

# Determinants of Child Malnutrition in Tribal Areas of Madhya Pradesh

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A research study conducted in three tribal districts—Alirajpur, Barwani and Khandwa—of Madhya Pradesh, based on a sample of 294 women with their last child in the age-group of six months–five years analyses the status and determinants of malnutrition and child death. Despite certain infant and young child-feeding practices like colostrum feeding and early initiation of breastfeeding, the study finds that a high level of child malnutrition exists due to short period of breastfeeding, delayed initiation of supplementary nutrition, and poor activities under the Integrated Child Development Services. Moreover, the conversion of normal children to malnourished category and malnourished children to normal category put together indicates a dismal picture of ICDS as well as the health functionaries. Barring antenatal care services, other nutrition and health services for women were not found to be satisfactory. The malnutrition level of children has shown a strong association with the age of mothers at the time of marriage.

Tribals in Madhya Pradesh constitute a sizeable population. As per the Census 2011, out of the 7.26 crore of total population of the state, tribal population constitutes 1.53 crore (21.1%). There are 46 recognised Scheduled Tribes (STs) and three of them—Bharia, Baiga and Sahariya—have been identified as “Special Primitive Tribal Groups.”

Bhil is the most populous tribe in Madhya Pradesh with a population share of 39.1% of the total ST population. Gond is the second largest tribe, with a population share of 33.3%. The next four populous tribes are: Kol, Korku, Sahariya and Baiga. These six tribes constitute 91.5% of the total ST population of the state (Census 2011). Bhils have the highest population in Jhabua district followed by Dhar, Barwani and Khargone districts. Gonds have major concentration in Dindori district, Chhindwara, Mandla, Betul, Seoni and Shahdol districts. Other four major groups—Kol, Korku, Sahariya and Baiga—have registered the highest population in Rewa, Khandwa, Shivpuri and Shahdol districts, respectively.

The tribals of Madhya Pradesh like other parts of the country largely depend on forest produce for their food and livelihood, but the civilisation and development processes have gradually invaded the forest area, depriving tribal community of their means of sustenance. Thus, tribals are confronted with poverty, food insecurity, unemployment, poor health and nutrition conditions that result in severe malnutrition and deaths of children. Every death of a child leads to a controversy as the government departments disown the responsibility of such deaths.

There are food security programmes like Mid-day Meal (MDM), Antyodaya Anna Yojana, Supplementary Nutrition Programme, etc, but even then hundreds of children die due to malnutrition and diseases every year. Malnourishment paves the way for a number of diseases like fever, vomiting, measles, diarrhoea, etc. Under ordinary circumstances these diseases are curable and not deadly; but when a malnourished child is caught up with any such disease, it becomes a death trap.

This article is based on a research study conducted by the regional centre of the National Institute of Public Cooperation and Child Development (NIPCCD), Indore in three tribal districts, namely, Alirajpur, Barwani and Khandwa of Madhya Pradesh. The study was based on a sample of 294 women with their last child in the age-group of six months–five years to analyse the status and determinants of malnutrition and child death. This study assesses child malnutrition, its causal analysis

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and also reviews the Integrated Child Development Services (ICDS) scheme which is aimed at the reduction of child malnutrition in tribal areas.

### 1 Infant and Young Child Feeding Practices

Infant and Young Child Feeding (IYCF) practices play a vital role in survival, growth and development of children. It helps in reducing infant and child mortality and morbidity. There are several factors like timely initiation of breastfeeding, administering first milk of mother (colostrum), exclusive breastfeeding up to six months, timely initiation of complementary feeding, etc, which affect the nutrition and health condition of children (Table 1).

**Table 1: Adoption of IYCF Practices by Tribal Women**

Serial No	Adoption of IYCF Practices	Percent
1	Knowledge about benefits of colostrum feeding	32.3
2	Colostrum feeding administered	91.5
3	Breastfeeding initiated within one hour after delivery	56.8
4	Exclusive breastfeeding up to six months	94.6
5	Duration of breastfeeding up to two years	20.7
6	Initiation of complementary feeding at six months	58.2

Source: Tables and figures given in this study are taken from a research project "Detriments of the High Malnutrition and Child Deaths in Tribal Areas of Madhya Pradesh: An Empirical Study" completed by NPCCO Regional Centre, Indore.

Colostrum is considered as the best vaccine which protects child from infection and disease. Colostrum feeding was administered to 91.5% tribal children, but knowledge about the benefits of the colostrum was known to only 32.3% women. This shows that though there is a practice of giving first milk of mother to children after birth, mothers are not aware about its benefits to children's health. Early initiation of breastfeeding is considered essential for better health and nutrition of a newborn child. The guidelines of IYCF suggest initiation of breastfeeding within an hour of the child's birth. About 56.8% women respondents accepted to have initiated breastfeeding to their children within one hour of their birth. There is a need to further strengthen the IYCF practices by propagating the importance of an early initiation of breastfeeding among mothers of the tribal areas.

As per the mandate of the Ministry of Women and Child Development, Government of India, exclusive breastfeeding for six months is being promoted nationwide through ICDS programme. About 94.6% women agreed to have exclusively breastfed their child for six months. This shows an encouraging practice by mothers in tribal areas. As far as the duration of breastfeeding is concerned, it was found that only 20.7% of women continued breastfeeding up to a period of two years. The IYCF guidelines recommend for an extended breastfeeding period up to two years. This is attributed to the fact that most of the tribal women are engaged as wage workers or agriculture workers which causes discontinuation of breastfeeding after one year or even less.

As per the guidelines under ICDS programme, complementary feeding should be initiated to the child on completion of six months of age. Either early or late initiation of complementary feeding causes obstructed growth of the child. It was found that about 58.2% of children were initiated with complementary feeding on completion of six months of age as per the

guidelines. This needs further strengthening through education and counselling of tribal mothers.

Infant and young child-feeding practices like giving mother's first milk and early initiation of breastfeeding were found to be traditionally very strong in the area, but duration of breastfeeding is not satisfactory. Similarly, timely initiation of supplementary nutrition is also a weak area. These two problematic areas are largely associated with the fact that a large number of tribal mothers work in the fields having no time for care of children. The standard timing of *anganwadi* centres (AWCs) is not suitable for tribal areas where majority of women are in fields/forest for whole day for collection of forest produce or working in agriculture field for their livelihood. Opening crèches in such areas could be more effective in dealing with the child malnutrition.

### 2 Review of Growth Monitoring and Promotion

Regular growth monitoring and promotion is an important component of the ICDS programme directed towards reduction of malnutrition among children. It includes recording of birth weight, date of birth, regular monthly weighing and plotting the growth charts as per the New World Health Organization (WHO) Child Growth Standards.<sup>1</sup> It is followed by necessary interventions like home visits, mothers' counselling and nutrition care at the level of AWCs (Table 2).

**Table 2: Growth Monitoring and Promotion**

Serial No	Birth Weight	Percent
1	Children recorded with their birth weight	59.2
2	Low birth weight	31.0
3	Underweight children as per AWC record	57.1
4	Underweight children as per actual weighing	68.0
5	Underestimation of underweight children at AWCs	10.9
6	Knowledge of mothers about current malnutrition status of child	64.3

Source: Same as Table 1.

The information on birth weight of 294 sample children was collected from the AWC records. It was very disheartening to note that the birth weight information of only 174 children (59.2%) was available out of 294 children. This is evidence of very poor recording of birth weights in tribal areas. Out of 174 children with birth weights, 31% babies had low birth weight, which is higher than the state average of 26% (AHS 2012-13). The higher proportion of low birth weight babies shows poor nutritional status of their mothers during pregnancy.

Nutrition data of all 294 children was collected from AWCs. As per the AWC records, 23.8% children were found severely underweight (SUW), 33.8% children were moderately underweight (MUW) and 42.9% children were found in normal category. Field investigators took the weight of all these children during the survey and also measured nutrition status as per the latest WHO Child Growth Standards. It was alarming to note that growth monitoring of children conducted by *anganwadi* workers possessed serious flaws. Actually, there were 31.3% SUW children against AWCs' record of 23.8%. Similarly, MUW children were found to be 36.7% in place of 33.3% as per the AWC records. Put together, the malnutrition level goes up from 57.1% as per AWC records to 68% as per the actual weighing.

Overall, malnutrition is underestimated by nearly 11%. The awareness of mothers about malnutrition of their children is also a weak area as mothers of only 64.3% malnourished children were found to be aware of malnutrition in their child.

### 3 Nutrition and Health Status of Women Affecting Children

Poor nutrition and health conditions of women have a direct bearing on nutrition and health conditions of children in any community. There is an association between malnutrition in women during adolescence and pregnancy on the one hand and low birth weight babies and malnourished children on the other. This paper presents nutrition and health status of women with an objective to assess the effect of this on nutritional condition of children. This mainly covers antenatal care and delivery services as well as food intake and rest during pregnancies which have a direct bearing on survival and development of children.

**Table 3: Nutrition and Health Status of Women Affecting Children**

Serial No	Body Mass Index (BMI) Level	Percent
1	Additional food during pregnancy	36.4
2	Low BMI (<18.5)	44.4
3	Pregnancy complications	37.1
4	Treatment for pregnancy complications	77.1
5	Institutional delivery	53.4
6	Home deliveries conducted by trained hands	21.9
7	New blade used to cut placenta in home deliveries	59.8

Source: Same as Table 1.

It is also recommended that women should take additional food during pregnancy to cater to the nutritional needs of growing foetus in the womb. It was found that only 36.4% women had additional food during pregnancy. There is need to strengthen awareness and counselling interventions to promote healthy nutritional intake among pregnant women in tribal areas.

Anthropometric tools were used during data collection in the field to record the weight and height of the sample women to work out BMI of women. But weight and height of 270 out of 294 women could be taken in the field. The data of 270 women were analysed and the BMI was worked out. As per the guidelines, women with BMI < 18.5 are considered wasted and categorised under low BMI. About 44.4% tribal women were found with low BMI (less than 18.5) which is higher than the figure of 28.3% for the whole of Madhya Pradesh as mentioned in the National Family Health Survey (NFHS – IV) (2015–16).

Complications during pregnancy have a significant bearing on successful delivery and birth of a child. As Table 3 shows 37.1% women faced health complications during their last pregnancy. The highest proportion of them (73.4%) suffered from fever during pregnancy. About 52.3% women had swelling and 46.8% faced severe fatigue during pregnancy. Out of 109 women who had pregnancy complications, about 77.1% of women received treatment for the same. This shows good improvement in health-seeking behaviour of women during pregnancy.

Promoting institutional delivery is one of the prime focus areas under the National Rural Health Mission (NRHM) and

ICDS programmes. Institutional delivery helps in preventing infant and maternal mortality. Janani Suraksha Yojana under the NRHM is one of the flagship programmes of health department. As the findings show, 53.4% deliveries were conducted in hospitals and rest 46.6% deliveries were conducted at home. About 21.9% home deliveries were conducted by trained persons. This shows that the majority of home deliveries in the tribal areas are still conducted by untrained hands which needs urgent attention at the programme level. Moreover, new blades were used to cut placenta only in the case of 59.8% of total home deliveries. This shows that even safe delivery practices are not being followed in tribal areas.

### 4 Role of ICDS in Reduction of Child Malnutrition

Mothers of normal children along with malnourished children were also covered to have a control group analysis during this study. The primary data was collected from 15 AWCs of three districts. Apart from this, AWWs of all 15 AWCs were also interviewed to assess and analyse the implementation of ICDS, functioning of AWCs and malnutrition in the area.

Major aspects covered under this section are profile of AWWs, low birth weight, malnutrition among children, distribution of supplementary nutrition, utilisation of AWC service, etc.

**Coverage of supplementary nutrition under ICDS:** Under the ICDS programme, children of age group six months–three years are provided *bal ahar* (take-home ration [THR]) to supplement their nutritional needs. Children of age-group three–six years are provided breakfast and lunch (hot-cooked meal) at AWCs. Hot-cooked meal (breakfast and lunch) is being prepared by self-help groups (SHGs) under the Sanjha Chulha programme. Sanjha Chulha is combined kitchen preparing food for ICDS as well as MDM for schoolchildren.

As stated in the table, the coverage of THR provided to children (six month–three years) was found to be 98.2% in Alirajpur and Khandwa, whereas it was 81.06% in Barwani. Overall, the coverage of THR for children (six months–three years) was 92.9% in all three districts together.

**Table 4: Distribution of Supplementary Nutrition at AWCs**

Serial No	Supplementary Nutrition at AWCs	Coverage (%)
1	Supplementary nutrition to children (6 months–3 years)	Take Home Ration (THR) 92.9
2	Supplementary nutrition to children (3–6 years)	Breakfast 55.4 Lunch 60.7
3	Supplementary nutrition to pregnant women	THR 92.9
4	Supplementary nutrition to lactating mothers	THR 90.9

The coverage of hot-cooked meal, including breakfast and lunch, was found to be much lower than the THR. As stated in Table 4, the coverage for breakfast for three–six years children varied from 29.6% in Alirajpur to 67.9% in Khandwa. Similarly, lunch had the coverage of 53.7% in Alirajpur, 57.2% in Barwani and 67.5% in Khandwa. Overall, 55.4% children were covered under breakfast and 60.7% children were covered under lunch for all three districts put together. Low coverage of hot-cooked

meals may be attributed to the fact that substantial proportion of children (three–six years) enrolled at AWCS are going to nursery/private schools. Apart from this, poor Early Childhood Care and Education (ECCCE) activities at AWCS are also responsible for low attendance at AWCS, and hence, low coverage and utilisation of ICDS. It was also observed during the data collection that there were several AWCS in these tribal districts which were not receiving breakfast for AWCS children from designated SHGs.

Pregnant women and lactating mothers are provided THR under the ICDS programme. As stated in Table 4, on an average, 92.9% pregnant women and 90.9% lactating mothers received supplementary nutrition provided at AWCS. Supplementary nutrition provided to pregnant/lactating women is directed towards meeting the additional requirement of nutrition of women during pregnancy and lactation. The coverage of supplementary nutrition for pregnant/lactating women was found to be lower in Alirajpur than in Barwani and Khandwa.

#### Supplementary nutrition and reduction of child malnutrition:

The growth monitoring data of 0–5-year-old children were collected from all 15 sample AWCS for the month of survey. It was found that growth monitoring records were available for 1,070 children out of 1,156 children of the age-group 0–5 years registered at AWCS. Table 5 presents three nutrition categories, namely, SUW, MUW and normal for all three sample districts covered under the study. The data presented here is purely secondary data collected from the records of AWCS.

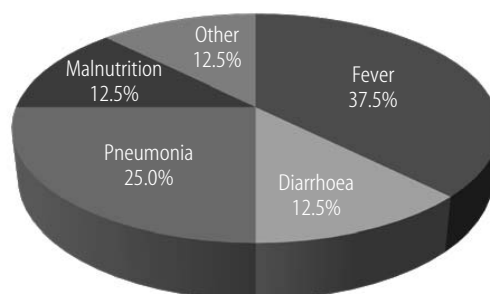
**Table 5: Supplementary Nutrition and Reduction of Child Malnutrition**

Serial No	Category of Children	Malnutrition Level (%)
1	All children under AWC	41.8
2	Children not taking supplementary nutrition under AWC	46.4

The study also tried to analyse the nutrition category of children who were not receiving supplementary nutrition from AWCS under the ICDS programme. As Table 5 depicts, 32 children out of 69 children (46.4%) not availing supplementary nutrition provided at AWCS were found in the underweight category. The equal proportion of children was found in the normal category. On the other hand, malnutrition level for children availing supplementary nutrition was found to be 41.8% as discussed earlier. This clearly indicates that the utilisation of supplementary nutrition has no significant impact on nutrition category of children.

**Conversion of underweight children to normal:** The major thrust of the ICDS provided through the AWCS is to reduce malnutrition among children by providing supplementary nutrition, health and nutrition education, health check-ups and referral to nutrition rehabilitation centre (NRC). Under this study, an attempt was made to assess and analyse the conversion of underweight children into normal category as per the new WHO Child Growth Standards. For the purpose, secondary data of underweight children (0–3 years) in 2011–12 were collected from AWCS and compared with their current nutrition grades (on the day of survey) almost after a gap of two years. The

**Figure 1: Causes of Child Death**



analysis of data is presented in Table 6 separately for each of the three districts (Alirajpur, Barwani and Khandwa) and combined data for all three districts together.

All three districts put together, only 9.9% SUW, 21.2% MUW and 17.8% SUW/MUW children could convert to normal category in a time span of two years. In the same duration, 26.7% of normal children converted into SUW/MUW category. Thus looking into these two conversions simultaneously, there seems to be virtually no impact of AWC services in reducing malnutrition of children enrolled at AWCS. There is a need to strengthen the quality and coverage of nutrition and health services provided through AWCS. The counselling, advocacy and community participation components of ICDS require more attention.

**Malnutrition and child deaths:** We also collected data from AWC records on child deaths occurred during the last five years. As Table 6 shows, total 32 cases of child deaths were reported from 15 AWCS of the three districts during the last five years. Though the number of child deaths recorded at AWCS during the last five years seems to be widely under-reported, if compared with child death rates of the state (SRS 2014), but inferences are drawn to understand the major causes of child deaths in the area. As per the records of AWCS, the highest proportion of child deaths was attributed to fever (37.5%) followed by pneumonia (25%), diarrhoea (12.5%) and malnutrition (12.5%) (Figure 1).

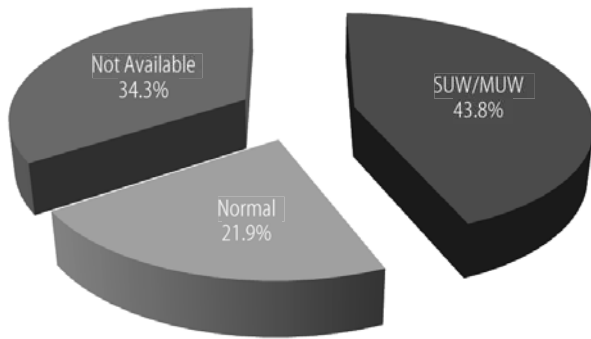
**Table 6: Conversion of Underweight Children (0–3 Years) to Normal**

S No	Nutrition Category during 2011–12		Conversion to the Category (2013–14)		
	Category	No of Children	SUW	MUW	Normal
1	SUW	71	32 (45.1)	32 (45.1)	07 (9.9)
2	MUW	165	09 (5.5)	121 (73.3)	35 (21.2)
3	SUW + MUW	236	41 (17.4)	153 (64.8)	42 (17.8)
4	Normal	310	10 (3.2)	73 (23.5)	227 (73.2)

Figures in parenthesis are in percentage.

**Nutrition category at the time of child death:** The AWC data pertaining to child deaths were analysed to find out the nutrition category of children at the time of their death to assess the relationship between malnutrition and child death. It was found that in case of 14 out of 32 deaths (43.8%), children were in the underweight category (SUW/MUW) at the time of death. Only 21.9% of total deaths were found in normal category (Figure 2, p 54).

The nutrition category of 34.4% children could not be traced from AWC records. This clearly implies the strong

**Figure 2: Nutrition Category at the Time of Child Death**

association of malnutrition and child death in tribal areas of Madhya Pradesh.

**Analysis of nutrition rehabilitation centre:** NRCs have been established in every district of Madhya Pradesh in joint collaboration of the Department of Women and Child Development, and Department of Health. ICDS functionaries mobilise malnourished children from villages to NRC. The children are screened at NRC as per the criteria of severely acute malnourished (SAM) laid down by the Department of Health and UNICEF. Only SAM children are admitted in NRC for a period of 14 days. There are three criteria for SAM children, namely, mid-upper arm circumference (MUAC) measurement < 11.5 cm, bilateral oedema and weight for height < -3Z score. Children satisfying any one of the three criteria are considered for NRC admission. Rest of the children would be sent back for care at the AWC level. There is a norm of admitting children in NRC for a period of 14 days. If required, it is extended for a further period, but initially it is mandatory to admit SAM children for a period of 14 days.

Total three NRCs, one from each of three districts were covered under the study to assess and analyse the situation. Total children admitted in one year (2012–13) were 371, 304 and 485 in Alirajpur, Barwani and Khandwa, respectively. As stated in Table 7, it was found that only about 60%–70% children admitted in NRC stayed for a complete period of 14 days. This is a major challenge before ICDS and NRC functionaries to hold children in NRC for the stipulated time period of 14 days. There is a strong reluctance of community for keeping their children in NRC for a period of 14 days.

The recovery rate of children admitted in NRC was found to be about 56.9% with slight variations among the three districts. The above findings suggest that there is a need to increase the utilisation of NRCs through a clear policy and mobilisation and sensitisation of community about possible implications of malnutrition among children.

## 5 Causal Analysis of Child Malnutrition

Initially, it was proposed to cover 10 underweight (SUW/MUW) and 10 normal children under the study from each of 15 AWCs selected from three tribal districts of Madhya Pradesh. Thus, in total, it was planned to have 300 children consisting of 150 underweight and 150 normal children with an objective of

control group analysis. But due to incomplete and faulty growth monitoring records in some of AWCs, the study could finally cover 168 underweight and 126 normal children with a total of 294 children in the sample. But as per the actual weighing of these 294 children, it was found that there were 200 malnourished (92 SUW and 108 MUW) children and 94 normal children. The nutrition category of children based on the actual weighing during the survey has been taken for causal analysis of malnutrition in the present chapter.

This chapter analyses malnutrition (underweight) in light of its association with several causal factors like low birth weight of children, mother's first milk given to child, early initiation of breastfeeding, exclusive breastfeeding, low BMI of mothers, etc.

**Nutrition category of children by birth weight:** Out of total 294 children in the sample, birth weight of only 174 children were available in the records of AWCs which show pathetic condition of recording and reporting system in ICDS. The cross tabulation of 174 children shows interesting results. Out of 174 children, 120 children were born with normal birth weight ( $\geq 2.5$  kg) and 54 children were born with low birth weight (< 2.5 kg). Table 8 reveals that among children with normal birth weight, 27.5% children were in SUW, 34.2% in MUW and 38.3% in normal category. But among children with low birth weight, 44.4% children were in SUW, 35.2% in MUW and only 20.4% in normal category. Put together, 61.7% of children with normal birth weight were found underweight against 79.6% children with low birth weight. Moreover, there were 44.4% children in SUW from low birth weight category against only 27.5% children from normal birth weight category. It is quite obvious from the analysis that low birth weight of children is an important factor contributing towards high malnutrition among children under the age of five years.

**Nutrition category by children given first milk of mother (colostrum):** Mother's first milk is considered as the first vaccination of child and it influences health, nutrition and growth of children. The cross-tabulation implies a close association between present nutrition category of children (six months–five years) and mother's first milk administered to the child after birth. The cross-tabulation is presented based on the sample of

**Table 7: Profile of Children Admitted in NRC during 2012–13**

Serial No	Status of NRCs in Tribal Areas	Level
1	Total children admitted in a year	1,160
2	No of children staying for 14 days	765 (65.9%)
3	Children cured	436 (56.9%)

**Table 8: Present Nutrition Category by Birth Weight**

Serial No	Birth Weight of Children	Present Nutrition Category			Total
		SUW	MUW	Normal	
1	Children with normal birth weight	33 (27.5)	41 (34.2)	46 (38.3)	120 (100)
2	Children with low birth weight	24 (44.4)	19 (35.2)	11 (20.4)	54 (100)
	All children	57 (32.8)	60 (34.5)	57 (32.8)	174 (100.0)

Figures in parenthesis are in percentage.

294 children (Table 9). About 28.9% of children given first milk were found in severely underweight category against 56% of children not given first milk. In total, about 67% children given first milk were in underweight category (muw/suw) against 80% of children who were not given mother's first milk. This categorically states that, mother's first milk has a significant and long-lasting effect on nutritional status of children.

**Table 9: Present Nutrition Category by Children Given First Milk**

Serial No	Children Given First Milk	Present Nutrition Category			Total
		SUW	MUW	Normal	
1	Children given first milk	78 (28.9)	102 (38.0)	89 (33.1)	269 (100)
2	Children not given first milk	14 (56.0)	6 (24.0)	5 (20.0)	25 (100.0)
	All children	92 (31.3)	108 (36.7)	94 (32.0)	294 (100.0)

Figures in parenthesis are in percentage.

### Nutrition category of children by exclusive breastfeeding:

This section focuses on the effect of exclusive breastfeeding up to six months on nutrition condition of children up to the age of five years. Out of 294 children, 278 children were given exclusive breastfeeding up to the age of six months and remaining 16 children were initiated mix feeding during the period. As Table 10 states, 30.2% of exclusive breastfed children were found in suw category against 50% of mix-fed children. This clearly indicates that exclusive breastfeeding up to six months of birth is better than mix feeding for growth of the child as also propounded by WHO under the new WHO Child Growth Standards. On an average 68% of exclusive breastfed children were in malnutrition category (SUW/MUW) against almost an equal proportion of mix-fed children.

### Nutrition category of children by early initiation of breastfeeding:

Early initiation of breastfeeding after birth is essential for healthy growth and development of children. The cross-tabulation clearly indicates the effect of early initiation of breastfeeding on nutritional status of children up to the age of five years. As stated in Table 11, 29.8% of breastfed children (within one day) were found in severely underweight category

**Table 10: Present Nutrition Category of Children by Exclusive Breastfeeding**

Serial No	Exclusive Breastfeeding Status	Present Nutrition Category			Total
		SUW	MUW	Normal	
1	Children with exclusive breastfeeding for six months	84 (30.2)	105 (37.8)	89 (32.0)	278 (100.0)
2	Children with mix feeding within six months	8 (50.0)	3 (18.8)	5 (31.2)	16 (100.0)
	All children	92 (31.3)	108 (36.7)	94 (32.0)	294 (100.0)

Figures in parenthesis are in percentage.

**Table 11: Present Nutrition Category by Early Initiation of Breastfeeding**

Serial No	Early Initiation of Breastfeeding	Present Nutrition Category			Total
		SUW	MUW	Normal	
1	Children with breastfeeding initiated within one day	84 (29.8)	107 (37.9)	91 (32.3)	282 (100.0)
2	Children with breastfeeding initiated after one day	8 (66.7)	1 (8.3)	3 (25.0)	12 (100.0)
	All children	92 (31.3)	108 (36.7)	94 (32.0)	294 (100.0)

Figures in parenthesis are in percentage.

against 66.7% of children breastfed after one day. This leads to the conclusion that an early initiation of breastfeeding reduces the chances of malnutrition in children up to the age of five years.

### Nutrition category of children with health problems during last one year:

Poor health conditions cause malnutrition among children. This is clearly visible in the cross-tabulation (Table 12). About 35.7% and 37% of children with health problems during last one year were found in suw and muw categories, respectively. On the other hand, only 13.6% and 35.6% of children with no health problems in the last one year were in suw and muw categories. On an average 72.7% of children with health problems were in underweight category against only 49.2% of children with no health problem in the last one year. This clearly indicates that poor health conditions adversely affect the nutrition condition of children in tribal areas.

**Table 12: Present Nutrition Category by Children with Health Problems**

Serial No	Category of Children	Present Nutrition Category			Total
		SUW	MUW	Normal	
1	Children with health problem during last one year	84 (35.7)	87 (37.0)	64 (27.3%)	235 (100.0)
2	Children with no health problem during last one year	8 (13.6)	21 (35.6)	30 (50.8)	59 (100.0)
	All children	92 (31.3)	108 (36.7)	94 (32.0)	294 (100.0)

Figures in parenthesis are in percentage.

### Nutrition category of children by BMI of mothers:

Out of 294 women covered under the sample, weight and height of only 270 women could be recorded in the field. Out of 270 women, 120 women were in low BMI category. As the cross-tabulation results indicate (Table 13), 38.3% of children of mothers with low BMI were found in suw category against 26.7% of children of mothers of normal BMI. Overall, 72.5% of children of low BMI mothers were found in underweight category (SUW/MUW) against 66% of children of normal BMI mothers. This clearly indicates a positive association between nutritional status of mother and child. Therefore, it is essential to improve nutritional status of mother so as to reduce malnutrition among children.

**Table 13: Present Nutrition Category of Children by BMI of Mothers**

Serial No	BMI of Mothers	Present Nutrition Category			Total
		SUW	MUW	Normal	
1	Children with low BMI of mothers (<18.5)	46 (38.3)	41 (34.2)	33 (27.5)	120 (100.0)
2	Children with normal BMI of mothers (>18.5)	40 (26.7)	59 (39.3)	51 (34.0)	150 (100.0)
	All children	86 (31.9)	100 (37.0)	84 (31.1)	270 (100.0)

### Present nutrition category of children by age of mothers' marriage:

It was interesting to note that mothers' age of marriage has a significant impact on the malnutrition level of the children (six months–five years). The proportion of suw was the highest (50%) among the children whose mothers married at an early age, that is, below 14 years. The proportion of suw children gradually reduces with an increase in the age of mothers' marriage (Table 14, p 56). Overall, the malnutrition level (SUW and MUW) was found to be 82.4% for children whose

mothers' age of marriage was below 14 years followed by 72.2% and 58.6% for age at marriage of 15–17 years and 18 years and above. This clearly indicates a strong negative correlation between malnutrition among children and their mothers' age at marriage. This is attributed to the fact that low age of marriage adversely affects the condition of women's health and nutrition, and in turn, causes poor nutrition and health of children.

**Table 14: Present Nutrition Category of Children by Mothers' Marriage Age**

Serial No	Mothers' Marriage Age	Nutrition Category of Children			Total
		SUW	MUW	Normal	
1	Less than 14 years	17 (50.0)	11 (32.4)	6 (17.6)	34 (100.0)
2	15–17 years	50 (34.7)	54 (37.5)	40 (27.8)	144 (100.0)
3	18 years and above	25 (21.6)	43 (37.0)	48 (41.4)	116 (100.0)
	All children	92 (31.3)	108 (36.7)	94 (32.0)	294 (100.0)

Figures in parenthesis are in percentage.

**Present nutrition category of children by schooling of their mothers:** The education of mother largely influences the health and nutrition of their children. As analysed earlier, the education level of women was found very low in the study area. Therefore, schooling of mothers was considered under cross-tabulation to understand its association with malnutrition of children. As depicted in Table 15, the malnutrition level (suw and muw) was found to be 69.3% for children with their mothers having no schooling. But the malnutrition level reduces to 63.8% for children with their mothers having some years of schooling. Though it does not depict a very strong association, but significantly justifies the role of mother's education in reducing malnutrition among children.

**Table 15: Present Nutrition Category of Children by Schooling of Their Mothers**

Serial No	Schooling of Mothers	Nutrition Category			Total
		SUW	MUW	Normal	
1	No schooling	72 (32.0)	84 (37.3)	69 (30.7)	225 (100.0)
2	Formal schooling	20 (29.0)	24 (34.8)	25 (36.2)	69 (100.0)
	All children	92 (31.3)	108 (36.7)	94 (32.0)	294 (100.0)

Figures in parenthesis are in percentage.

**Present nutrition category of children by their birth order:** The high birth rate with low birth spacing in tribal community is a common phenomenon. The number of children and the family size in tribal areas is much higher than the other social groups. Children are deprived of proper nutrition and health-care in larger families. The malnutrition level of 294 children covered under the study was analysed for different birth orders. We have seen a systematic increase in malnutrition level for higher order births. The malnutrition level of 60% for first order births gradually increased and reached to 74.2% for fourth order births and above (Table 16). This clearly indicates

**Table 16: Present Nutrition Category of Children by Their Birth Order**

Serial No	Birth Order of Children	Nutrition Category			Total
		SUW	MUW	Normal	
1	First order birth	17 (20.0)	34 (40.0)	34 (40.0)	85 (100.0)
2	Second order birth	24 (30.0)	30 (37.5)	26 (32.5)	80 (100.0)
3	Third order birth	25 (39.7)	21 (33.3)	17 (27.0)	63 (100.0)
4	Fourth order birth and above	26 (39.4)	24 (36.4)	17 (25.8)	66 (100.0)
	All children	92 (31.3)	108 (36.7)	94 (32.0)	294 (100.0)

the need for popularising small family norms in tribal community in way to reduce malnutrition among children.

### 5 Summing Up

There is an improvement in social and economic life of tribals in Madhya Pradesh. Though the education level of tribals is still below the overall education level of the state, it has registered a positive change. The fact that about one-fourth of schoolgoing children not attending schools, is definitely a cause of worry. Large proportions of early marriages and child marriages in tribal community are another problematic area which needs an urgent attention. Areas like equitable land distribution, cropping pattern, electrification of villages and water supply have shown encouraging improvements in the tribal community. All these have helped in improved utilisation of household durables positively affecting the living standards of tribals in the state.

Infant and young child feeding practices like giving mother's first milk (colostrum) and early initiation of breastfeeding were found to be traditionally strong in the tribal area, but duration of breastfeeding and timely initiation of supplementary nutrition were found to be weak in the area. These two problematic areas are largely associated with the fact that a large number of tribal mothers work in agricultural fields having no time for proper care of their children.

The ICDS programme is a major intervention directed towards providing supplementary nutrition to children (six months–six years) and growth monitoring of children through Awcs for

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reduction of malnutrition. The whole growth monitoring exercise was found in pathetic conditions. Half of the children of AWCs had no records of their birth weight. Weighing and plotting of children were found to be erroneous. Children registered in growth registers were not found in villages and children available in villages had no place in growth registers of AWCs. The proportion of malnourished children as per the AWC data was found highly underestimated.

The conversion of malnourished children (SUV and MUW) of AWCs to normal category, and at the same time, normal children converting to malnourished category after a span of two years had stated a dismal picture. There seems to be virtually no impact of AWC services in reducing malnutrition of children even after two years. There was no significant difference between malnutrition level of children availing supplementary nutrition and children who were not availing the same from AWCs. This also indicates that there is no significant bearing of supplementary nutrition of ICDS in reduction of child malnutrition. There was high level of malnutrition in tribal areas observed under the study. Malnutrition has been found as one of the important causes of child death in the area. It was also observed that NRCS were not being optimally utilised in tribal areas of Madhya Pradesh.

The updating and maintenance of vaccination/mother-child protection cards (MCP) was also found to be poor in the area. The MCP card which is considered as a good counselling tool for mothers had been adopted with no interest of ICDS as well as health functionaries. Fever, diarrhoea and pneumonia were major health problems faced by tribal children. They were largely dependent on private doctors and faith healers for treatment.

The nutrition and health status of women largely affects children. Slightly less than half of women were found underweight. The dietary intake by women during pregnancy was

found far from satisfactory. The study also observed poor awareness and counselling in the tribal community on malnutrition, safe delivery practices and maternal care during pregnancy.

It can be concluded that despite certain IYCF practices (colostrum feeding and early initiation of breastfeeding) being traditionally strong among tribals, there was a high level of child malnutrition in the tribal area due to short period of breastfeeding, delayed initiation of supplementary nutrition, and most importantly, poor growth monitoring and poor implementation of malnutrition reduction interventions, including information, education and communication (IEC) activities under ICDS. Barring ANC services, other nutrition and health services for women were not found satisfactory. The malnutrition level has shown a strong association with the mothers' marriage age and the birth order of children showing the need for promoting legal age of marriage and small family norm in tribal areas. Low BMI of women and low birth weight of children had also shown a strong association with high child malnutrition stating the need for more emphasis on nutrition care of women in a way to reduce child malnutrition. Poor health condition had registered a positive association with child malnutrition, and moreover, malnutrition was found to be one of the important factors responsible for child deaths in tribal areas.

## NOTE

- 1 Child Growth Standards, World Health Organization, available at: <http://www.who.int/childgrowth/en/>

## REFERENCES

- AHS (2012-13): *Annual Health Survey-2012-13*, Registrar General and Census Commissioner, Government of India.
- GOI (2011): *Final Population Totals-India/States/Districts*, Registrar General, India, Census of India, Government of India, New Delhi.
- NFHS (2005-06): *National Family Health Survey-3, 2005-06*, Indian Institute for Population Studies, Mumbai.

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