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Health Assessment of Newborns by CAN Score: A Comprehensive Study

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ABSTRACT

Newborns health and survival is closely associated with maternal health and also an important indicator for health status of general population. The aim of research is to assess health status of newborns by CAN score and to explore the influence of maternal socio economic factors on newborns health. For the present study, Lakhanpur and Jharsuguda Block of Jharsuguda district of Odisha was selected as study area. 300 newborns were selected randomly for the present study and socio demographic characteristic of mothers was studied with the help o fself modified UdaiPareek scale. The results of the study revealed that the 64.29% newborns born to the mothers having less than 20 year of age. 56.07% malnourished newborns belonged to lower caste mother followed by scheduled caste mothers i.e 55.81% . It was clearly observed that less number of malnourished newborns belonged to the mother who had graduation and above educational qualification. The incidents of giving birth to malnourished babies were more among the mothers who work within home. Highest malnourished newborns(60.91%) found among mothers having family income Rs 10353 – 15535/-per month . The 64.29% malnourished newborns belonged to mothers having class-IV socio-economic status. Statistically a strong association was observed between maternal education , occupation, monthly income, socio economic class with health status of newborns according to CAN score.

1. Introduction

Newborns health and survival is closely associated with maternal health and also an important indicator for health status of general population. Newborns health has now come to the attention of policymakers and UNICEF and they are joining their efforts to address the preventable deaths and percentage of malnutrition related to birth process and other associated factors. Though India accounts for highest burden of under-5 deaths, it has shown faster decline in under-5 mortality reduction compared with the global fall. Worldwide, the under-5 mortality rate reduced by 49 per cent from 90 per 1000 live births in 1990 to 46 per 1000 live births in 2013, while India achieved a reduction of 59 per cent in under-5 mortality from 126 in 1990 to 52 in 2012. .India has shown good progress in the MDGs' era and narrowly missed its MDG 4 target for under five mortality, achieving an under five mortality rate of 43 per 1000 against the target of 42 per 1000 live births. However in spite of these gains, the burden still remains high with India contributing to one fifth of under-five mortality burden and a quarter of neonatal deaths globally. In terms of absolute numbers, this translates into 1.1 million under 5 deaths, of which 630,000 happen during the first four weeks of life. In order to accelerate progress it is important that preventing neonatal deaths has been prioritized. (WHO,2018)

Under nutrition is an underlying factor in 38 per cent of under-5 deaths and breaking the intergenerational cycle of malnutrition needs to focus on nutrition of adolescent girls and pregnant women.(UNICEF, 2018)Thus understanding the connections between a mother's environmental factors and that of her newborns health is crucial for addressing maternal and infant mortality and morbidity.

Maternal environment factors included her macro and micro social factors. Influence of environmental condition on occurrence of malnutrition has been well established since long. Macro environment condition includes social, economic and cultural variables whereas micro environment condition includes poor housing and sanitation. Various type of maternal attributes plays a crucial role in prevalence of malnutrition (Lenka, 2015). In the present study an attempt has been made to assess the health status of newborns with help of CAN Score and its association with maternal socio economic factors.

2. Objective

The aim of research is to assess health status of newborns by CAN score and to explore the influence of maternal social factors on newborn's health.

3. Methodology

1.1. Study Area: For the present study Lakhanpur and Jharsuguda Block of Jharsuguda district of Odisha was selected as study area. 957 Anganwadi centers at Jharsuguda district out of them 16 numbers of Anganwadi centers of Lakanpur block and 12 Anganwadi centers of Jharsuguda Block were selected randomly for the present study.

1.2. Research Design: considering the different literature and keeping objective in the mind exploratory cum descriptive research was most suitable for the present study.

1.3. Sampling Design: For the present study 300 newborns along with their mother were selected randomly.

1.4. Tools & Techniques used:

1.4.1. Health assessment of newborns by "CAN SCORE": The health status of newborns was assessed by clinical assessment of nutrition score popularly termed a "CAN Score" devised by Metcoff J (1994). The score was used given from the examination of clinical signs on nine regions of the body via hair, cheeks, neck, arms, chest, skin of the abdominal wall, back, buttocks and leg. Depending upon the grade of development of clinical sign CAN Score was awarded for each region ranging from a minimum of 1 to a maximum of 4 as suggested by Metcoff. A score of 4 denotes "well nourished" and a score of 1 denotes evidence of malnutrition. A score of 2 or 3 indicates a degree of improvement in the nutritional status compared to the score of one. The highest possible rating of CAN Score is 36 and the lowest possible is 9 for the nine region of the body collectively.

1.4.2. Demographic Profile: The self modified UdaiPareek's socio-economic scale was used to collect the socio-demographic information from the mothers of newborns.

1.4.3. Data Analysis: After the collection of data, the Statistical analysis of the data was done with the help of computer by using Microsoft excel and the result was interpreted.

4. Results and Discussion

Figure-1

4.1 Distribution of newborns according to prevalence of malnutrition

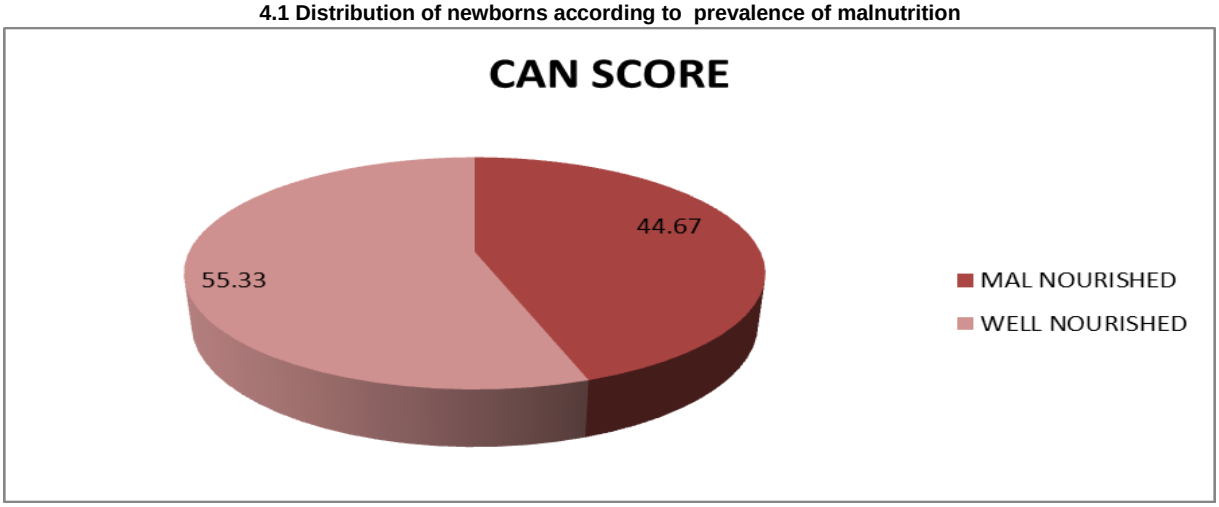

Figure no.1 indicates the prevalence of malnutrition according to CAN score among newborns. It was observed that 44.67%newborns were malnourished whereas 55.33% were well -nourished. Incidence of malnutrition was found to be 24 %by Soundarya, et al (2012).Singhal et al (2012) also identified 17.5% (n = 35) malnourished neonates and 82.5% (n = 165) of babies as well-nourished with the help of CAN Score in their studies.

4.2 Maternal age and prevalence of malnutrition in new borns

Table no-1

Distribution of respondents according to age of mother and prevalence of malnutrition

Age	Malnourished		Well nourished		Total		Chi Square Value
	No.	%age	No.	%age	No.	%age	
Less than 20	9	64.29	5	35.71	14	100.00	CALCULATED VALUE=3.11 Tabulated Value: 9.488 Result- Not Significant
20-25	70	43.75	90	56.25	160	100.00	
26-30	44	42.31	60	57.69	104	100.00	
31-35	9	47.37	10	52.63	19	100.00	
Above 35	2	66.67	1	33.33	3	100.00	

The Table -1 reveals the impact of maternal age on prevalence of malnutrition among the newborns. 64.29%, 43.75%, 42.31%, 47.37% and 66.67% newborns were malnourished, Whereas 35.71%, 56.25% ,57.69%, 52.63% and 33.33% were well nourished among the mothers of the age group of Less than 20, 20-25, 26-30, 31-35 and above 35 respectively. Majority malnourished newborns found among mothers belonged to age group less than 20 years and above 35 years. There was no significant association found in prevalence of malnutrition among newborns and maternal age. But Sanghai et.al (2016) and Dayanithi et.al (2018) found significant association of newborns with maternal age and foetal outcome.

4.3 Caste of mothers and prevalence of malnutrition among newborns

Table No-2

Distribution of respondents according to caste of mother and prevalence of malnutrition among new borns

CASTE	Malnourished		Well nourished		Total		Chi Square Value
	No.	%age	No.	%age	No.	%age	
Schedule Caste	24	55.81	19	44.19	43	100.00	CALCULATED VALUE= 16.47 Tabulated Value: 11.070 Result-Significant
Lower Caste	60	56.07	47	43.93	107	100.00	
Artisan Caste	21	34.43	40	65.57	61	100.00	
Agriculture Caste	17	29.31	41	70.69	58	100.00	
Prestige Caste	11	37.93	18	62.07	29	100.00	
Dominant Caste	1	50.00	1	50.00	2	100.00	

Table no. 2 indicates that maximum respondents (107) were belonged to lower caste, out of them 56.07% had newborns with malnutrition and 43.93% had well nourished newborns. Only 2 respondents were belongs to dominant caste, out of them (1) newborns was malnourished and 1 number was well nourished. 55.81%,34.43%, 29.31% and 37.93% newborns are malnourished who belonged to schedule caste, Artisan Caste, Agriculture Caste and Prestige Caste respectively. There was a significant statistical association found between caste of mother and prevalence of malnutrition among newborns. Ray et.al (2018) also found significant association with caste of mother and foetal outcome.

4.4 Maternal education and prevalence of malnutrition among new borns

Table no-3

Distribution of respondents according to maternal education and prevalence of malnutrition among new borns

EDUCATION	Malnourished		Well nourished		Total		Chi Square Value
	No.	%age	No.	%age	No.	%age	
Illiterate	0	0.00	2	100.00	2	100.00	CALCULATED VALUE=61.47 Tabulated Value: 14.067 Result-Significant
Can Read Only	0	0.00	1	100.00	1	100.00	
Can Read & Write	1	33.33	2	66.67	3	100.00	
Primary	18	62.07	11	37.93	29	100.00	
Middle	61	70.11	26	29.89	87	100.00	
High School	49	41.53	69	58.47	118	100.00	
Graduate	5	8.47	54	91.53	59	100.00	
Above	0	0.00	1	100.00	1	100.00	

The incidences of malnourishment among the babies in relation to mother's educational status were assessed in the present study and present in table -3. From the table it was clearly observed that the babies of mothers with graduation and above education level of education showed less incidence of Malnourishment (8.47 %), whereas the babies of illiterate and less educated mothers had more number of malnourished babies. There was a statistical significant association between prevalence of malnutrition among newborns according to CAN score and maternal educational status found in this study. Naiket. al (2016) and Bhue(2018) also found statistical significant association between maternal education and foetal outcome.

4.5 Maternal occupation and prevalence of malnutrition among newborns

Table no-4

Distribution of respondents according to maternal occupation and prevalence of malnutrition among newborns

OCCUPATION	Malnourished		Well-nourished		Total		Chi Square Value
	No.	%age	No.	%age	No.	%age	
None	118	44.53	147	55.47	265	100.00	CALCULATED VALUE=17.56 Tabulated Value: 11.070 Result-Significant
Labourer	14	73.68	5	26.32	19	100.00	
Caste Occupation	1	100.00	0	0.00	1	100.00	
Business	0	0.00	1	100.00	1	100.00	
Independent Profession	1	33.33	2	66.67	3	100.00	
Service	0	0.00	11	100.00	11	100.00	

Assessment of malnourishment on the basis of prevalence of malnutrition among newborns in relation to occupation of mother has been presented in table no –4. It was observed from the table that incidence of malnutrition was more among the mother who work with in home than those who goes outside for work. However this result was statistically associated between occupations of mother and CAN score but the number of women working outside the home was very less i.e. Only 11.Bhue (2018) also found statistical association between maternal occupation and foetal outcome.

4.6 Monthly income of family and prevalence of malnutrition among new borns

Table no-5

Distribution of respondents according to monthly income of family and prevalence of malnutrition among new borns

Monthly Income of Family	Malnourished		Well-nourished		Total		Chi Square Value
	No.	%age	No.	%age	No.	%age	
Above 41430	1	14.29	6	85.71	7	100.00	CALCULATED VALUE=49.12 Tabulated Value: 11.070 Result-Significant
20715-41429	1	3.33	29	96.67	30	100.00	
15536-20714	18	26.09	51	73.91	69	100.00	
10357-15535	67	60.91	43	39.09	110	100.00	
6214-10356	45	56.25	35	43.75	80	100.00	
2092-6213	2	50.00	2	50.00	4	100.00	

Table no.5 indicates that majority respondents were belonged to Rs10357-15535/- income group, out of them 60.91% and 39.09% were malnourished and well-nourished respectively. Least and highest percentage of malnourished and well nourished newborns found in the family having income Rs20715-41429/- per month.A statistical significant association between prevalence of malnutrition and monthly income of the family was found in this study. Ray et.al(2015) found that majority of mothers (39.4%) belonged to lower income group had low birth weight newborns.

4.7 Socio economic class of family and prevalence of malnutrition among new borns

Table no-6

Distribution of respondents according to socio economic class and prevalence of malnutrition among new borns

Socio economic class	Malnourished		Well nourished		Total		Chi Square Value
	No.	%age	No.	%age	No.	%age	
CLASS I	0	0.00	1	100.00	1	100.00	X^2 VALUE=31.94 Tabulated Value: 7.815 Result-Significant
CLASS II	4	8.89	41	91.11	45	100.00	
CLASS III	117	49.58	119	50.42	236	100.00	
CLASS IV	13	72.22	5	27.78	18	100.00	

As per the socio-economic status of mother and prevalence of malnutrition according to CAN score of newborns is shown in the table no.6 shows that 45newborns belonged to Class-IIout them 8.89% and 91.11%were malnourished and well-nourished respectively. 49.58%and 72.22% were malnourished newborns belonged to Class-III and Class-IV socio economic class respectively. There was a statistical significant association between prevalence of malnutrition and socio economic class of the mother found in this study. Statistical association between maternal socio economic status and foetal outcome also observed by Naiket. al (2016) and Bhue (2018),Lenka (2015).

5. Conclusion

The study concluded that the mother who had less than 20 years of age, had64.29% malnourished new borns according to CAN score. Majority of respondents belonged to lower caste, out of them 56.07% had low birth weight babies. It was clearly observed that less incidence of malnutrition was found among the mothers who had graduation and above educational qualification. The incidents of giving birth to malnourished babies were more among the mothers who work within home than those who goes outside for work. Highest malnutrition newborns found among mothers having income Rs10353 – 15535 incomeper month i.e. 60.91%. The incidence of malnourished newborns was 72.22% among the mothers of class-IV socio-economic class. Statistically a strong association was observed between maternal education , occupation, monthly income, socio economic class, with health status of newborns according to CAN score. Thus it can be concluded that health status of new borns is closely associated with socioeconomic environment of mothers. Thus necessary steps should be taken at every level to improve economic condition of mothers to better up both child and maternal health which will ultimately help to achieve sustainable development goals by 2025.

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