



Prevailing IYCF Practices Among Under Five Years Children and Its Association with Acute Respiratory Tract Infections in Surendranagar District

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ABSTRACT

Background: The optimal infant and young child feeding practices during the early years of life is of paramount importance as this period is the "critical window" for the promotion of health, good growth, behavioural and cognitive development. ARI is considered as one of the major public health problems and recognized as the leading cause of mortality and morbidity in many developing countries.

Objectives: The study was conducted to find out the prevalence of ARI among children. To explicate the association of ARI with IYCF practices.

Material and methods: This was a community based cross sectional study conducted in Surendranagar district, Gujarat. Data of 400 Under Five years children was obtained and analyzed using appropriate test.

Results: Out of 400 children studied, majority of children having malnutrition were in the rural area (Grade I= 70.27%, Grade II= 74.55, Grade III= 81.25%). Longer the duration of continue breast feeding lesser are the chances for ARI. The association was statistically highly significant. ($p < 0.01$). When the prevalence of ARI was assessed were seen that majority of 34% % of the children in rural area.

Conclusion: It suggests importance of proper IYCF practices in prevention of ARI in early life.

Keywords: IYCF practices, ARI, Nutritional status, Under 5 years.

INTRODUCTION

Acute Respiratory Infection (ARI) is an acute infection of any part of the respiratory tract and related structures including paranasal sinuses, middle ear and pleural cavity with a wide range of combination of symptoms & signs¹.

Every year 10.9 million of under-five children die worldwide, among which 2.4 million are from India alone. Poor feeding and repeated infections resulted in 30% of stunted under-five children world-wide.³ Malnutrition alone is responsible for 67% of child death in India. In all settings that includes irrespective of place of delivery, rich and poor, urban and

rural area breastfeeding had positive effects on the health of infants and mothers. In India, while the infant mortality rate (IMR) has declined to 40 (SRS September 2014), but there still remains the need to accelerate improvements in infant and neonatal survival to achieve twelfth Plan goal, to reduce IMR to 25 by 2017. Infants aged 0-5 months who are not breastfed have 7-fold and 5-fold increased risks of death from diarrhoea and pneumonia, respectively, compared with infants who are exclusively breastfed. At the same age, non-exclusive rather than exclusive breastfeeding results in more than 2-fold increased risks of dying from diarrhoea or pneumonia. The optimal infant and young child feeding

practices during the first 2 years of life is of paramount importance as this period is the "critical window" for the promotion of health, good growth, behavioural and cognitive development².

Infant and young child nutrition need utmost attention of scientists and planners for the very simple reason that growth rate in the early years of life is maximum and infant and young child feeding (IYCF) practices comprising breastfeeding as well as complementary feeding have major role in determining the nutritional status of children.

Malnutrition has been responsible, directly or indirectly, for 60% of all deaths among children less than 5 years of age in India annually. Many of these deaths are possibly associated with inappropriate feeding practices during early years of life. Only 35% of infants world-wide are exclusively breastfed during the 1st4 months of life and complementary feeding begins either too early or too late with foods, which are often nutritionally inadequate and unsafe. Poor feeding practices in infancy and early childhood, resulting in malnutrition, contribute to impaired cognitive and social development, poor school performance and reduced productivity in later life.³

Acute respiratory infections (ARIs) contribute to major disease associated mortality and morbidity among children under 5 years. It is considered as one of the major public health problems and it is recognized as the leading cause of mortality and morbidity in many developing countries

MATERIALS AND METHODS

The present study was community based cross sectional study for Under five years of age children (≤ 5 yrs) in the urban and rural area of Surendranagar district of Gujarat state India. This study was carried out from August 2011 to January 2013. Based on the prevalence of ARI derived from pilot study in 0-5 years population, which was found to be 20%, the sample size of study as per statistical calculation ($4pq/l^2$, where $p = 20$ and $l = 20\%$ of p) came out to be 400. This sample size was further sub grouped into two parts Urban and Rural According to (census 2001) distribution of rural and urban population in Gujarat state were 62.65% and 37.35% respectively. The sample size was therefore divided in urban and rural groups as per the above data. Surendranagar city was selected for the urban study. The city has 14 wards and by simple random technique, Ward No.12 was selected. Total population of this ward is 11800 (as per estimates of municipal corporation, Surendranagar city Census 2001)⁶, which was sufficient to give required sample 149 for the study. The houses in area were listed and a randomly selected house

was taken as the first house to be surveyed. Houses were selected only from one direction of the lane to avoid cross selection and duplication, and continued till the blind end was reached. In the next lane the same procedure was followed till the entire sample size was achieved. For rural areas out of the ten talukas in the district, Sayla was selected through simple random technique. Sayla village is situated around 32 km away from Surendranagar city. Out of the total villages under the taluka, Sayla village was selected which had population 15,376 and gave required sample of 251 for the study⁷. For the selection of the first house, the same technique was followed as in urban. The study was carried out through oral questionnaire method and anthropometric as well as clinical examination using prestructured and pretested proforma by undertaking house to house visit of the study area. For calculating prevalence of ARI amongst children and for gradation of pneumonia, WHO criteria was applied. The collected data was tabulated and analyzed in terms of proportion using SPSS. Chi-squared test was applied to study the relationship between occurrence of accidents and different socio-demographic variables. P-value less than 0.05 were considered significant.

RESULT

Out of 400 children studied, observation found in table 1 with maximum were from 4-5 years age group i.e. 140 (35%) followed by 1-2 years age group 77 (19.25%) and lowest belonged to the age group of 2-3 years i.e. 45 (11.25%). In urban area, maximum were belonged to the age group of 1-2 years i.e. 33 (21.85%) and lowest in the age group of 2-3 years i.e. 26 (17.22%), while in rural area maximum and lowest were belonged to the age group of 4-5 years and 2-3 years i.e. 140 (43.78%) and 45 (07.63%) respectively.

It was found that over all gender wise 195 (48.75%) were males and 205 (51.25%) were females which is almost similar.

Table 1: Distribution of children according to age and gender

Profile	Urban (n=151) (%)	Rural (n=249) (%)	Total (n=400) (%)
Age			
≤ 1 Yr	31 (20.53)	40 (16.06)	71 (17.75)
1-2 Yrs	33 (21.85)	44 (17.67)	77 (19.25)
2-3 Yrs	26 (17.22)	19 (07.63)	45 (11.25)
3-4 Yrs	30 (19.87)	37 (14.86)	67 (16.75)
4-5 Yrs	31 (20.53)	109 (43.78)	140 (35.00)
Gender			
Male	85 (56.29)	110 (44.18)	195 (48.75)
Female	66 (43.71)	139 (55.82)	205 (51.25)

Table 2: Distribution of children according to their feeding history

Feeding History	Urban (n=151)(%)	Rural (n=249)(%)	Total (n=400)(%)
Colostrum Given			
Yes	142 (94.04)	223 (89.56)	365 (91.25)
No	9 (05.96)	26 (10.44)	35 (08.75)
Initiation of Breast Feeding			
≤1 hr	126 (83.44)	195 (78.31)	321 (80.25)
>1hrs to1 st Day	19 (12.58)	43 (17.27)	62 (15.50)
2 nd Day or More	6 (03.97)	11 (04.41)	17 (04.25)
Time of Weaning			
< 4 Months	21 (13.91)	17 (06.82)	38 (09.50)
4-6 Months	23 (15.23)	138 (55.42)	161 (40.25)
At 6 Months	67 (44.37)	45 (18.07)	112 (28.00)
>6 Months	29 (19.21)	28 (11.24)	57 (14.25)
Not Started	11 (07.28)	21 (08.43)	32 (08.00)
Duration of Breast Feeding (N=329)*			
< 6 Months	42 (35.00)	63 (30.14)	105 (31.92)
6-12 Months	67 (55.83)	118 (56.46)	185 (56.23)
≥ 12 Months	11 (09.17)	28 (13.40)	39 (11.85)

*Children less than one year were excluded.

Table 3: Distribution of children according to their nutritional status (weight for age)

Nutritional Status	Urban (n=151)(%)	Rural (n=249)(%)	Total (n=400)(%)
Normal	98 (64.90)	104 (41.77)	202 (50.50%)
Grade I	33 (21.85)	78 (31.33)	111 (27.75)
Grade II	14 (09.27)	41 (16.46)	55 (13.75)
Grade III	6 (03.98)	26 (10.44)	32 (08.00)

Table 4: Association between IYCF practices and prevalence of ARI

Variables	Prevalence of ARI				Children Without ARI (n=278) (%)	Total (n=400) (%)
	Mild (n=83) (%)	Moderate (n=34) (%)	Severe (n=5) (%)	Total (n=122) (%)		
Initiation of Breast Feeding						
Immediate or ≤1 hrs	50 (15.58)	21 (06.54)	2 (0.62)	73 (22.74)	248 (77.26)	321 (80.25)
>1hrs To 1 st Day	27 (43.55)	10 (16.13)	2 (03.23)	39 (62.90)	23 (37.10)	62 (15.50)
2 nd Day or More	6 (35.29)	3 (17.65)	1 (05.88)	10 (58.82)	7 (41.18)	17 (04.25)
Duration of Breast Feeding*						
< 6 Months	25 (23.81)	14 (13.33)	2 (01.90)	41 (39.05)	64 (60.95)	105 (31.92)
6-12 Months	33 (17.84)	11 (05.94)	1 (00.54)	45 (24.32)	140 (75.67)	185 (56.23)
> 12 Months	5 (12.82)	2 (05.13)	1 (02.56)	8 (20.51)	31 (79.49)	39 (11.85)
Time of Weaning (Months)						
< 4 Months	11 (28.95)	3 (07.89)	0 (0)	14 (36.24)	24 (63.16)	38 (09.50)
4-6 Months	28 (17.39)	8 (04.97)	1 (00.62)	37 (22.98)	124 (77.02)	161 (40.25)
At 6 Months	18 (16.07)	6 (05.36)	1 (00.89)	25 (22.32)	87 (77.68)	112 (28.00)
>6 Months	16 (28.07)	9 (15.79)	1 (01.75)	26 (45.61)	31 (54.39)	57 (14.25)
Not Started	10 (31.25)	8 (25.00)	2 (06.25)	20 (62.50)	12 (37.50)	32 (08.00)

*Children less than one year excluded.

Table 5: Association between nutritional status of children and prevalence of ARI

Nutritional Status	Prevalence of ARI				Children Without ARI (n=278) (%)	Total (n=400) (%)
	Mild (n=83) (%)	Moderate (n=34) (%)	Severe (n=5) (%)	Total (n=122) (%)		
Normal	31 (15.36)	9 (4.45)	1 (0.49)	41 (20.30)	161 (79.70)	202 (50.50)
Grade I	27 (24.33)	12 (10.81)	1 (0.90)	40 (36.04)	71 (63.96)	111 (27.75)
Grade II	15 (27.27)	6 (10.90)	1 (1.83)	22 (40)	33 (60)	55 (13.75)
Grade III	10 (31.25)	7 (21.87)	2 (6.26)	19 (59.38)	13 (40.62)	32 (08.00)

Percentage of males were higher in urban area, i.e. 56.23%, while in rural area percentage of female were higher (55.82%).

Table 2 shows nearly 91.25% of children had received colostrum. In urban area, almost all 94% of children had received colostrums. Among those who had not received were more from rural area (74.29%). Around 80% of mothers started breast feeding within 1 hour. Percentage of mothers who delayed breast feeding by 1hr to 1st day, 2nd day or more was 15.50% and 4.25% respectively. In urban area, around 83% of mothers started breast feeding within 1 hour, percentage of those mothers who delayed for 2 days or more were more from rural area (64.71%). Percentage of mothers who started weaning their children before 6 months was 50%. Among those who delayed weaning more than 6 months, the percentage was observed similar both in urban and rural area. Out of 329 mothers, 185 (56.23%) continued breast feeding for six to twelve months after delivery followed by less than six month and more than twelve month, i.e. 105 (31.92%) and 39 (11.85%) respectively. While in comparison to urban and rural area, 40% mothers of urban area had discontinued to breast fed their children before 6 months and the percentage was higher in rural area 60%. The prevalence was higher in male (56.56%) as compared to female (43%).

Table 3 shows that nearly 50% of the children had some degree of malnutrition. Majority of children having malnutrition were in the rural area (Grade I= 70.27%, Grade II= 74.55, Grade III= 81.25%). About 65% of the urban children had normal nutritional status.

Table 4 shows that there is positive association between timely initiation of breast feeding and decreased prevalence of ARI. It was observed that prevalence of ARI was lowest in children whose mothers initiated breast feeding within 1 hour and prevalence of ARI went on increasing as time of initiation of breast feeding was delayed. Prevalence was highest in children whose mothers initiated breast feeding after 1hr to 1 day and 2nd day or more which was 62.90% and 58.82% respectively. The association was statistically highly significant ($X^2 = 46.259$, $df=2$, $p < 0.0001$).

Similarly the duration of breastfeeding increases, prevalence of ARI decreases. Mothers who stopped breast feeding before 6 months their children were having high prevalence of ARI (39.05%). Thus, the observations indicate that the duration of breast feeding affects the vulnerability of child for ARI. Longer the duration of breast feeding lesser are the chances for ARI. The association was statistically highly significant. ($X^2=8.523$, $df= 2$, $p<0.01$)

Observations reveal that timely initiation of weaning protects the child against the ARI. It was found that the prevalence of ARI in children who were weaned at more than 6 months of age had highest prevalence (62.50%), while before 6 months had less (22.98%). The association was statistically highly significant. ($X^2 = 30.150$, $df= 4$, $p<0.0001$)

Table 5 observations indicate that nutritional status of child has direct bearing on their susceptibility to ARI. Prevalence of ARI amongst children who had no malnutrition was lowest (20.30%). As grade of malnutrition increases, prevalence of ARI also increases. Children with Grade III malnutrition had high of prevalence of ARI, i.e.59.38%. The association observed was statistically highly significant. ($X^2 =26.453$, $df= 3$, $P<0.0001$).

DISCUSSION

Initiation of breast feeding and colostrums given to the child has great influence on health, morbidity pattern and longevity of child. It is good to observed in present study that almost 80% of mothers initiated breast feeding within 1st hour. Of the remaining 15% of mother delayed it to 1st day and least 4% of children it was delayed it to 3rd day of beyond. Similar observations were noted by N Das et al³ in whose studies it was found around 60% while study done by Anjali et al⁴ & AlGhambi et

al⁵ found around 35% of mothers initiated breast feeding within 1st hour. Similarly study done by Kaware AC et al⁶ in Solapur Maharashtra found that Occurrence of ARI was more in those patients whose mothers were not practicing exclusive breast feeding 60.82%. A study conducted by Pore et al⁷ in a tertiary care centre in Solapur found significant association between breast feeding and ARI ($p < 0.05$). In a study by Jha et al⁸ in Pune, found that incidence of ARI was more in children those who were not exclusively breast feed.

Equally important is the duration of breast feeding. It was noted that about two third (68.08%) of mother breast fed their babies for more than 6 months duration which is hearting to note. Similar observations were noted by Cesar et al⁹, AL-Ghambi et al⁵, Arifee1n et al¹⁰, Kumar et al¹¹ and report of planning commission Delhi¹² in whose studies 67.32%, 60.62% and 58.57%, 58.9%, 86.97% & 68.4% of mothers respectively breast fed their babies beyond 6 months.

Only half 50% of children had normal nutritional status and of remaining 50% who were malnourished, about 41.50% belongs to grade I or grade II while 8% belongs to grade III (severe) malnutrition was highest in rural area (58.23%) and was least in urban area which was 35.10%. Found Similar prevalence of malnutrition in study done by Vyas S et al.¹³ which is much higher than the results of Pandey et al¹⁴ (1996) (25.32%) and Deb SK¹⁵ (1998) (24.21%) before a decade almost. Overall prevalence of ARI was found to be 30.50% out of it, prevalence of mild ARI was highest (68.03%) followed by moderate ARI (27.87%) and prevalence was least for severe ARI (4.10%).

Present study's findings are lower than the studies done by S Ganesh et al¹⁶ which was around 59%. Similarly study done by Vinod et al and FAUJunwa et al¹⁷ it was observed that Severe malnutrition was found to affect the prevalence of severe forms of ARI; the relative risk of malnourished children developing pneumonia was 3 times higher than the well-nourished children. It was observed that poor immunization status were found to significantly affect the prevalence of ARI, 50% of poorly immunized subjects had severe forms of ARI.

CONCLUSION

Prevalence of ARI was least (22.74%) when breast-feeding was started within 1st hour of birth and it was highest (58.82%) in children whose breast-feeding was initiated after 2nd day or more of birth. It suggests importance of colostrums in the prevention of ARI in early life. There is positive association between timely initiation of breast feeding and decreased prevalence of ARI. Children who were

timely weaned had lower prevalence rate (22.32%). Malnutrition had a negative impact on the vulnerability towards ARI. It was seen that the prevalence of ARI was 20.30% in children with normal nutrition status, while it was more than double (59.38%) in malnourished children. It suggest IYCF practices play major role in prevalence of ARI.

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