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Original Research Article

A study to analyze the correlation between nutritional dermatoses with socioeconomic status, dietary fallacies and growth in children 1 to 5 years of age, in and around rural area

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ABSTRACT

Background: Little information is available about the prevalence of skin conditions among the children in general population. Skin conditions vary in frequencies and severity in different age groups, different geographical locations and under different definitions of skin diseases. Low socioeconomic status, malnutrition, overcrowding, poor standards of hygiene are important factors accounting for development of nutritional dermatoses in developing countries such as India. The objective of the present research was to study the association between nutritional dermatoses with Socioeconomic status, dietary fallacies and growth in children 1 to 5 years of age.
Methods: A cross sectional study was conducted in a rural based medical college of Dakshina Kannada District in Karnataka among the one to five years age children, who were attending the Pediatric out patient with nutritional skin lesions from the month of November 2012 to October 2013. The sample size was estimated as 150 children.
Results: In present study, 76.00% (114) of children fall in the group of under nutrition and 73.33% (110) children is having the causative factor as Dietary Fallacies. Majority of children 60.66% (91) with nutritional dermatoses belongs to class IV socio-economic status according to B.G Prasad classification, 27.33% (41) belongs to class III and 12.00% (18) children belongs to class V. 64.66% (97) of children with nutritional dermatoses were underweight, 47.33% (71) of children showed wasting and 35.30% (53) children were stunted.
Conclusions: Lower socioeconomic condition and dietary fallacies were the two most causative factors which had an adverse effect on nutritional status of child causing dermatoses. Nutrition deficiency had an impact of early transitional growth failure and delay in the achieving mile stone.

Keywords: Dietary fallacies, Nutritional dermatoses, SES

INTRODUCTION

"The word 'Nutrient' or 'Food factor' is used for specific dietary constituents such as proteins, vitamins and minerals.[1] The word Malnutrition is derived from the etymological origin, Malus (bad) and Nutire (nourish). It is a manmade disease which often starts in the womb and ends in the tomb.[2] Protein energy malnutrition is a spectrum having two different clinical manifestations Kwashiorkar being one end of the spectrum and the Marasmus at the other end.[3] "Dermatoses is defined as any disorder of the skin especially those without inflammation" and if the same is due to deficient intake of nutrition among the children it is known as Nutritional Dermatoses.[4,5]

Nutritional dermatoses are caused mainly due to Inadequate diet (poverty or ignorance), Food faddism,

impaired absorption (malabsorption) and utilization due to various causes like Metabolic defects (acquired or genetic), Diarrhoea, acute or chronic due to intolerance, infection, infestation or allergy. Nutritional dermatoses is also caused by lack of nutrition during periods of growth, fever, hyperthyroidism, burns and other catabolic states. Chronic medications such as antibiotics or anticonvulsants and Faulty cooking practices like milling and polishing, washing after cutting, open pan cooking, prolonged storage, over boiling of milk can also leads to nutritional dermatoses.[6] Children between one to five years of age are the most vulnerable section of population. They constitute 16.5% of total population whereas mortality in this age group constitutes 40% of total deaths in the country.[7] Low socioeconomic status, malnutrition, overcrowding, poor standards of hygiene are important factors accounting for development of nutritional dermatoses in children between one to five years of age group. 'Nutritional disorders' by social classification revealed that 86.1% were of social classes IV and V.[8]

Hence this study was done to find out the correlation of Nutritional Dermatoses with Socioeconomic status of the family along with the dietary fallacies and growth of the one to five-year age children. The objective of the research was to study the association between nutritional dermatoses with socioeconomic status, dietary fallacies and growth in children 1 to 5 years of age.

METHODS

A cross sectional study was conducted in a rural based medical college of Dakshina Kannada District in Karnataka predominantly catering the health needs of rural population.

All the children between the age group of 1 to 5 years with Nutritional skin lesions diagnosed with clinical examination in the OPD of the Pediatric Department were included in the study from the month of November 2012 to October 2013. Children with congenital anomalies and parents not willing to enroll in the study were excluded.

The sample size was estimated as 150 children, based on the prevalence of Nutritional Dermatoses in India ranging from 4% to 30% in different studies.[9,10]

Informed consent is taken from the parents or the guardians of children between one to five years of age after explaining the aims, objectives and procedures of the study. A single face-to-face interview using a standardized questionnaire is conducted. All the parents or guardians were co-operative throughout the study. Children were examined in the day light. Data was entered in the standardized proforma. A pretested and semistructured questionnaire was used to collect information and entered in excel sheet. Data entry and statistical analysis was performed with the help of SPSS Version 17. Percentages and chi-square tests were used for the analysis of the data. The P value <0.05 was considered significant and P value <0.01 was considered highly significant. Microsoft Word has been used to generate graphs, tables, etc.

RESULTS

Out of the 150 study subjects in the present study 58.00% (87) children were males and 42.00% (63) were females. Majority 33.33% (50) of them belonged to 12-24 month's age group.

Table 1: Relation between various types of nutritional dermatoses and dietary fallacies.

Various type of nutritional dermatoses	Dietary fallacies				Total No of children observed
	Present		Absent		
	f	%	f	%	
Nutritional anemia associated dermatoses	45	40.90	0	0	45
Nutritional anemia with Vit A deficiency	10	9.09	11	27.50	21
Nutritional anemia with other micro nutrient deficiency associated dermatoses	19	17.27	9	22.50	28
Nutritional anemia with Vit C deficiency	2	1.81	0	0	2
Vitamin C deficiency dermatoses	6	5.45	4	10.00	10
Vitamin A deficiency dermatoses	17	15.45	2	5.00	19
Vitamin A deficiency with other micronutrient deficiency dermatoses	3	2.72	9	22.50	12
Phrynoderma only	0	0	3	7.50	3
Kwashiorkar associated dermatoses	4	3.63	2	5.00	6
Marasmus associated dermatoses	4	3.63	0	0	4
Total	110	73.33	40	26.66	150
$\chi 2$ test DF= 9, p= <0.001(significant)					

Table 2: Relation between various types of nutritional dermatoses and Socio-economic status.

Various type of nutritional dermatoses	SES			Total No of children observed
	III F (%)	IV F (%)	V F (%)	
Nutritional anemia associated dermatoses	9 (21.95)	28 (30.76)	8 (44.44)	45 (30.00)
Nutritional anemia with Vit A deficiency	7 (17.07)	11 (12.08)	3 (16.66)	21 (14.00)
Nutritional anemia with other micro nutrient deficiency associated dermatoses	6 (14.63)	20 (21.97)	2 (11.11)	28 (18.66)
Nutritional anemia with vit C deficiency	2 (4.87)	0 (0)	0 (0)	2 (1.33)
Vitamin C deficiency dermatoses	4 (9.75)	5 (5.49)	1 (5.5)	10 (6.66)
Vitamin A deficiency dermatoses	5 (12.19)	13 (14.28)	1 (5.5)	19 (12.66)
Vitamin A deficiency with other micronutrient deficiency dermatoses	5 (12.19)	5 (5.49)	2 (11.11)	12 (8.00)
Phrynoderma only	1 (2.43)	2 (2.19)	0 (0)	3 (2.00)
Kwashiorkar associated dermatoses	0 (0)	5 (5.49)	1 (5.55)	6 (4.00)
Marasmus associated dermatoses	2 (4.87)	2 (2.19)	0 (0)	4 (2.66)
Total	41 (27.33)	91 (60.66)	18 (12.00)	150 (100.00)
$\chi 2$ test DF= 18, p= < 0.05 (significant)				

In this study, 76.00% (114) of children fall in the group of under nutrition and 73.33% (110) children is having the causative factor as dietary fallacies, followed by 26.66% (40) children with no dietary fallacies.

Out of the 150 children 7.33% (11) children had development delay, whereas 92.66% (139) had normal development respective to their age. In this study majority of children with different type of nutritional dermatoses 73.33% (110) are associated with dietary fallacies like early cessation of breast feeding, delayed weaning, faulty weaning technique, bottle feeding with improper dilution and contaminated mixtures, faulty cooking methods (wash- cut-wash-cook, open pan cooking).

Among the children associated with dietary fallacies, majority 40.90% (45) of them presented with nutritional anemia associated dermatosis. Association between dietary fallacies and dermatoses in the present study was statistically significant (p = <0.001).

In this present study, majority of children 60.66% (91) with various types of nutritional dermatoses belongs to class IV socio-economic status, 27.33% (41) to class III and 12.00% (18) children to class V. The relation between nutritional dermatoses and SES is statistically significant (p= < 0.05).

Table 3: Relation between various types of nutritional dermatoses and growth.

Various type of nutritional dermatoses	No of children	Nutritional Status		
		Under weight f (%)	Wasting f (%)	Stunting f (%)
Nutritional anemia	45 (30.00)	36 (37.11)	31 (43.66)	19 (35.8)
Nutritional anemia with Vit A	21 (14.00)	17 (17.52)	16 (22.53)	18 (33.9)
Nutritional anemia with other micro nutrient deficiency	28 (18.66)	15 (15.46)	9 (12.67)	5 (9.43)
Nutritional anemia with vitamin C	2 (1.33)	2 (2.06)	0	1 (1.88)
Vitamin C deficiency	10 (6.66)	2 (2.06)	1 (1.40)	2 (3.77)
Vitamin A deficiency	19 (12.66)	11 (11.34)	3 (4.22)	2 (3.77)
Vitamin A with other micronutrient	12 (8.00)	3 (3.09)	1 (1.40)	0
Phrynoderma only	3 (2.00)	1 (1.03)	1 (1.40)	1 (1.88)
Kwashiorkar associated dermatoses	6 (4.00)	6 (6.18)	5 (7.04)	3 (5.66)
Marasmus associated dermatoses	4 (2.66)	4 (4.12)	4 (5.63)	2 (3.77)
Total	150 (100)	97 (64.66)	71 (47.33)	53 (35.3)
$\chi 2$ test DF= 18, p= <0.05 (significant)				

In the present study, 64.66% (97) of children with nutritional dermatoses are underweight, 47.33% (71) of children showed wasting and 35.30% (53) children are stunted. In all the various forms of nutritional dermatoses

majority of children were underweight. Relation between nutritional dermatoses and growth was statistically significant (p= < 0.05).

DISCUSSION

The present study was conducted with the objective of assessing the association between nutritional dermatoses with socioeconomic status, dietary fallacies and growth in children 1 to 5 years of age.

Out of the 150 study subjects in the present study 58.00% (87) children were males and 42.00% (63) were females. Majority 33.33% (50) of them belonged to 12-24 month's age group. Similar age and sex distribution was found in a study conducted by Mathur et al in which majority of children 60.33% (128) were in the age group of 12-24 months and males 61.30% were higher than females.[8]

In this study, 76.00% (114) of children fall in the group of under nutrition and 73.33% (110) children is having the causative factor as dietary fallacies.

Rao et al study showed that highest proportion of under nutrition 52.17% (214) was in the age group of 12-24 months and quotes that 12-24 months is the "Critical period" for undernutrition and this can be attributed to the associated Dietary fallacies like early cessation of breast feeding, delayed weaning, faulty weaning technique, bottle feeding with improper dilution and contaminated mixtures for the early nutritional deficiencies and transitional growth failure.[14]

In present study 7.33% (11) children in study group is associated with Developmental delay. 92.66% (139) children had normal development during their growth period. Park et a1 study proved that nutritional status has a significant impact on both cognitive and psychomotor development.[11]

With regard to baseline cognitive development, 29.00% of children had MDI scores <70, and 59.00% had scores <85. Weight for age was positively and significantly associated with MDI, for each standard deviation decrease in weight for age, the MDI score is expected to decrease by 2.95 points (SE = 1.32, p = 0.0327).

In present study 73.33% (110) of study groups with nutritional dermatoses are associated with dietary fallacies as a causative factor. In nutritional anemia 40.90% (45) children, in nutritional anemia with vitamin A deficiency 9.09% (10) children, in vitamin A deficiency 15.45% (17), in nutritional anemia with vitamin B deficiency 17.20% (19), in vitamin A with vitamin B deficiency 2.72% (3), in nutritional anemia with vitamin C deficiency 1.81% (2), in vitamin C deficiency 5.45% (6), in kwashiorkar 3.63% (4) and in marasmus 3.63% (4) children are associated with dietary fallacies.

Present study shows higher association of various types of nutritional dermatoses with dietary fallacies when it is compared to Mathur's study mainly due to lower socioeconomic class and lack of knowledge of weaning, child feeding practices among mothers.

In nutritional anemia 44.44% belongs to class V, 30.76% belongs to class IV and 21.95% of children belongs to class III. In vitamin A deficiency 29.26% belongs to class III, 26.36% belongs to class IV and 22.16% of children belongs to class V. In vitamin B deficiency 27.46% belongs to class IV, 26.82% belongs to class III and 22.22% belongs to class V.

In vitamin C deficiency 14.62% belongs to class III, 5.50% belongs to class V and 5.49% belongs to class IV. In PEM 7.68% of children belongs to class IV, 5.55% children belong to class V and 4.87% of children belongs to class III.

Table 4: Comparison of association between nutritional dermatoses and dietary fallacies.

Nutritional Dermatoses	Mathur et al study	Present study
Nutritional anemia	18.31% (37)	40.90% (45)
Vitamin A deficiency	4.55% (9)	Anemia + Vitamin A = 9.09% (10)
		Only vitamin A = 15.45% (17)
Vitamin B complex deficiency	3.55% (7)	Anemia + Vitamin B = 17.2% (19)
		Vitamin A + Vitamin B = 2.72% (3)
Vitamin C deficiency	1.00% (2)	Anemia + Vitamin C = 1.81% (2)
		Only Vitamin C = 5.45% (6)
PEM	2.00% (4)	Kwashiorkar = 3.63% (4)
		Marasmus = 3.63% (4)

Since majority of children in present study belongs to lower socioeconomic class the prevalence of various types of nutritional dermatoses falls in the higher range when compared to Mathur's study as shown in the Table 5. In present study, 64.66% (97) children are underweight, 47.33% (71) are wasted and 35.30% (53) children are stunted. In the present study 7.33% (11) of present study subjects are also had delay in their development. Mathur et al study proved that 26.82% of children with nutrition deficiency had delay in there

developing milestones.[8] Since the present study has done in the rural area of the lower socio-economic class the percentage of underweight and wasting is more compared to the other studies and also indicates the presence of complex interlinked relationship between nutrition deficiency and growth and development.

Table 5: Comparison of association between nutritional dermatoses and socio-economic class.

Nutritional Dermatoses	Mathur et al [10] study			Present study		
	III	IV	V	III	IV	V
Nutritional anemia	23.07%	16.85%	16.48%	21.95%	30.76%	44.44%
Vitamin A deficiency	7.69%	3.37%	4.71%	29.26%	26.36%	22.16%
Vitamin B deficiency	7.69%	1.12%	4.71%	26.82%	27.46%	22.22%
Vitamin C deficiency	3.85%	0	1.17%	14.62%	5.49%	5.50%
PEM	0	3.37%	1.17%	4.87%	7.68%	5.55%

Table 6: Comparison of association between nutritional dermatoses and growth and development.

Nutritional status	Saxena et al (1997)	Rao et al (2005)	Present study
Underweight	57.60 %	61.60%	64.66%
Wasting	22.50%	32.90%	47.33%
Stunting	53.00%	51.60%	35.30%

CONCLUSION

Lower socio-economic condition and dietary fallacies were the two most causative factors which had an adverse effect on nutritional status of child causing dermatoses. Nutrition deficiency had an impact of early transitional growth failure and delay in the achieving mile stone. Proper intersectoral co-ordination between health and social welfare department is to be achieved for the accelerated and extended reach of ICDS to rural areas in socio-economic development and skill-based nutrition education to the families in averting nutritional dermatoses. The strength of the present study is to assess the objective mainly from rural backward areas, even though there are many studies conducted to know the association in urban areas, there are very few studies conducted specifically for nutritional dermatoses among 1 to 5 years children in rural background.

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