



Morbidity among Under Five Children in a Rural Area of Jammu

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Abstract

Children under five years of age constitute approximately 15% of the country's total population and are the most vulnerable section of the society and suffer from highest morbidity. A Prospective study was conducted to find out the magnitude of morbidity in under five children in rural area and its association with various socio-environmental factors. 206 under-fives (134 Males & 72 Females) were followed monthly for a period of one year. The annual incidence rate of morbidity (Acute spells of illness) was 4.6 episodes /child /year. The leading causes of morbidity in decreasing order of incidence were - acute respiratory infections, diarrheal diseases, skin infections and fever. Episodes of illness were observed more during infancy, in females, malnourished and in children living in over-crowded and poorly ventilated houses. An inverse relationship of the morbidity and socio-economic status of the families was also observed. However, no association of morbidity was observed with parental literacy, location of Kitchen, type of excreta disposal and Infant feeding practices.

Key Words

Morbidity, Under Five Children, Rural

Introduction

Children under five years of age constitute approximately 15% of the country's total population and are the most vulnerable section of the society and suffer from highest morbidity. First few years of life is the most crucial period of life as this age is known for accelerated growth and development, warranting regular monitoring. During this period about 40% of physical growth and 80% of mental development occurs (1). Any adverse influences during this period may result in severe limitations in their development. This age group is most affected by various common and easily treatable illnesses. Three in four episodes of childhood illness are caused by one of these conditions- acute respiratory infections (mostly pneumonia), diarrhea, measles, malaria, malnutrition or a combination of these conditions (2). A number of child survival strategies implemented by GOI has resulted in impressive improvement in morbidity and mortality indicators but the results have not been consistent. The pace of improvement is expected to accelerate further upon full implementation of activities under NRHM (National Rural Health Mission). The present community based study thus is an attempt to re-address morbidity among under five children through monthly home visits and its association with various socio-environmental factors.

Material and Methods

The study was conducted in village Domana (Rural field practice area of Post Graduate Department of Community Medicine, Govt. Medical College, Jammu) for one year. The target population consisted of children catered by three anganwadi centers located in the field practice area. These anganwadi centers were selected randomly by employing simple random sampling technique. A house to house survey was conducted and a total of 206 under five children were enrolled for the study in the first month of study period i.e. Nov.2006. Children who had completed five years on 31st oct.2006 or born after enrolment were excluded from study. At first visit, mothers of enrolled children were interviewed and information regarding family composition, their age, sex, literacy, occupation, marital status etc. was collected. Housing conditions such as overcrowding, ventilation, sanitation, kitchen, water supply, excreta disposal etc was also assessed by the investigator. Socio-economic status of the family was assessed by using "Modified Uday Pareek Scale". Exact age of the child was established from birth certificate/ delivery discharge slip, immunization card or recall method (to the nearest month using calendar of local events). Every child was weighed and graded using weight for age criteria adopted by Nutrition sub-committee

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**Table 1. Monthwise And Annual Distribution of Morbidity Among Under Five Children**

Morbidity condition	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Acute respiratory infections	35	57	69	45	37	24	31	27	19	30	34	41	449
Diarrhoeal diseases	18	20	16	7	11	22	34	39	47	36	26	10	286
Skin infections	7	9	6	5	3	4	7	10	8	9	7	7	82
Fever	7	8	9	6	4	3	5	7	6	8	4	6	73
Worm infestation	3	2	3	1	2	-	1	2	3	1	-	-	18
Measles	-	-	-	-	-	-	3	-	-	2	-	-	5
Chicken pox	-	-	-	-	3	-	-	-	2	2	-	--	7
Infective Hepatitis	-	-	-	-	-	-	-	1	2	1	-	-	4
Injuries	1	-	2	-	1	-	-	-	-	2	-	1	7
Poisoning	-	-	-	-	-	-	1	-	-	-	-	-	1
Miscellaneous	-	2	2	3	-	4	-	1	1	3	-	2	18
Total	71	98	107	67	61	57	82	87	88	94	71	67	950

of the Indian Academy of pediatrics (3). Immunization status of the child was noted down from the immunization card. Infant feeding practices of children up to 2 years of age were also enquired from the mother including information regarding colostrums, duration of exclusive breast feeding and age at weaning. After detailed history, thorough general physical and systemic examination of every child was done to find out any illness. Any congenital malformations or chronic disability in the child was also noted. Periodic monthly visits were made to the household of each enrolled child for twelve months till October 2007. An inquiry was made about the occurrence of any episode of illness in the child in the preceding month (since the last visit). The illness prevalent at the time of visit was also recorded and managed accordingly. At the end of twelve months, the morbidity data was combined for all the children and analyzed to find out the magnitude of morbidity and its association with the socio- environmental factors

Results

Out of 206 children studied, 134 were males and 72 females (M/F ratio 1.86:1). Approximately one fourth (28.16%) of the sample studied belonged to scheduled and backward castes. Almost three-fourth (74.75%) children belonged to either middle or higher middle class and 118 (57.28%) belonged to nuclear families. Only 7.25% mothers and 3.62% fathers were illiterate. 35.92% of children were living in families where overcrowding was present. 7.77% of children were living in poorly ventilated houses. 19.42% children were from the families which did not have separate kitchen facility. 48.06% children did not have separate toilet facility. All the children were fully immunized for their age. 46.52% children were exclusively breast fed for 6 months. 66.28% children were given supplementary foods at the age of 4-6 months. 79.13% children were in normal nutritional grade. The principal causes of morbidity in children under five years of age were acute respiratory infections,

Table 2. Age Wise Distribution of Morbidity Among Children Under Five Years of Age

Age Group (Months)	No. of Children	No. of Episodes	Episode/ Child/Year
0-12	44	212	4.8
13-24	42	201	4.7
25-36	47	208	4.4
37-48	42	184	4.3
49-60	31	145	4.6
Total	206	950	4.6

Table 3. Sex Wise Distribution of Morbidity Among Children

Sex	No. of Children	No of Episodes	Episode/ Child/Year
M	134	544	4.0
F	72	406	5.6
Total	206	950	4.6

Chi Square (Yate's Corrected) 3.92 p.04 Significant

Table 4. Morbidity Among Children According To Their Nutritional Status

Nutritional	No. of Children	No of Episodes	Episode/ Child/Year
Normal	163	693	4.2
Malnourished	43	257	5.9
Total	206	950	4.6

Table 5. Morbidity Among Children As Per Their Socio-Economic Status

Socio economic	No. of Children	No of Episodes	Episode/ Child/Year
Upper	84	290	3.4
Middle	80	367	4.5
Lower	42	293	6.9
Total	206	950	4.6

Chi Square(2) 11.88 p.002 Highly Significant

**Table 6. Association of Over Crowding With Episode of Illness**

Over Crowding	No. of Children	No. of Episodes of illness	Episodes/child/year
Present	74	427	5.77
Absent	132	523	3.96
Total	206	950	4.6

Chi Square 5.62 p.01 Significant

diarrhoeal diseases, skin infections and fever. Acute respiratory infections and diarrhoeal diseases together accounted for 77.36% of the total episodes of illnesses, with acute respiratory infections contributing for 47.26% and diarrhoeal diseases accounted for 30.10% of total episodes of illnesses. Episodes of acute respiratory infections were observed more during winter months while diarrhoeal disease episodes and skin infections were more during summer months. (Table I)

Most episodes of illness were observed in infants followed by children in 13-24 and 49-60 months respectively. Significantly higher morbidity rates were observed among female children (5.6 episodes/child/year) as compared to male children (4 episodes per child per year) $X^2 = 3.92$, p.04. Similarly, malnourished children more often suffered from episodes of illness as compared to children with normal nutritional status, though the differences were not found to be statistically significant. ($X^2 = 3.05$, p.08). Morbidity in children was seen to be inversely related to the socioeconomic class ($X^2 = 11.88$ p<.008). Also, the children living in overcrowded and poorly ventilated houses suffered more number of episodes of illness ($X^2 = 5.61$ p .01). No statistically significant association of the morbidity was observed with literacy of parents even though the episodes of illness were less in number among children of literate parents. Location of kitchen and type of excreta disposal also did not have any significant association with morbidity. Infants exclusively breast fed for six months suffered less morbidity though it was statistically not significant.

Discussion

Every child in the study group suffered one or more episode of illness. There were a total of 950 acute spells of sickness in 206 children. The mean annual incidence rate of morbidity was 4.6 episodes/child/year. This corroborates well with the findings of Venkatesh S (4) (4.85 episodes per child per year) and Malhotra & Prasad (5) (4.1 episodes per child per year). The episodes of acute respiratory infections were observed more during winter months and diarrhoeal episodes were more during summer months in present study. Niyogi *et al* (6) Kumar S (7) and Verma IC (8) also reported the peak incidence

of ARI in winter and diarrhea in summer. The mean number of episodes per child per year observed in present study was higher than the figures of Gulati PV (9) (2.44 episodes per child per year), 3.4 episodes per child per year by Chowdhary Amla *et al* (10) and 2.34 episodes per child per year by Muhe *et al.*(11). The mean number of episodes observed is far less than that observed by Gupta KB (12) (10.7 episodes per child per year) and Melania X Castro (13) who observed 10.8 episodes per child per year. The possible reasons for varying number of episodes in different studies could be differing geographic and climatic conditions apart from inherent differences in the study design and methodology.

Among the children in the study group, the leading causes of morbidity (excluding chronic conditions) in decreasing order of incidence were acute respiratory infections (47.26%), diarrhoeal diseases (30.10%), skin infections and fever (Table I). These findings are almost concordant with the findings of Gulati PV (14) who reported that respiratory and diarrhoeal diseases together account for two third of total morbidity in children under the age of five years. Similar findings were reported by Datta Banik *et al* (15) who reported that respiratory and diarrhoeal diseases together account for 73.9% of total episodes of diseases with respiratory diseases contributing 39.7% and diarrhoeal diseases 33.9% of total episodes of diseases. Bansal RD (4) also reported that respiratory illnesses and diarrhea accounted for 64.9 % of all morbidity. Recent data from studies by Narkhede Vinod *et al* (16), Srivastava DK *et al* (17) and Abhulimhen - Iyoha BI (18) also report that malnutrition, respiratory infection and diarrhoeal diseases are still major problem among under five children

In present study, the episodes of illness were observed more during infancy (Table 2) i.e 4.8 episodes per child per year and episodes decreased as age progressed. Same trend was observed by Gulati PV (14) and Datta Banik.(15) Chowdhary Amla *et al* (10) who reported highest morbidity between 1-3 years.

The analysis by sex showed that females suffered more number of episodes of illness i.e, 5.6 episodes/ child/year whereas in males it was only 4.0 episodes per child per year (Table 3). This confirms with the observation of Chowdhary *et al* (10) who also reported higher morbidity rate among female children. This finding however, is in contrast with Gulati PV (14) and Maltotra P5 who observed more episodes in males as compared to females in their studies whereas Datta Banik *et al* (15) found no difference in the incidence of sickness between male and female children. Morbidity was strongly associated with nutritional status and socio-



economic status (Table 4 & 5). Many investigators (19, 20) including Gulati PV (9) and Datta Banik (15) reported increased morbidity in malnourished children. No significant association of morbidity with literacy of parents was observed in present study. Similar finding was observed by Walia BNS (21) whereas M. Israt Rayhan (22) observed decrease in morbidity with increase in educational level of mothers. Overcrowding and poor ventilation (Table 6 & 7) was significantly associated with the morbidity in present study. Mukhopadaya J (23) observed increased ARI episodes in children living in over crowded families. No significant association of morbidity with location of kitchen was observed in present study. Mukhopadaya J (23) reported increased ARI episodes among children in families not having separate kitchen as compared to their counterparts who were staying in houses with separate kitchens. Children not having sanitary toilet facility suffered more number of episodes of illness as compared to those having sanitary toilet facility. However this association was not significant. Strong association of faulty refuse disposal with diarrhoeal episodes has been reported in literature. T. Barne (24) observed that improper excreta disposal and lack of proper drainage system was associated with 47% increase in diarrhoea. Apparently episodes of illness were less in number among children < 2 years of age who were exclusively breast fed for 6 months and in children who were given semisolids at appropriate age. However no statistically significant difference was observed in present study whereas Kumar V (25) and Mukhopadaya J (23) found a significant difference in episodes of illness among children < 2 years of age in relation to breast feeding practices.

Conclusion

The present study concludes that acute respiratory infections and diarrheal diseases are still common among under five children through Govt. of India has made sincere efforts to improve the overall health of under five children using a multipronged approach under NRHM. Achievement of Millennium Development Goal of reducing child mortality by two thirds from the 1990 rate will depend on renewal efforts to prevent and control malnutrition, respiratory infections and diarrheal diseases.

References

- Joshi S. Child survival, Health & Social work intervention (1996). Concept publishing company, New Delhi.
- IMCI Information. Management of childhood illness in developing countries: Rationale for an integrated strategy. UNICEF 1999.
- Nutrition sub-Committee of Indian Academy of Pediatrics IAP classification of Malnutrition. AIP text book of Pediatrics, 3rd edition .pp.126.
- Venkatesh S, Bansal RD. A longitudinal study of morbidity among under five children in a semi-urban area. *Ind J Community Med* 1986; 11(1): 11-20
- Malhotra P, Prasad BG. A study of morbidity among children below five years in and urban area of Delhi. *Ind J Med Res* 1966; 54: 285
- Niyogi AK, Trivedi DH, Patel YI. Longitudinal Survey of morbidity and needs of P.H.C. *Ind J Preventive & Social Med* 1969; 1:85-92.
- Kumar S, Nagesh S, Premrajan KC. Pattern of morbidity and changes in nutritional status among under five children in a slum of South Delhi, India. *J Nepal Med Assoc* 2004; 43: 154.
- Verma IC, Kumar S. Causes of morbidity in children attending P.H.C in new Delhi. *Ind J Pediatrics* 1968 ; 35:251, 243-549.
- Gulati PV. An epidemiological study of Morbidity Pattern. *Ind Pediatrics* 1977; 16(2): 93-97.
- Chowdhary Amla and Chowdhary KC. Studies of morbidity patterns of children in Urban community. *Ind J Paediatrics* 1962; 29:145
- Muhe L, Bypass P, Freij L, Sandstrom A, Wall S. A one year community study of under fives in rural Ethiopia. Patterns of morbidity and public health risk factors. *Public Health* 1995 ; 109(2):99-109.
- Gupta KB, Walia BNS. A longitudinal study of morbidity in children in a rural area of Punjab. *Indian J Pediat* 1980: 297 - 301.
- Melania X Castro, Alberto M Soares . Common infections diseases & skin test energy in children from an urban slum in Northeast Brazil. *Brazilian J Infections Diseases* 2003 ; 7(6)
- Gulati PV. Morbidity and Mortality Pattern in children below 5 years (1965). Thesis submitted to Faculty of AIIMS. Unpublished
- Datta Banik ND, Krishan R, Mane SIS, Lila R. Longitudinal study on morbidity and mortality patterns of children in Delhi during the first two years of life .A review of 1000 children. *Indian J Med Res* 1967; 55; 504-510.
- Narkhede V, Sinha U, Bhardwaj S D, Pitale S. Morbidity Profile in under five children in urban slum area of Nagpur. *Natl J Community Medicine* 2012 ; 3(3):442-46
- Srivastava Dk, Tripathi D, Gour N, et al. Morbidity Profile of under five children urban slums of Etawah Dist. *Ind J Community Health* 2012;.24(2):153
- Abhulimhen -Iyoha BI, Okolo AA. Morbidity and mortality of child hood illness at the emergency pediatric unit of the university of the Benin teaching hospital, Benin City. *Niger J Paed* 2012, 39(2): 71-74
- Awasthi S, Aggarwal S. Determinants of childhood morbidity and mortality in Urban slums. *Ind Pediatrics* 2003;40:114.
- Biswas A, Biswas R, Dutta K, Manna B. Risk factors of acute respiratory infections in under fives of urban slum community. *Indian J Pub Health* 1999;43:73-75.
- Walia BNS, Gambnir SK, Singhi S, Sroa SR. Socio-economic and ecologic correlates of acute respiratory infections in pre-school children. *Ind Pediatrics* 1988; 25: 607-612.
- M Israt Rayhan, M Sekander Hayat Khan, M Shahidullah B. Impact of Biosocial factors on morbidity among children aged under five in Bangladesh. *Asia Pacific Population J*