Health Survey (NFHS-3)[3], Ghana Demographic and Health Survey (2003)[15] *and* Saiprasad Bhavsar et al (2012)[10] *who reported* 70%, 77% and 58.8% respectively.

In resonance with the observations of present study, *Kavita Baranwal et al (2010)*[16] Saiprasad Bhavsar et al (2012)[10] also observed no association of age with nutritional status of the child.

Likewise, regarding birth order association with nutritional status, NFHS-3[3] and Saiprasad Bhavsar et al (2012)[10] also observed increase proportion of under nutrition with increase birth order.

The present study shows that under-nutrition was approximately similar in both type of families and is not associated with size of family. Similar observations were made by of Saiprasad Bhavsar et al (2012)[10], Fayyaz Ahmed Shaikh (2007)[17] and Paramita Sengupta et al (2010)[8] but are in contrast with Srivastava et al (2012)[18] study who observed that under nutrition was higher among those belonging to nuclear families.

In present study it was also revealed that under-nutrition was maximum (62.5%) in socioeconomic class V children and there was no undernourished child in SE class I & II. This difference in proportion of undernourished children as per socioeconomic status was found significant ($p < 0.001$). Well comparable observations were made by other studies like NFHS-3[3], Gobane and D Choramo (2012)[11], Ahmed E et al (2011)[19], Paramita Sengupta et al (2010)[8].

5. Conclusion

About one tenth of children was undernourished and about two third were having anemia. Nutritional status of children was found to be associated with sex, socio-economic status and birth order of child whereas it was not associated with type of the family, family size and age of child.

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