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Original research article: Factors influencing on status of under nutrition among children in rural population of Gujarat

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Abstract
Background: The National Family Health Survey (2005-06) data on the nutrition status of children in Gujarat shows that 41.1% of under three and 45% under five children are underweight. Amongst Under three children 49.2% are stunted and 19.7% are wasted. (NFHS 3).
Methods: The study was done in the Waghodiya area (a Rural ICDS project in gujarat). All the eligible 350 children between the age group 0-5 years as found in the survey register of ICDS project for 2 Anaganwadi Centre's (AWC-A & AWC-B) at the time of data collection, were included in the study. The prevalence of undernutrition in 2 AWCs was determined and it was compared with records of 2 AWCs. The primary and secondary data was triangulated to confirm pattern scenario of undernutrition.
Results: In Rural ICDS Block, the prevalence of underutrition came out 57.8%.The difference in nutritional grades of undernutrition in the study were not statistically significant (P>0.05) as per their the registration status at AWCs in ICDS scheme. The type of family and family income of household however were statistically significantly associated with the nutritional status of child (P<0.01).
Conclusions: The undernutrition is prevailing in rural area of Gujarat (India), despite the presence of ICDS scheme; suggesting that other host factors in family are also important and service delivery factors in nutrition and health programmes also needs radical relook for tackling undernourished children in Gujarat.

Keywords: Undernutrition, Risk factor

Introduction

Malnutrition refers to 'undernutrition' resulting from inadequate consumption, poor absorption or excessive loss of nutrients as also to 'overnutrition', resulting from excessive intake of specific nutrients[1]. An individual will experience malnutrition if the appropriate amount or quality of nutrients comprising a healthy diet is not consumed, or not absorbed adequately or not metabolized for an extended period of time.
The words malnutrition and undernutrition are used interchangeably in this document[2].
In Gujarat Malnutrition prevalence rate among children below three years is almost static between NFHS-2 (1998-99) (41.6) and NFHS-3 (2005-06) (41.1%).
Rate of under five children with (<3SD) weight for height which is a cut off for SAM(Severeacute malnutrition) is 5.8%.with severe malnutrition are at increased risk of mortality due to common childhood illnesses since they have reduced immunity and in some cases deranged metabolic system [3].Severely malnourished children contribute significantly to deaths in children under the age of five years.
It is important to recognize that malnutrition is a preventable and treatable cause of morbidity and mortality and therefore there is an urgent need to have in place mechanisms for early detection of growth faltering and taking corrective measures before the child progresses to severe grades of malnutrition[4].Those children who have already developed severe malnutrition require immediate nutritional care and nutritional rehabilitation and amongst them those with one or more conditions like infection, loss of appetite, severe wasting, bilateral pitting oedema on legs also need immediate medical care along with nutrition rehabilitation[5].

Methods

Study area

This descriptivestudy was done at 2 Anganwadi centers of Wagodiya rural area of Vadodara, Gujarat during 2012-2013.

Study population

Inclusion criteria

All the eligible 350 children between the age group 0-5 years as found in the survey register of rural ICDS project for 2 AWCs (175 each from both AWC-A & AWC-B) at the time of data collection, were included in the study.

Exclusion criteria

Overnutrition factor was excluded in our study.

Data collection tools and technique

Both primary and secondary data were collected in the study.
Secondary data collection
It was collected through study of records and reports maintained at different level in ICDS scheme (from AWW to MS to CDPO & programme officer level). Secondary data (of last 3 years undernutrition) was collected through study of records. The relevant reports & registers of AWW showing grades of malnutrition, of these children were procured. This was done to select 2 AWCs finally.
Primary data was collection

Questionnaire was used in this after visiting the Rural ICDS block. The children (0-5 years) were examined for their nutritional status.

Analysis criteria in calculation of prevalence of malnutrition in Children

For calculating the Prevalence, total no of malnourished children and population was procured and point prevalence was calculated from the data. The children were first classified into nutrition grades by weight for age criteria & IAP classification used under ICDS scheme was employed to find their nutritional grades. The prevalence of undernutrition in 2 AWCs was determined and it was finally compared with records of 2 AWCs. The primary and secondary data was therefore triangulated to confirm the pattern of undernutrition.

Result

Table 1: Nutrition grade wise distribution of participants

Nutritional status	Number(n)[%]
Normal	190(42.2)
Under nutrition	260(57.8)
PEM Grade 1	148(34.6)
PEM Grade 2	93(20.1)
PEM Grade 3	13(2.8)
PEM Grade 4	6(1.3)
Total	450(100)

Table 2: Distribution of participants according to nutritional and registration status in ICDS scheme

Nutritional status	Registered(n)[%]	Unregistered(n)[%]	Total(n)[%]
Normal	86(43)	104(39.8)	190(41.2)
PEM Grade 1	72(37)	74(32.8)	148(34.6)
PEM Grade 2	35(17.5)	58(22.1)	93(20.1)
PEM Grade 3	04(2)	09(3.4)	13(2.8)
PEM Grade 4	1(0.5)	05(1.9)	06(1.3)
Total	200(100)	250(100)	450(100)

Chi Square test:X^2=4.6,df=4,p>0.05

Table 3: Distribution of participants according to age groups in AWC A& AWC BAWC-Anganwadi center

Nutritional status	Age group				
	0-6 Month(n)[%]	6 Month-1 yr(n)[%]	1-3 yr(n)[%]	3-6 yr(n)[%]	Total(n)[%]
AWC-A					
Normal	10(52.7)	8(47.1)	24(30.4)	38(34.5)	80(35.5)
Undernourished	9(47.3)	9(52.9)	55(69.6)	72(65.5)	145(64.5)
Total	19(100)	17(100)	79(100)	110(100)	225(100)
Chi Square test:X^2=0.1,df=1,p>0.05, Chi Square test:X^2=0.19,df=1,p>0.05					
AWC-B					
Normal	8(30.7)	10(25.6)	11(16.9)	81(77.8)	110(48.8)
Undernourished	18(59.3)	29(74.4)	54(83.1)	23(22.2)	115(51.2)
	26(100)	39(100)	65(100)	104(100)	225(100)

ChiSquare test:X^2=0.28,df=1,p>0.05ChSquaretest:X^2=57.2,df=1,p<0.0001

Table 4: Sex wise distribution of participants in AWC A& AWC B

Nutritional status	Sex		
	Male(n)[%]	Female(n)[%]	Total(n)[%]
AWC-A			
Normal	48(40)	32(30.5)	80(35.5)
Undernourished	72(60)	73(69.5)	145(64.5)
Total	120(100)	105(100)	225(100)
Chi Square test:X^2=1.8,df=1,p>0.05			
AWC-B			
Normal	54(47.3)	56(50.5)	110(48.8)
Undernourished	60(52.7)	55(49.5)	115(51.2)
Total	114(100)	111(100)	225(100)

Chi Square test:X^2=0.1,df=1,p>0.05

Table 5: Distribution of participants according to Type of family in AWC A& AWC B

Nutritional status	Type of family		
	Nuclear(n)[%]	Joint(n)[%]	Total(n)[%]
AWC-A			
Normal	62(51.6)	18(17.1)	80(35.5)
Undernourished	58(48.4)	87(82.9)	145(64.5)
Total	120(100)	105(100)	225(100)
Chi Square test:X^2=146.4,df=1,p<0.01			
AWC-B			
Normal	84(67.2)	26(26)	110(48.8)
Undernourished	41(32.8)	32.8(74)	115(51.2)
Total	125(100)	100(100)	225(100)

Chi Square test:X^2=146,df=1,p<0.01

Table 6: Distribution of participants according to Family income in AWC A& AWC B

Nutritional status	Family Income			
	Up to 2000/Month	Up to 4000/Month	> 4000/Month	Total
	N (%)	N (%)	N (%)	N (%)
AWC-A				
Normal	0(0)	30(46.9)	50(81.9)	80(35.5)
Undernourished	100(100)	34(53.1)	11(18.1)	145(64.5)
Total	100(100)	64(100)	61(100)	225(10)
Chi Square test:X^2=136.4,df=8,p<0.01				
AWC-B				
Normal	0(0)	63(70)	47(85.5)	110(488)
Undernourished	80(100)	27(30)	08(14.5)	115(52)
Total	80(100)	90(100)	55(100)	225(10)

Chi Square test: X^2=135.3,df=8,p<0.01

Discussion

In our study, overall 41.2% children were normal, whereas in undernutrition the most common grade was grade I PEM (34.6%) and the least common grade was grade 4 PEM (1.3%).

This is in consonance with various studies carried in different states of India such as found in the study by Surwade JB *et al*. (2013) [6] where the majority of the malnourished children in urban and rural area were from grade I malnutrition and also found in many studies by different researchers in India.

The prevalence found in our study (57.8%) is also just similar to prevalence found in study conducted in district Meerut of Uttar Pradesh (57.4%) by Singh AK *et al*. (2012) [7]and also very near to proportion of undernourished children found in rural area (55.56%) of Latur district in Maharashtra by Surwade JB *et al*. (2013)[8].

In our study, mild to moderate malnutrition was almost equally distributed among registered (54.5%) and unregistered children (54.9%). However, severe malnutrition (grade III and IV) was higher in unregistered category (5.3%) as compared to registered category (2.5%) under ICDS scheme. Study by Surwade JB *et al*. (2013) [9]in Latur district in Maharashtra also found the lower utilization of supplementary nutrition service of ICDS scheme from rural area suggesting that mere presence of ICDS scheme may not influence the nutritional status of under six years children if ICDS scheme is not implemented properly.

In AWC-A & B (40% vs. 35.6%) of undernourished children were from nuclear families as compared to Joint families (60% vs. 64.4%). This finding was statistically significant (P<0.01). The study by Joshi HS *et al*. (2011) in district Bareilly of state Uttar Pradesh in India, however found the fact that Prevalence of underweight was significantly higher in children belonging to nuclear families[10]. This contradictory finding might be due to fact that either broken joint families or illiteracy in joint family is responsible for poor child feeding practices in relation to their income, bigger family size and health and nutritional knowledge

In both the AWC A and B majority of children were normal where family income was more than Rs 2000/month. The family income of household was significantly associated with the nutritional status of children (P<0.01) and this fact was also found in many studies in past by different researchers in India.

Conclusion

From my study it will be conclude that eventhough ICDS scheme in rural area of Gujarat prevalence of undernutrition is not reduced that is due to many other key host factors in family such as type of family, family income are playing an important role in nutritional status of under 5 years children. So there is a need to look at other service delivery factors of nutrition and health programmes more seriously for tackling undernourished children in Gujarat by larger sample size studies in future.

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