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Original Research Article

A cross-sectional study among severely acute malnourished children and socio-demographic factors with associated factors in Central India.

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Abstract

Background: Mother-child bonding is a rapid process which occurs immediately after birth, in which mother forms an affectionate attachment with the child. This is interrupted when child is admitted to nutritional rehabilitation centers due to severe acute malnutrition. SAM increases significantly the risk of death in children under five years of age. It can be an indirect cause of child death by increasing the case fatality rate in children suffering from common illnesses such as diarrhea and pneumonia. Children who are severely wasted are 9 times more likely to die than well-nourished children .

Aim: 1) To find out the socio-demographic factors associated with severely acute malnourished children. 2) To determine the associated factors among severely acute malnourished children.

Methods: This cross-sectional study was conducted on total 450 severely acute malnourished children admitted in nutritional rehabilitation centers of Jabalpur district from April 2019 to July 2020 for find out the socio-demographic and associated factors.

Results: In the present study, 50.9% (229) were male child and 49.1% (221) were female child. 35.8% children were between age group >1-2years, mean age of child was 23.38 months (SD-11.96). Most of the children were from rural area 69.1% (311) , most of the children 93.6% (421) were Hindu by religion, 51.3% (231) children were from ST caste. 25.1 % (113) mothers of severely acute malnourished children were educated till primary school, 32% (144) fathers of severely acute malnourished children were educated up to high school. 48.5% (218) fathers of severely acute malnourished children were semi-skilled by occupation.

Conclusion: In our study we conclude that toddler (1-2year) age group are more prone to develop severe acute malnutrition. We found that in our study that children from the rural areas, education status of the mother, occupation of the father are some determining factors for the severe acute malnutrition.

Key words: severe acute malnutrition, nutritional rehabilitation center, children, mother

1. INTRODUCTION

Mother-child bonding is a rapid process which occurs immediately after birth, in which mother forms an affectionate attachment with the child. This is interrupted when child is admitted to nutritional rehabilitation centers due to severe acute malnutrition. SAM increases

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significantly the risk of death in children under five years of age. It can be an indirect cause of child death by increasing the case fatality rate in children suffering from common illnesses such as diarrhea and pneumonia. Children who are severely wasted are 9 times more likely to die than well-nourished children [1,2]. According to UNICEF India tops South East Asia in child malnutrition. It is estimated that 40% of all under weight babies in the world are Indian. The prevalence of underweight among children in India is amongst the highest in the world, and nearly doubles that of Sub-Saharan Africa. Fifty million Indian under five are affected by malnutrition. The national average is 42 out of 100 children. [3,4]

AIMS AND OBJECTIVES

1) To find out the socio-demographic factors associated with severely acute malnourished children.
2) To determine the associated factors among severely acute malnourished children.

2. MATERIALS AND METHOD

This cross-sectional study was conducted at selected Nutritional Rehabilitation centers of Jabalpur city, from April 2019 to July 2020. The study was approved by the Ethics Committee of the institute. Written informed consent was obtained from all recruited participants before the study. **Inclusion criteria** were children of severely acute malnourished children whose mothers were willing to participate in the study **Exclusion Criteria**-Those were admitted again with in the selected Nutritional Rehabilitation Center during our study period and those were critically ill**.** The sample size was estimated by using formula $N=Z^2pq/d^2$ (P= 23.5%[2],q=(100-P), Absolute error d as 5% and Z as 1.96 with 95% confidence interval and 50% non-respondents).Total of 450 children with severely acute malnutrition admitted in selected Nutritional Rehabilitation Center (NSCB Medical College NRC and Victoria Hospital NRC) in Jabalpur district (M.P.) were taken as final sample size. After explaining the study protocol and obtaining informed consent, Predesigned semi-structured Questionnaire was used to assess the socio-demographic factors (Questionnaire were modified in local language after pre-testing). Equal no. of study subjects were taken from NSCB medical college and Victoria Hospital NRC, so total sample size divided into two equal parts. A total of 225 study subjects were taken from medical college as well as Victoria hospital NRC respectively. These NRC from Jabalpur city were selected by simple random method using lottery method, hence 225 study subjects were taken from each NRC. **Sampling Technique-**Consecutive/sequential sampling technique was used for the selection of study subjects. Sample collection from each NRC were done till the completion of required study subjects within due time. Subjects admitted at NRC were approached on planned weekly visit to the NRC. The subjects those were found to be admitted in last 14days at the time of visit were approached included in the study.

DATA COMPILATION AND STATISTICAL ANALYSIS-Data thus obtained was coded and entered into Microsoft excel worksheet. This was analyzed using Epi Info 7.1.5 and SPSS 20.0 (free trial version). The frequency distribution of study subjects according to their socio-demographic factors were analyzed . For determining the association of socio-demographic factors with the other factors chi-square test, t-test were applied. The statistical significance was evaluated at 5% level of significance. P value less than 0.05 was considered as statistically significant.

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3. RESULT

As evident from table no.1 socio- demographic characteristics of severely acute malnourished children, most of the mothers of severely acute malnourished children were of the age group 18-23years (56%) followed by age group 24-29years (41.9%), mean age of the mothers was found to be 23.54years (SD 2.43). In the present study, 50.9% (229) children were male child and 49.1% (221) were female child. 35.8% mothers had children between age group >1-2years, followed by 26% mothers had children between age group >2-3years, mean age of child was 23.38 months (SD-11.96). Most of the children were from rural area 69.1% (311) and 30.9% (139) were from urban area. Most of the children 93.6% (421) were Hindu by religion, followed by 5.3% (24) were Muslim by religion. Most of the children 51.3% (231) were from ST caste, followed by 27.3% (123) were OBC caste..

Table 1. frequency Distribution of severely acute malnourished children according to socio-demographic factors

Characteristics	Frequency(n=450)	Percentage
Age of the mother in years		
1)18-23	252	56
2)24-29	189	41.9
3)30->30	9	2.1
Mean age	23.54±2.432	
Gender of child		
1)Male	229	50.9
2)Female	221	49.1
Age of child(in years)		
1) 0-1 year	104	23.1
2)>1-2year	161	35.8
3) > 2-3year	117	26
4) >3-5year	48	10.7
Mean age (in months)	23.38±11.96	
Area of residence		
1)Urban	139	30.9
2) Rural	311	69.1
Religion		
1)Hindu	421	93.6
2)Muslim	24	5.3
3)Sikh	0	0
4)Christian	1	0.2
5)Others	4	0.9
Caste		
1)General	19	4.2
2)OBC	123	27.3
3) SC	77	17.1
4) ST	231	51.3

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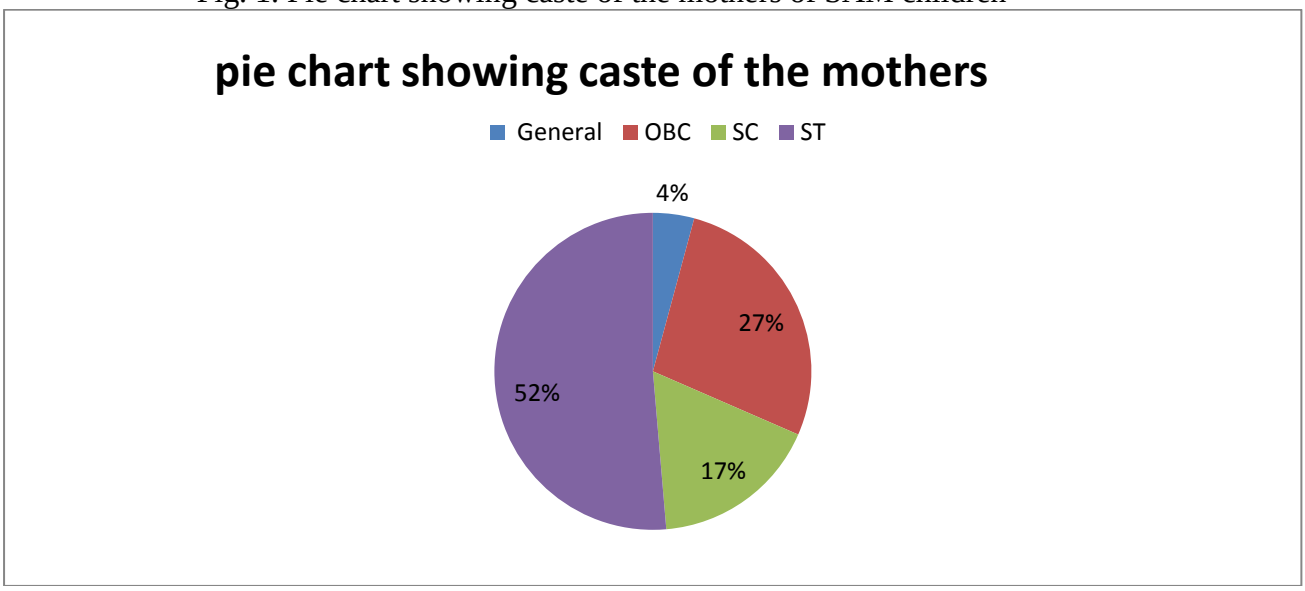
Fig. 1 showing that most of the children 51.3% (231) were from ST caste, followed by 27.3% (123) were OBC caste..

Fig. 1. Pie chart showing caste of the mothers of SAM children



As depicted in Table No. 2 socio- demographic characteristics of severely acute malnourished children. 25.1 % (113) mothers of severely acute malnourished children were educated till primary school, followed by 24.5% (110) mothers were educated up to middle school. 89.8% (404) mothers were unemployed, followed by 10.2% (46) mothers were semiskilled by occupation. 32% (144) fathers were educated up to high school, followed by 28.9(130) fathers educated up to middle school. Most of the fathers 48.5% (218) were semiskilled, followed by 27.8 % (125) were unskilled by occupation.

Table 2. Distribution of severely acute malnourished children according to socio-demographic factors

Characteristics	Frequency(n=450)	Percentage
Education status of mother		
1. Graduate & Postgraduate	17	3.8
2.Higher Secondary	54	12
3.High School	77	17.1
4. Middle School	110	24.5
5. Primary School	113	25.1
6. Literate	29	6.4
7. Illiterate	50	11.1
Occupation status of mother		
1.Professional	0	0
2.Semi-professional	0	0

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3.Clerks/Shopkeeper/Farmers	0	0
4.Skilled	0	0
5.Semi-skilled	46	10.2
6.Unskilled	0	0
7.Unemployed	404	89.8
Education status of father		
1. Graduate & Postgraduate	0	0
2.Higher Secondary	73	16.2
3.High School	144	32
4. Middle School	130	28.9
5. Primary School	77	17.2
6. Literate	0	0
7. Illiterate	26	5.8
Occupation status of father		
1.Professional	0	0
2.Semi-professional	0	0
3.Clerks/Shopkeeper/Farmers	22	4.9
4.Skilled	85	18.9
5.Semi-skilled	218	48.5
6.Unskilled	125	27.8
7.Unemployed	0	0

Table no. 3 shows socio- demographic characteristics of the mothers of severely acute malnourished children. 88.7% (399) children were from joint family, followed by 11.3 % (51) nuclear family. Most of the children , 83.8% (377) had 5 or >5 family members and 16.2% (73) had <5 family members. 46.7% (210) child with 1 sibling, followed by 28% (126) child with more than 1 sibling. 83.8%(399) children were from lower class of socio-economic status, followed by 5.8% (28) children were from lower-middle class of socio-economic status.

Table No. 3 Distribution of severely acute malnourished children according to socio-demographic factors

Characteristics	Frequency	Percentage
Type of family		
1. Nuclear	51	11.3
2. Joint	399	88.7
Total family members		
1. less than 5	73	16.2
2. 5 or >5	377	83.8
Age of the mother at the time of marriage		
1. <18	58	12.9
2. ≥18	392	87.1
Mean age of marriage	18.53±1.67	
No. of siblings of child		
1. 0	114	25.3
2. 1	210	46.7

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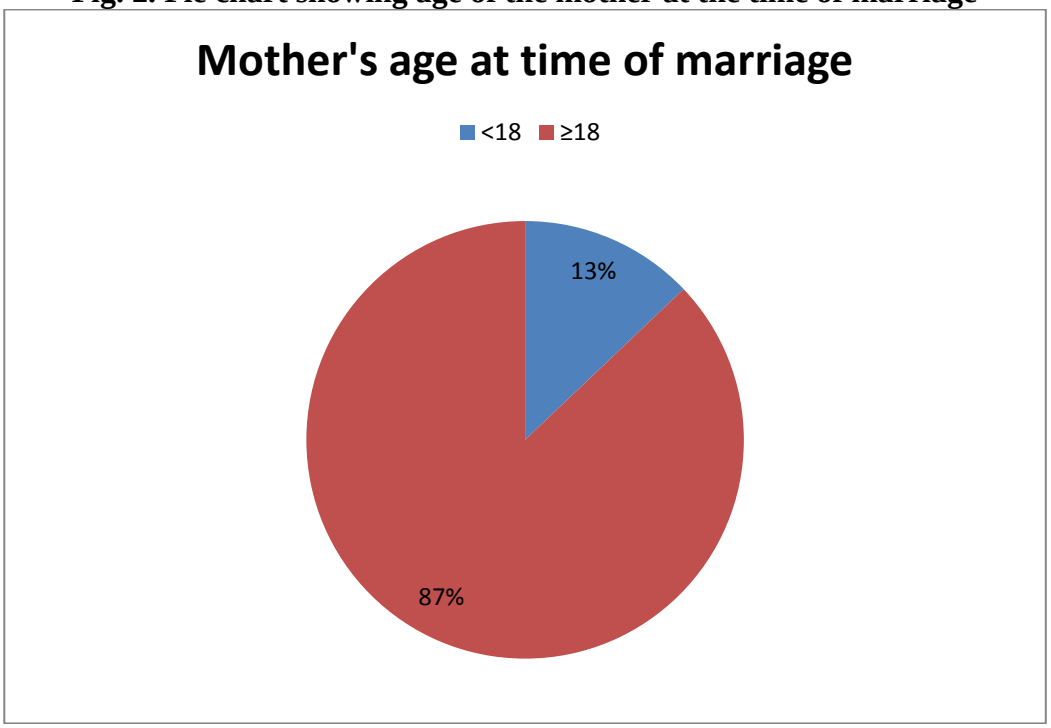
3. >1	126	28
Socio-economic status		
1.Upper Class	0	0
2.Upper Middle Class	2	0.4
3.Middle Class	21	4.7
4.Lower Middle Class	28	5.8
5.Lower Class	399	83.8

Fig. 2 showing that 12.9% (58) mothers were married at age <18 years and 87.1% (392) mothers were married at age 18 or >18 years.

Fig. 2. Pie chart showing age of the mother at the time of marriage



4. DISCUSSION

Study done by Burtscher et al [5] in their qualitative study community based study done in rural Bihar, India reported that 98% mothers were in age-group 20-34 years. Mean age of the mother was 25 years. According to gender of the child 76.9% mothers had male child and 56.3% had female child and they found difference was highly significant. Also study conducted by Stewert et al[6] in Malawi reported that the mean maternal age was 25.5years (SD 5.5) similarly 48.4% mothers had male child and 51.6% mothers had female child. Findings of these studies were not accordance to our study. Differences in findings of these studies might be due to that studies were conducted at different geographical location and had different socio –demographic characteristics of study participants. Study done by Burtscher et al [5] in their qualitative study community based study done in rural Bihar, India reported that 12% mothers were literate compared to 36% fathers literacy status. Also study conducted by Stewert et al[6] in Malawi reported that 40.2% mothers completed 6th standard and above.Study done by Levinson et al[7] in west Bengal, India, reported that 60.6% fathers

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completed their secondary education. Ambedkar et al[8] study done in rural India, found 85% mothers were unemployed and 60% fathers were semiskilled by occupation and followed by 23% unskilled by occupation. Differences in findings of these studies in contrast to our study might be due to difference in our study area, educational status ,occupational status of the study participants. A study done by Shrivastav et al[9] found that 64 % mothers were from joint family compared to 36% were from nuclear family. Study done by Kirti Patel et al[10] in Maharashtra found that 53% mothers were from joint family compared to 47% were from nuclear family and 15% belonged to middle class. The discrepancy might be due to that study which was conducted in Maharashtra have better socioeconomic status and better health infrastructure than our state.

5. CONCLUSION

In our study we conclude that toddler (1-2year) age group are more prone to develop severe acute malnutrition. We found that in our study that children from the rural areas, education status of the mother, occupation of the father are some determining factors for the severe acute malnutrition.

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