International Journal of Community Medicine and Public Health
Sahu S et al. Int J Community Med Public Health. 2020 Mar;7(3):1072-1077
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20200969

Original Research Article

Infant and young child feeding practices among tribal mothers in Sambalpur district, Odisha, India

Samyak Sahu, Subrat K. Pradhan*, Sadhu C. Panda

Department of Community Medicine, Veer Surendra Sai Institute of Medical Sciences and Research, Burla, Sambalpur, Odisha, India

Received: 08 January 2020
Revised: 12 February 2020
Accepted: 13 February 2020

***Correspondence:**
Dr. Subrat K. Pradhan,
E-mail: drsubratpradhan@yahoo.co.in

ABSTRACT

Background: Indicators of infant and young child and feeding (IYCF) practices have been devised by WHO in order to help objectively assess the prevalence of these practices in the population. IYCF practices play a vital role in the control of infant and child deaths. This study was undertaken to assess the IYCF practices among children aged less than 2 years among the tribal population. Objective of this study to measure the indicators of IYCF practices in children in the 0-23 months age group.
Methods: It is a community based, cross sectional study of infant and young child feeding practices among tribal mothers having children younger than 24 months, in Sambalpur district of Odisha from October 2017 to December 2019. The study participants were tribal mothers having children less than 24 months of age. The sample size was 384.
Results: Among the study participants, 93.5% belonged to the 21-30 years age bracket, 37.5% had middle school certificate education and 75.3% belonged to the upper lower socioeconomic class. The indicators were continued breastfeeding at 1 year (100%), continued breastfeeding at 2 years (100%) and children ever breastfed (100%), exclusive breastfeeding (98.71%) and bottle feeding (16.36%). A significant association was found between delivery by lower segment caesarean section and delayed initiation of breastfeeding.
Conclusions: The indicators related to breastfeeding and complementary feeding were adequate except for minimum dietary diversity and minimum adequate diet.

Keywords: Breastfeeding, Complementary, Feeding, Infant and young child and feeding practices, Tribal

INTRODUCTION

Approximately, 1.4 million deaths of children under the age of 5 years worldwide can be attributed to suboptimal breast-feeding. Almost 6% of under-five mortality can be prevented by the timely introduction of complementary feeding. It was estimated that about one-fifth of overall under-five mortality can be averted if 90% infants are covered with an inclusive package of interventions to promote, protect, and support the optimal infant young child feeding (IYCF) practices.[1] Odisha has taken giant strides in the direction of improvement of child survival. IMR in Odisha has reduced from 75 in 2005 to 51 in 2013 and U5MR has reduced from 90 in 2005 to 66 in 2013.[2] However, there is a significant shortfall in adherence to IYCF practices in Odisha, as reflected by National Family Health Survey (NFHS)-4 data, with 68.6% children under 3 years breastfed within 1 hour of birth, 65.6% children aged 0-5 months exclusively breastfed and 54.9% children aged 6-9 months receiving solid or semi-solid food and breast milk.[3] Most of the studies conducted in

India have focused on mainly the breast-feeding aspects and not the dietary diversity and cultural aspects of diet, which are important in IYCF. With this background, this study was undertaken to assess the IYCF practices with special emphasis on IYCF indicators, among children aged less than 2 years among the tribal population. Objective of this study to measure the indicators of Infant and Young Child Feeding practices in children in the 0-23 months age group.

METHODS

Study design

It is a community based, cross sectional study of infant and young child feeding practices among tribal mothers having children younger than 24 months, in Sambalpur district of Odisha.

Study period

The study was conducted from October 2017 to December 2019.

Study participants

Inclusion criteria

Tribal mothers having children less than 24 months of age were included in the study after obtaining verbal informed consent.

Exclusion criteria

Tribal mothers having children suffering from congenital anomalies or children already diagnosed with metabolic diseases affecting growth were excluded.

Study variables

The sociodemographic variables for both mother and child were examined in this study. The sociodemographic variables for mother were age, type of family, educational status and socioeconomic status. The sociodemographic variables for child were age, gender, birth order, place of delivery, mode of delivery, complications at birth and history of illness at birth.

The IYCF variables were[4]

- *Early initiation of breastfeeding:* The proportion of children born in the last 24 months who were put to the breast within one hour of birth.
- *Exclusive breastfeeding under 6 months:* The proportion of infants 0-5 months of age who are fed exclusively with breast milk.
- *Continued breastfeeding at 1 year:* The proportion of children 12-15 months of age who are fed breast milk.
- *Introduction of solid, semi-solid or soft foods:* The proportion of infants 6-8 months of age who receive solid, semi-solid or soft foods.
- *Minimum dietary diversity:* The proportion of children 6-23 months of age who receive foods from 4 or more food groups. The 7 food groups used for tabulation of this indicator are: a) grains, roots and tubers, b) legumes and nuts, c) dairy products (milk, yogurt, cheese), d) flesh foods (meat, fish, poultry and offal), e) eggs, f) vitamin A rich fruits and vegetables and g) other fruits and vegetables
- *Minimum meal frequency:* The proportion of breastfed and non-breastfed children 6-23 months of age who receive solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more. Minimum is defined as: 2 times for breastfed infants 6-8 months of age, 3 times for breastfed children 9-23 months of age, 4 times for non-breastfed children 6-23 months of age.
- *Minimum acceptable diet:* The proportion of children 6-23 months of age who receive a minimum acceptable diet (apart from breastmilk) i.e., minimum meal frequency and minimum dietary diversity.
- *Children ever breastfed:* The proportion of children born in the last 24 months who were ever breastfed.
- *Continued breastfeeding at 2 years:* The proportion of children 20-23 months of age who are fed breastmilk.
- *Bottle feeding:* The proportion of children 0-23 months of age who are fed with a bottle.

Sample size

Considering the children aged 6–8 months receiving solid or semi-solid food and breast milk to be 55%, as per NFHS-4, the sample size was calculated to be 380 subjects and allowing for 10% non-response rate, the final sample size was calculated to be 420 subjects.[3]

Data collection

The WHO IYCF questionnaire was modified in order to suit the local culture, customs and practices. A pilot study was conducted in the slum area of Goudpali in the vicinity of Veer Surendra Sai Institute of Medical Sciences and Research (VIMSAR), Burla, Sambalpur, Odisha. The data thus obtained were entered in Microsoft Excel, data cleaning was done, and analysis was done using Epi Info 7. The revised questionnaire was found to be adequate and appropriate.

The district of Sambalpur consists of 9 blocks. Out of those, 5 blocks were randomly selected, 2 PHC's were selected randomly from each block, 4 subcentres randomly from each PHC and 2 AWC's were randomly selected from each subcentre. After visiting the AWC's, individual tribal families having children under the age of 2 years were identified with the help of the Anganwadi Worker (AWW).

Mothers of 5 infants/children from each AWC, who met the inclusion criteria of the study, were interviewed by house to house visit, using the revised WHO IYCF questionnaire. In cases where the number of tribal children registered in the AWC was less than 5, the next nearest AWC(s) was/were visited, till at least 5 mothers were interviewed, in order to reach the desired sample size. The data thus obtained were entered into Microsoft Excel software followed by thorough data cleaning. Data analysis was done using Epi Info 7 software.

RESULTS

The characteristics of the children are depicted in Table 1, which shows that majority (79.7%) of the children were in the 6-23 month age group and 55% were male. Majority of the children were first born (59.7%) and were born in government hospitals (96.4%).

Table 1: Characteristics of the children.

Characteristic	N	%
Age (in months)		
0-5	78	20.3
6-23	306	79.7
Total	384	100
Gender		
Male	211	55
Female	173	45
Total	384	100
Birth order		
First	229	59.7
Second	126	32.8
Third or more	29	7.5
Total	384	100
Place of birth		
Home	2	0.5
Private hospital	12	3.1
Government hospital	370	96.4
Total	384	100

The sociodemographic characteristics of the mothers are depicted in Table 2. It can be seen that majority of the mothers were in the 21-30 years age group (93.7%), had middle school certificate education (37.5%), belonged to joint families (89%) and upper lower socioeconomic class (75.5%). Most of the mothers had more than 4 antenatal visits (98.5%) and had normal vaginal delivery (81.5%).

Table 3 lists the IYCF indicators that were measured in this study. The continued breastfeeding at 1 year, continued breastfeeding at 2 years and children ever breastfed indicators were found to be 100%. The other indicators that were calculated were exclusive breastfeeding (98.71%), minimum meal frequency (98.71%), introduction of solid, semi-solid or soft foods (89.74%), early initiation of breastfeeding (84.89%), minimum dietary diversity (65.35%), minimum adequate diet (65.15%) and bottle feeding (16.36%).

Table 4 shows the association between mode of delivery and early initiation of breastfeeding.

Table 2: Sociodemographic characteristics of the mothers.

Characteristic	N	%
Age (in years)		
<21	15	3.9
21-30	360	93.7
>30	9	2.4
Total	384	100
Education		
Illiterate	47	12.2
Primary school certificate	108	28.1
Middle school certificate	144	37.5
Secondary school certificate	76	19.8
Higher secondary or diploma	6	1.6
Graduate or postgraduate	3	0.8
Total	384	100
Type of family		
Joint	340	89
Nuclear	44	11
Total	384	100
Socioeconomic class (Modified Kuppuswamy classification)		
Upper middle	7	1.8
Lower middle	87	22.7
Upper lower	290	75.5
Total	384	100
Number of ANC visits		
Less than 4	6	1.5
4 or more	378	98.5
Total	384	100
Mode of delivery		
Normal	313	81.5
LSCS	71	18.5
Total	384	100

LSCS=lower segment caesarean section.

DISCUSSION

The 'Early Initiation of Breastfeeding' indicator was found to be 84.89% in the present study, which is much higher than the national average of 41.6% as well as the state average of 68.6%.[5,3] Similar findings were reported by different authors wherein the value ranged from 81% to 88%.[6-10] This may be explained by the inclusion of tribal or backward class populations in these studies. It was much higher in studies conducted by Nisha et al where it was 98.6% and Madhu et al where it was 97%.[11,12] This difference may be due to the fact that both these studies employed methodology and tools which

were different from the current study. It was much lower in the studies where the values ranged from 28.14% to 68.5%.[13-15] This conformation of studies reflects that the population structure in different as compared to the present one.

The 'Exclusive Breastfeeding' indicator was found to be 98.71%, which is much higher than the national average of 54.9% as well as the state average of 65.6%.[5,3] It is comparable to the findings of Chandwani et al where it was 95% and Parashar et al where it was 94.9%.[16,17] This might have been due to the similar educational status of the mothers in these studies. It is much higher than the findings of Khan et al where it was 35% and Chavan et al where it was 36.45%.[13,9] This may be due to difference in cultural beliefs among the mothers in these studies as they were conducted in Karnataka and Maharashtra respectively.

Table 3: IYCF Indicators.

Indicator	N (n)	%
Early initiation of breastfeeding	326 (384)	84.68
Exclusive breastfeeding under 6 months	77 (78)	98.71
Continued breastfeeding at 1 year	61 (61)	100
Introduction of solid, semi-solid or soft foods	35 (39)	89.74
Minimum dietary diversity	200 (306)	65.15
Minimum meal frequency	303 (306)	98.69
Minimum acceptable diet	200 (306)	65.15
Children ever breastfed	384 (384)	100
Continued breastfeeding at 2 years	85 (85)	100
Bottle feeding	63 (384)	16.36

N=number of practicing mothers; n=total number of mothers.

Table 4: Association between mode of delivery and early initiation of breastfeeding.

Mode of delivery	Total	Practiced EIBF	Percentage
Normal	313	283	90.4
LSCS	71	43	60.5
Total	63	321	84.89

EIBF=early initiation of breastfeeding; LSCS=lower segment caesarian section; χ^2=40; p=0.00.

The 'Continued Breastfeeding at 1-year' indicator was 100%. It was similar to the findings of Das et al who also found it to be 100%.[18] This may have been due to the inclusion of backward population in that study as ours. It was much higher than the findings in the studies conducted by Sangra et al where it was 25% and Parashar et al where it was 50%.[19,17] This may be because both these studies were conducted in the hilly regions of the north India where the culture may be quite different from the tribal population in the plains of Odisha.

The 'Introduction of Solid, Semi-solid and Soft foods' indicator was 89.74%. This is much higher than the national average of 42.7% and the state average of 54.9%.[5,3] The result was very similar to that found by Chakraborty et al where it was 88.9% and Velu et al where it was 90.5% which may be explained by the fact that these studies were also conducted in tribal and rural areas of the country which is quite similar to the setting of this study.[20,21] The practice was much higher than the studies of Gupta et al where it was 54.6% and Sreedhara et al where it was 55%.[22,23] Since both these studies were in urban areas, it may reflect the differences in feeding practice from a rural area which was the basis of this study.

The 'Minimum Dietary Diversity' indicator is the proportion of children 6-23 months of age who receive foods from 4 or more food groups. In this study it was found to be 65.35%. This was similar to the results of the study of Karmee et al where it was found to be 66.9% which may be because of the geographic proximity of the study areas.[6] However it was much higher than the results in the studies of Mondal et al where it was 30.85% and Chaudhary et al where it was 15.7%.[24,25] This may be due to the high rates of illiteracy among the mothers in these studies as compared to the current study. It is much lower than that in the study conducted by Das et al where it was 83.3%.[18] This difference may be due to the cultural differences in the study settings.

The 'Minimum Meal Frequency' indicator is the proportion of breastfed and non-breastfed children 6-23 months of age who receive solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more. It was 98.69% in the current study. It is similar to the results of the study of Chandwani et al who found it to be 95.6%.[16] This may have been because of the rural setting of both these studies. It is considerably higher than that found in the studies of Davalgi et al where it was 48% and Karol et al where it was 36.6%.[26,27] These differences may be because these studies were conducted in healthcare facilities and not community based like the current study. The result was also higher than the studies of Khan et al where it was 38.2%.[28] Though these studies were in a similar study setting as the current study, the difference may have arisen due to the wide geopolitical divide between these regions.

The 'Minimum Adequate Diet' indicator is the proportion of breastfed and non-breastfed children 6-23 months of age who receive the minimum dietary diversity and the minimum meal frequency. It was found to be 65.15% in this study. It is much higher than the national average of 9.6% and the state average of 8.5%.[5,3] It was much higher than the studies of Bentley et al and Omotoye et al.[29,30] This disparity may be a reflection of inadequacy of penetration of health care services to the study areas owing to the former being informal settlements and the latter having poor public health infrastructure. It was less

than that found by Karmee et al where it was 78.7%.[6] This dissimilarity may be because even though both the studies have been conducted in the same state, the latter study was conducted in a healthcare facility and the level of awareness of mothers attending a healthcare facility may be different from the tribal community which was the setting for the current study.

The 'Child ever breastfed' indicator was 100% which is similar to the results of Omotoye et al and Deshmukh et al where it was 100%.[30,31] This is because this indicator tends to evoke a positive response most of the times since its scope spans a long period and mothers generally breastfeed their children at some time.

The 'Continued Breastfeeding at 2 years' indicator was 100%. It is similar to the results of Das et al where it was also found to be 100%.[18] This similarity may be because the backward populations in both studies may find it economical to continue breastfeeding till 2 years and beyond as the cost of other foods and snacks available in the market can be quite high. The results of a study conducted by Sangra et al where it was 16% and Khan et al where it was 74.7% were much lower than that found in this study.[19,28] This may be because the geographic regions in these studies are quite distinct from that of the current study and hence the cultural beliefs regarding continuation of breastfeeding may have been different.

The 'Bottle feeding' indicator was found to be 16.36%. It was similar to the results of a study conducted by Chakraborty et al where it was 16.5%.[20] Since both the studies were conducted in tribal population, this similarity in result may be justified. It was less than the value found in the results of a study conducted by Chaudhary et al where it was 26.2% and Demilew et al where it was 23%.[25,32] The practice of bottle feeding is mostly a by-product of an urban and affluent lifestyle since it is economically demanding. Since both these studies were conducted in urban areas, the similar lifestyle may be posited as an explanation. It was more than the value found in a study conducted by Khan et al.[28] Here the study setting is a rural populace where the poor economic feasibility reduces bottle feeding.

Delivery by lower segment caesarean section (LSCS) was associated with delayed initiation of breastfeeding (χ^2=40, p=0.00). This was similar to the results of Gupta et al.[22] This may be explained by the fact that recovery after anaesthesia for LSCS, though mostly spinal, may take longer than one hour in many cases.

CONCLUSION

The indicators related to breastfeeding and complementary feeding were adequate except for minimum dietary diversity and minimum adequate diet. Bottle feeding practice was minimal. Though the practice of bottle feeding is minimal, steps should be taken to increase awareness, with an aim to change this unhealthy behaviour fully, in order to ensure food safety for the infants and young children. The association between delivery by caesarean section and delayed initiation of breast feeding was found to be significant.

Limitation of the study is that only those mothers registered in the Anganwadi Centres were included in the study. Hence the study doesn't consider those mothers who weren't registered due to any exigent circumstances. The EIBF and child ever breastfed indicators are based on historic recall. Hence, there is the possibility of considerable recall bias.

Funding: The author sincerely acknowledges the Indian Council of Medical Research (ICMR) grant for MD/MS/DM/MCh dissertation/thesis
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Black RE, Morris SS, Bryce J. Where and why are 10 million children dying every year? Lancet. 2003;361(9376):2226-34.
2. Bulletin SRS. Sample Registration System, Government of India, New Delhi, India. 2016;50:2.
3. National Family Health Survey-4, 2015-16. Available at: http://rchiips.org/NFHS/pdf/NFHS4/OR_FactSheet.pdf. Accessed 10 November 2019.
4. WHO. Indicators for assessing infant and young child feeding practices Part 1, Definitions. Geneva, Switzerland; 2008: 2-9.
5. Government of India. Available at: http://rchiips.org/nfhs/pdf/NFHS4/India.pdf. Accessed 10 November 2019.
6. Karmee N, Satapathy SP, Tripathy RM. Infant and young child feeding practices among mothers attending an Urban Health Training Centre (UHTC): a cross-sectional (mixed methodology) study in Berhampur, South Odisha, India. Int J Contemp Pediatr. 2017;5(1):161.
7. Sasie SD. Infant and Young Child Feeding Practice and Associated Factors among Mothers/Caretakers of Children Aged 0-23 Months in Asella Town, South East Ethiopia. J Fam Med. 2017;4(5):0-5.
8. Campbell RK, Aguayo VM, Kang Y, Dzed L, Joshi V, Waid J, et al. Infant and young child feeding practices and nutritional status in Bhutan. Matern Child Nutr. 2018;14:1-6.
9. Chavan S, Jadhao A, Narlwar U, Ughade S, Adikane H. Cross sectional study of knowledge and practices regarding breast feeding amongst mothers belonging to tribal community in Melghat area, Amravati, Maharashtra, India. Int J Res Med Sci. 2017;5(3):990.
10. Anjana P, Bant DD. Assessment of infant and young child feeding practices among Under-3 Years Children in Urban Slums of Hubballi City. Int J Med Res Heal Sci. 2015;4(4):763.

11. Catherin N. Infant and Child Feeding Practices among Tribal Population in Bangalore Infant and Child Feeding Practices among Tribal Population in Bangalore district, Karnataka. 2017;4:370-3.
12. Madhu K, Chowdary S, Masthi R. Breast feeding practices and newborn care in rural areas: A descriptive cross-sectional study. Indian J Community Med. 2009;34(3):243.
13. Khan A, Radha R. Breast feeding and weaning practices of mothers in a rural area - a cross-sectional study. Int J Med Sci Public Heal. 2013;2(4):857.
14. Sharma A, Thakur P, Tiwari R, Kasar P, Sharma R, Kabirpanthi V. Factors associated with early initiation of breastfeeding among mothers of tribal area of Madhya Pradesh, India: a community based cross sectional study. Int J Community Med Public Heal. 2016;3(1):194–9.
15. Sarkar T, Bhattacherjee S, Mukherjee A, Saha T, Chakraborty M, Dasgupta S. Early initiation of breast feeding in tribal children. Int J Community Med Public Heal. 2016;3:3081-5.
16. Chandwani H, Prajapati A, Rana B, Sonaliya K. Assessment of infant and young child feeding practices with special emphasis on IYCF indicators in a field practice area of Rural Health Training Centre at Dabhoda, Gujarat, India. Int J Med Sci Public Heal. 2015;4(10):1414.
17. Parashar A, Sharma D, Thakur A, Mazta S. Infant and young child feeding practices - Insights from a cross-sectional study in a hilly state of North India. Int J Nutr Pharmacol Neurol Dis. 2015;5(3):103-7.
18. Chattopadhyay D, Chakraborty S, Dasgupta A, Das N. Infant and young child feeding perceptions and practices among mothers in a rural area of West Bengal, India. Ann Med Health Sci Res. 2013;3(3):370.
19. Sangra S, Kumar D, Dewan D, Sangra A. Reporting of core and optional indicators of infant and young child feeding practices using standardized the WHO formats from a rural population of Jammu region. Int J Med Sci Public Heal. 2017;6(11):1.
20. Chakraborty B, Bhattacherjee S, Ray K, Mukherjee A. Infant and Young Child Feeding Practices among Tribal Population of a Tea Estate in Darjeeling District, West Bengal, India. J Compr Heal. 2017;5:29-38.
21. Velu MK, Reetheeswaran J, Arumugam B. A Study of Determinants on Infant and Young Child Feeding Practices among Mothers attending Primary Health Centers in Rural Area of Tamil Nadu, India. J Academia Ind Res. 2019;7(12):162-8.
22. Chhabra P, Gupta A. Infant and young child feeding practices and its determinants in an urbanized village of Delhi. Int J Med Public Heal. 2015;5(3):228.
23. Sreedhara MS, Banapurmath CR. A study of nutritional status of infants in relation to their complementary feeding practices. Curr Pediatr Res. 2014;18(1):39-41.
24. Mondal T, Sarkar A, Shivam S, Thakur R. Assessment of infant and young child feeding practice among tribal women in Bhatar block of Burdwan district in West Bengal, India. Int J Med Sci Public Heal. 2014;3(3):324.
25. Chaudhary SR, Govil S, Lala MK, Yagnik HB. Infant and Young Child Feeding Index and its association with nutritional status: A cross-sectional study of urban slums of Ahmedabad. J Family Community Med. 2018;25(2):88-94.
26. Davalgi S. A study to know infant and young child feeding practices of mothers attending mother and child health clinic at a tertiary care teaching hospital, Davangere, India. Int J Community Med Public Heal. 2015;2(4):478-83.
27. Karol S, Khanna P, Karol M. Infant and Young Child Feeding Practices Among Mothers Attending Immunization Clinic in Tertiary Health Care Centre, Haryana. Global Jr Res Analysis. 2019;7(6):65-6.
28. Khan GN, Ariff S, Khan U, Habib A, Umer M, Suhag Z, et al. Determinants of infant and young child feeding practices by mothers in two rural districts of Sindh, Pakistan: A cross-sectional survey. Int Breastfeed J. 2017;12(1):1-8.
29. Bentley A, Das S, Alcock G, More NS, Pantvaidya S, Osrin D. Malnutrition and infant and young child feeding in informal settlements in mumbai, india: Findings from a census. Food Sci Nutr. 2015;3(3):257-71.
30. Esther Omotoye F, Samuel Adesanmi RA. Infant and Young Child-Feeding Practices in Two Local Government Areas in Southwest, Nigeria. J Food Sci Nutr Res. 2019;02(02):136-45.
31. Deshmukh U, Thomas T, Swaminathan S, Kurpad A. Breastfeeding Practices and Dietary Diversity among Infants and Young Children in Rural and Urban-Slum Populations in India: An Observational Study. Int J Child Heal Nutr. 2018;7(4):175-83.
32. Demilew YM, Tafere TE, Abitew DB. Infant and young child feeding practice among mothers with 0-24 months old children in Slum areas of Bahir Dar City, Ethiopia. Int Breastfeed J. 2017;12(1):1-9.

Cite this article as: Sahu S, Pradhan SK, Panda SC. Infant and young child feeding practices among tribal mothers in Sambalpur district, Odisha, India. Int J Community Med Public Health 2020;7:1072-7.