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Occurrence of malnutrition and its relationship with dietary pattern and utilization of related health care services among under five children in selected ICDS centres, West Bengal

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Abstract

Malnutrition is the condition that develops when the body does not get the right amount of the vitamins, minerals, and other nutrients which need to maintain healthy tissues and organ function as measured by bio-physiologic measurement. Majority of the children in India who live below the poverty line in an environment of multi-deprivation and starvation have impact on their development. Malnutrition is a global problem especially in developing countries. Specifically under nutrition is a major public health problem among under five children. The high mortality rate is largely due to infection and malnutrition. Hence malnutrition was shown to be an underlying cause in 3.4% of all deaths in all young children.

Aim: The aim of the study was to find out the occurrence of malnutrition and its relationship with dietary pattern and utilization of related health care services among under five children in selected ICDS centres, West Bengal.

Objectives: 1. To identify the occurrence of malnutrition among under five children, 2. To find out the dietary pattern of under five children, 3. To determine the utilization of related health care services among under five children, 4. To find out the relationship between malnutrition and dietary pattern, 5. To find out the association between malnutrition and utilization of related health care services.

Methodology: 100 malnourished under five children from selected ICDS centres of Purulia district, west Bengal were selected by using non-probability purposive sampling technique.

Results: The findings revealed that occurrence of malnutrition in Purulia district, Bagmundi block was 37.7%, 61% of malnourished children had medium dietary diversity, 42% of malnourished children frequently suffered by ARI. The co relational analysis suggests that malnutrition of under five children positively correlate with dietary pattern of them ($r = 0.5$). The chi square value showed only significant association between malnutrition and exclusive breast feeding practices, iron syrup supplementation and occurrence of ARI (5.99*, 7.35**, 8.62**).

Keywords: Malnutrition, occurrence of malnutrition, dietary pattern, under five children, utilization of related health care services

Introduction

Children are human resources of the future. Their development is in the interest of the total national development. Under five children aged (1-5 yrs) represent about 29% of the general population in children. A large majority of these children are in rural and tribal areas and in urban slums, they need special attention but unfortunately these children are comparatively less attended. The mortality rate in India is as high as 20% of all deaths of under-fives. The high mortality rate is largely due to infection and malnutrition. Hence malnutrition was shown to be an underlying cause in 3.4% of all deaths in all young children. Nutritional status is the result of complex interaction between the food we eat, our overall state of health, and the environment in which we live- in short, food, health, and caring, the three “pillars of well-being” [2].

Need of the study

The UN ranks India in the bottom quartile of countries by under-1 infant mortality (The 53rd highest), and under-5 child mortality (78 deaths per 1000 live births). According to the 2008 CIA fact book, 32 babies out of every 1,000 born alive die before their first birthday.

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At least half of Indian infant deaths are related to malnutrition, often associated with infectious diseases. Malnutrition impedes motor, sensory, cognitive and social development, so malnourished children will be less likely to benefit from schooling and will consequently have lower income as adults. It is reported that 63% of them are go to bed hungry, and 53% suffering from chronic malnutrition [3]. The most damaging effects of under-nutrition occur during pregnancy and the first two years of a child's life. These damages are irreversible, making dealing with malnutrition in the first two years is crucially important. Some factors are believed to influence health and play an important role in prevalence of malnutrition those are age of weaning, birth weight, antenatal visits of mother, breast feeding, immunization, diarrhoeal episodes in past 2 weeks, frequency of food intake per day, height of mother, practise of exclusive breast feeding practices, use of unhygienic latrines etc, because of these factors the under five children suffer from malnutrition and it leads to the mortality ,morbidity in under five children. Therefore this community based study has done as a brighter side to identify the occurrence of malnutrition and find out the relationship between malnutrition and dietary pattern among the under five children residing in Purulia district, West Bengal, which will help in planning future intervention. According to FAO reports there are about 460 million people 15% of the world population excluding china who are malnourished of which about 300 million live in south Asia where they constitute one third of the population [4]. About half of the children are underweight in Orissa, Maharashtra and west Bengal. In rural areas, 20.3% of the children were severely malnourished, 30.2% were moderately malnourished, 50.5% were malnourished (Moderate and severe). In urban areas 12% of the children were severely malnourished, 27% of the moderately malnourished and 39% were malnourished (Moderate and severe) [5].

Problem statement

Occurrence of malnutrition and its relationship with dietary pattern and utilization of related health care services among under five children in selected ICDS centres, West Bengal.

Objectives of the study

1. To identify the occurrence of malnutrition among under five children.
2. To find out the dietary pattern of under five children.
3. To determine the utilization of related health care services among under five children.
4. To find out the relationship between malnutrition and dietary pattern.
5. To find out the association between malnutrition and utilization of related health care services.

Delimitation

The study was delimited to

- Under five children with their mothers who are available during study period.
- Mothers of under five children who can comprehend Bengali.

Research Methodology

Research Approach

Survey research approach was considered to be the most appropriate for the study.

Research Design

Descriptive Survey research design was considered to be the most appropriate for the study.

Setting of the study

The study was conducted in Purulia District, West Bengal

- **Target population:** The target population was included all under five children of Purulia District, West Bengal.
- **Accessible population:** The accessible population included the under five children who attended selected ICDS centers of Purulia District, West Bengal.

Sample

Malnourished under five children attended selected ICDS centres.

Sample size

One hundred malnourished under-five children were selected as sample.

Inclusion Criteria for selection of sample

The under five children with their mothers/Care givers who

- Were 1-5 years of age
- Reside at the selected rural community.
- Were willing to participate in the study.
- Were present during data collection procedure.

Exclusion criteria

The under five children with their mothers/Care givers who are not;

- Willing to participate in this study
- Available at the time of data collection

Sampling Technique

Non-probability purposive sampling technique was used to select the sample.

Variables of the study

Variables selected in the present study were

Research Variables

- Occurrence of malnutrition among under-five children
- Malnutrition
- Dietary pattern and utilization of related health care services among under-five children.

Demographic Variables

Demographic Variables namely age of child, sex of the child, birth order, family type, number of family member, religion, Occupation and educational level of mother and father, socio economic class.

Description of tools

Tool I Record analysis proforma

Record analysis Proforma composed of six items for Identification of Malnutrition (within one year) as per ICDS Centre's Register.

Tool II Semi structured interview schedule

Semi structured interview schedule was composed of 11 items on socio demographic and socio economic data. The

socio demographic data (Item 1-10) determine the variables such as age, sex of child, type of family, family size, education of mother and father and occupation of mother and father and socio economic status scale by modified B.G. Prasad scale.

Tool III MUAC tape

Mid upper arm circumference tape was created in order to support implementation of the new WHO and UNICEF joint statement on WHO child growth standards and the identification of severe acute malnutrition in infants and children published in May 2009.

Cut-off points; Red: 0-11.5 cm indicates severe acute malnutrition. Yellow: 11.5 cm - 12.5 cm indicates moderate acute malnutrition. Green: from 12.5 cm indicates normal level.

Tool IV Standard FAO Diet Diversity Questionnaire

Dietary diversity is a qualitative measure of food consumption that reflects household access to a variety of foods; at individual level.

FAO guidelines provide a standard dietary diversity questionnaire that can be used at household or individual level. This questionnaire includes three parts:

- The question introducing the open recall of the respondent’s food consumption on the previous day
- A space to record all the foods and drinks mentioned

- during the open recall
- The list of 16 standard food groups (FAO, 2011).

Tool V Structured interview schedule

Structured interview schedule was composed of 12 items for assessing utilization of health care services like immunization, use of ICDS services, administration of iron syrup, deworming , vitamin a oil supplementation, exclusive breast feeding, occurrence of diarrhoea and use of diarrheal treatment.

Data Analysis and Discussion

Table 1: Frequency and percentage distribution of registered malnutrition cases in last one year (November 2016 to October 2017)

Tear and Months	Total Under Five Children (1-5 yrs)	Registered Malnourished Children	Occurrence (%)
November 2016 to October 2017	5268	1986	37.70%

Table 1 shows that total registered under five (1-5 yr) children in the last one year (November 2016 to October 2017) was 5268 in Bagmudi Block, Purulia District and total malnourished children was 1986. So the occurrence of malnutrition (According to operational definition) was 37.7%.

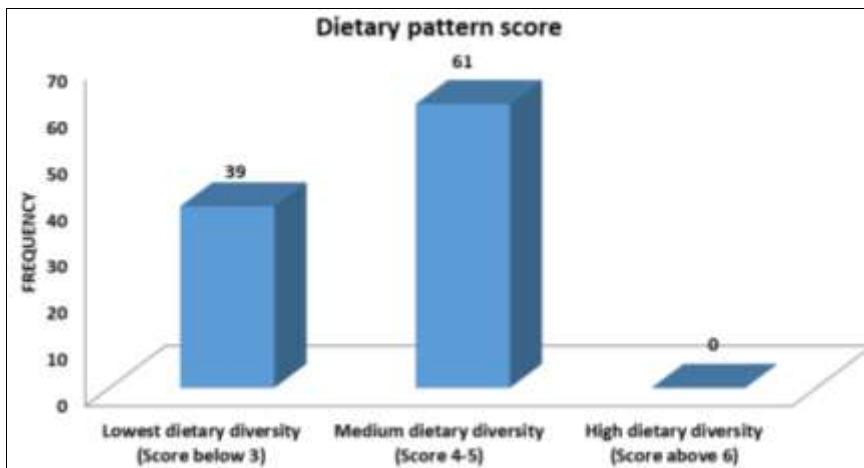


Fig 1: Bar diagram showing the frequency distribution of malnourished under five children according to their dietary pattern score, n = 100

Data presented in figure 1 depicts that 61% had medium dietary diversity and rest 39% had lowest dietary diversity.

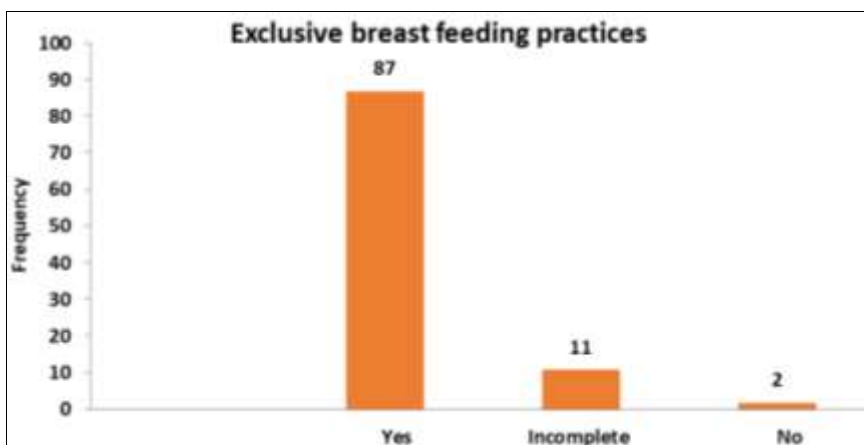


Fig 2: Bar diagram showing the frequency distribution of malnourished under five children according to breast feeding practices, n = 100

Table 2: Frequency and percentage distribution of malnourished under five children according to utilization of ICDS services

Variables	Frequency	Percentage (%)
Attend ICDS Centre		
Every day	38	38
Sometimes	28	28
Never	34	34
Frequency of Taking Diet		
Every day	38	38
Sometimes	28	28
Never	34	34
Weight Monitoring		
Monthly	38	38
Quarterly	28	28
Never	34	34

Data presented in table 2 depict that 38% children attended ICDS centre every day, 34% never attended and rest 28% children attended sometimes.

It also shows that 38% children took diet every day, 34% never took diet and rest 28% took diet sometimes. It also shows that weight was monitored monthly and quarterly in 38% of children and 28% of children respectively and 34% children’s weight was never monitored.

Table 3: Frequency and percentage distribution of malnourished under five children according to utilization of related health care services

Variables	Frequency	Percentage (%)
Iron Syrup Supplementation		
Yes	49	49
Incomplete	20	20
No	31	31

Data presented in table 3 shows that 49% children took iron syrup regularly, 31% never took and rest 20% took irregularly

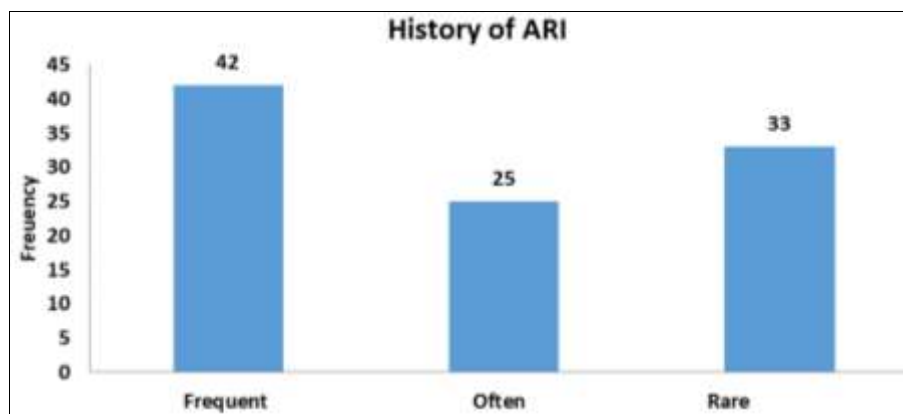


Fig 3: Bar diagram showing the frequency distribution of malnourished under five children according to occurrence of ARI, n₁ = 100

Data presented in figure 3 shows that 42% children frequently suffered by ARI, 33% rarely suffered by ARI and rest 25% children often suffered by ARI.

Table 4: Correlation Coefficient and its significance exists between malnutrition and dietary pattern, n₁ = 100

Variables	r	t
Malnutrition	0.5	5.7***
Dietary Pattern (Diversity)		

t DF (98) 3.17; p<0.001

Data presented in table 4 indicated that calculated r value between malnutrition and dietary pattern was 0.5, showing positive correlation between malnutrition and dietary pattern of under five children. This can be evident by the calculated t value of 5.7 which is significant at the level of 0.001 level of significance.

So the co relational analysis suggests that children who reported malnutrition most likely to have improper dietary pattern.

Table 5: Chi-square value showing association between malnutrition and utilization of ICDS services of malnourished under five children, n₁=100

Variables	Grade of Malnutrition		Chi-Square
	MAM	SAM	
Attend ICDS centre			
Utilized	26	12	0.004
Not utilized	42	20	
Dietary service			
Utilized	26	12	0.004
Not utilized	42	20	
Weight Monitoring			
Utilized	26	12	0.004
Not utilized	42	20	

χ^2 df (1) = 3.84, p>0.05

Data presented in table 5 shows that 26 MAM children and 12 SAM children utilized ICDS services, 42 MAM children and 20 SAM children did not utilized ICDS services. Chi

square was computed to determine the association between malnutrition and utilization of ICDS services among malnourished under five children was 0.004 for DF 1 at 0.05

level of significance which was less than the table value. So it could be concluded that there was no significant association between malnutrition and utilization of ICDS services.

Table 6: Chi-square value showing association between malnutrition and exclusive breast feeding practices of malnourished under five children, $n_1=100$

Variables	Grade of Malnutrition		Chi-square
	MAM	SAM	
Exclusive breast feeding practices			5.99*
Utilized	63	24	
Not utilized	5	8	
$\chi^2_{df(1)} = 3.84, p < 0.05$			

Data presented in table 6 shows that 63 MAM children and 24 SAM children utilized exclusive breast feeding practices, 5 MAM children and 8 SAM children did not utilize exclusive breast feeding practices. Chi square was computed to determine the association between malnutrition and exclusive breast feeding practices of malnourished under five children was 5.99 for DF 1 at 0.05 level of significance which was more than the table value. So it could be concluded that there was significant association between malnutrition and exclusive breast feeding practices.

Data presented in table 7 shows that 27 MAM children and 22 SAM children utilized Iron syrup supplementation, 41 MAM children and 10 SAM children did not utilize Iron syrup supplementation. Chi square was computed to determine the association between malnutrition and iron syrup supplementation of malnourished under five children was 7.35 for DF 1 at 0.01 level of significance which was more than the table value.

So it could be concluded that there was significant association between malnutrition and utilization of Iron syrup supplementation.

Table 7: Chi-square value showing association between malnutrition and utilization of iron syrup supplementation of malnourished under five children, $n_1=100$

Variables	Grade of Malnutrition		Chi-square
	MAM	SAM	
Iron syrup supplementation			7.35**
Utilized	27	22	
Not utilized	41	10	

$\chi^2_{df(1)} = 6.63, p < 0.01$

Table 8: Chi-square value showing association between malnutrition and history of ARI among malnourished under five children, $n_1 = 100$

Variables	Grade of Malnutrition		Chi-square
	MAM	SAM	
History of ARI			8.62**
Present	52	15	
Absent	16	17	

$\chi^2_{df(1)} = 6.63, p < 0.01$

Data presented in table 8 revealed that 52 MAM children and 15 SAM children had history of ARI, 16 MAM children and 17 SAM children did not have any history of ARI. Chi square was computed to determine the association between malnutrition and presence of history of ARI was 8.62 for df 1 at 0.01 level of significance which was more than the table

value.

So it could be concluded that there was significant association between malnutrition and presence of ARI.

Major findings of the study

- The occurrence of malnutrition (According to operational definition) in Purulia district is 37.7%.
- Out of 100 malnourished children 61% had medium dietary diversity.
- It was found that 38% children attended ICDS centre every day, took diet and monitored weight monthly, 49% children took iron syrup regularly.
- 42% children frequently suffered by ARI.
- The co relational analysis suggests that children who reported malnutrition most likely to have improper dietary pattern.
- The result indicated that there was statistically significant association of chi square value between malnutrition and utilization of Iron syrup supplementation among malnourished under five children. [$\chi^2_{df(1)} = 7.35$ at $p < 0.01$]
- There was statistically significant association of chi-square value between malnutrition and exclusive breast feeding practices among malnourished under five children. [$\chi^2_{df(1)} = 5.59$ at $p < 0.05$].
- It also indicated that there was statistically significant association of chi square value between malnutrition and presence of ARI among malnourished under five children. [$\chi^2_{df(1)} = 8.62$ at $p < 0.01$].

Conclusion

The following conclusions were drawn on the basis of the findings of the study

- Occurrence of malnutrition is 37.7% among under five children in Purulia district, West Bengal. So it could be concluded that nutritional control program needs special attention in that area.
- There is statistically significant correlation between malnutrition and dietary pattern of malnourished under five children. So the parents of under five children should be aware of dietary pattern of children and proper diet should be provided.
- It was statistically significant that exclusive breast feeding practices was closely associated to malnutrition among malnourished under five children. So it could be concluded that exclusive breast feeding practices is necessary to prevent malnutrition.
- Prevention of ARI and iron syrup supplementation could reduce chances of malnutrition.

Conflict of Interest

Not available.

Financial Support

Not available.

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