RESEARCH PAPER

Assessment of Morbidity Pattern among Children under Five Years of Age in a Rural Community of Gurugram District

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ABSTRACT

Background & Objective

Acute respiratory infections (ARI), diarrheal diseases, measles, and malaria remain among the leading causes of morbidity and mortality among children under five years of age. In addition, conditions such as worm infestation and anemia further contribute to poor health outcomes and adversely affect the growth and development of young children. Understanding the burden and distribution of childhood illnesses is essential for planning effective public health interventions. Therefore, the present study was conducted to assess the pattern of morbidity among under-five children and to examine the socio-demographic factors associated with morbidity in a rural community of Gurugram district.

Methodology

The present community-based cross-sectional study was conducted between December 2024 and November 2025 in a rural community of Gurugram district. The study population comprised children aged below five years. A total sample size of 98 participants was determined for the study, and participants were selected using a simple random sampling technique. Data were collected using a pre-designed, pre-tested, and semi-structured questionnaire. Information regarding socio-demographic characteristics, morbidity profile, and other relevant variables was obtained through interviews with caregivers. Statistical analysis was performed to assess the pattern of morbidity and its association with various risk factors, including the nutritional status of the children.

Result

A total of 98 children under five years of age were included in the study to assess the morbidity pattern among under-five children in a rural community of Gurugram district. The findings revealed that diarrheal disease was the most prevalent morbidity, followed by acute respiratory infections (ARI) and worm infestation. Female children experienced a marginally higher number of morbidity episodes compared to male children. Analysis of nutritional status demonstrated that underweight children had a significantly higher prevalence of diarrhea, ARI, measles, fever, skin infections, and worm infestation. In contrast, no statistically significant association was observed between underweight status and the occurrence of malaria or anemia.

Conclusion

The present study revealed a high burden of common childhood morbidities, including diarrheal diseases, acute respiratory infections (ARI), measles, anemia, fever, and worm infestation among children under five years of age. These findings highlight the persistent challenges to child health in rural communities. Strengthening healthcare services at the peripheral level, improving access to preventive and curative care, and promoting community-based health interventions may contribute significantly to reducing the burden of morbidity among under-five children.

Keywords: Morbidity pattern, Under-five, ARI, Worm expulsion, Neonatal.

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INTRODUCTION

Morbidity refers to the state of being affected by a disease or health condition and is commonly measured using prevalence and incidence rates. Prevalence represents the proportion of a population experiencing a particular disease, symptom, or health-related condition at a specific point in time. Childhood morbidity remains a major public health concern and is a significant contributor to child mortality in developing countries.

Despite considerable progress in reducing under-five mortality rates, diarrhoeal diseases and febrile illnesses continue to be among the leading causes of morbidity and mortality in this age group.

The burden of childhood morbidity is particularly high among rural and indigenous tribal populations, who constitute approximately 8.2% (84.3 million) of the total population of India [1]. Poor socioeconomic conditions, illiteracy, inadequate sanitation, overcrowding, and limited access to healthcare services increase the susceptibility of these populations to communicable diseases and malnutrition. Over the years, several child survival strategies implemented by the Government of India have contributed to notable improvements in child health indicators, including reductions in morbidity and mortality. However, these gains have not been uniform across regions. The full implementation of the National Rural Health Mission (NRHM) is expected to further accelerate improvements in child health outcomes.

Numerous studies conducted in different regions of India have assessed the magnitude and pattern of morbidity among under-five children [2–8]. The findings from these studies highlight substantial geographical variations in disease burden and emphasize the need for area-specific strategies and targeted interventions. Existing literature underscores the importance of community-based information on morbidity patterns among under-five children, as such data are essential for evaluating the effectiveness of ongoing nutritional and disease-control programmes and for guiding resource allocation and health planning.

Considering the high prevalence of undernutrition and childhood illnesses, particularly in rural areas, the present study was undertaken in a rural community to assess the morbidity profile of under-five children and identify associated factors affecting this vulnerable population.

Children under five years of age constitute approximately 10.7% of the Indian population and are particularly vulnerable to a wide range of health problems [9]. Diarrhoea, dehydration, malaria, anaemia, acute respiratory infections (ARI), and meningitis account for 85.5% of the underlying illnesses and 76% of deaths among children in this age group [10]. According to the World Health Organization (WHO), among all deaths occurring in children under five years of age, 19% are attributable to ARI, 19% to diarrhoeal diseases, 18% to perinatal causes, 7% to measles, 5% to malaria, and 32% to other causes [11]. Several studies have documented the morbidity status of under-five children; however, continuous monitoring and region-specific assessments remain essential for developing effective interventions aimed at improving child health and reducing preventable morbidity and mortality.

MATERIALS AND METHODS

The present community-based cross-sectional study was conducted in a selected rural community of Gurugram district from December 2024 to November 2025. The study population comprised children below five years of age residing in the study area. Children belonging to families who had not been residing in the community for at least three months prior to the survey, as well as children of families temporarily visiting relatives in the area, were excluded from the study.

Based on the prevalence reported in previous studies, the estimated sample size was calculated to be 97.8 and was rounded off to 98 participants. A simple random sampling technique was employed to select the study participants and achieve the required sample size.

Data were collected using a pre-designed, pre-tested, and semi-structured questionnaire. Information was obtained through interviews with the mother or primary caregiver of the under-five child, and where necessary, the head of the household. Data collected included socio-demographic characteristics such as age, sex, religion, caste, mother tongue, family type, type of cooking fuel used, educational status, family income, occupation, and addiction habits of family members. In addition, information related to birth history, feeding practices, nutritional status, and morbidity profile of the child was recorded.

A list of common childhood morbidities, including fever, diarrhoea, measles, acute respiratory infections (ARI), malaria, worm infestation, skin diseases, and anaemia, was prepared based on information provided by the mothers or caregivers. The collected data were compiled, coded, and analysed using appropriate statistical methods. The analysis included univariate, bivariate, and multivariate techniques to assess the prevalence of morbidities and their association with various socio-demographic and nutritional factors. Statistical significance was determined wherever applicable.

RESULTS

The study entitled "**Assessment of morbidity pattern among children under five years of age in a rural community of Gurugram district.**" consisted 98 under-five children as the study population. Out of 98, diarrhea was the major morbidity among the children, accounting for 36.53% children. This was followed by ARI affecting 30.92% of the children. Worm expulsion accounted for about 10.10% of the children. Female children (57.91%) suffered slightly more episodes than male children (42.09%).

There is anassociation of various morbidities observed in this study with nutritional status. It was seen that underweight was significantly associated with diarrhea, ARI, measles, fever, skin infections and worm expulsion. However, it was not significantly associated with malaria or anemia.

Table 1: Demographic distribution of the study population (n = 98)

Demographic distribution		Number (Percentage)	
		Male	Female
Age inMonths	0–11	5 (5.51 %)	21 (20.92%)
	12–23	8	4

		(7.76 %)	(4.08 %)
	24–35	9 (9.59 %)	11 (10.80%)
	36–47	6 (6.84 %)	11 (11.12%)
	48–59	13 (13.27%)	10 (10.12 %)
Caste	General	71 (72.04%)	
	ScheduleCaste(SC)	13 (13.98%)	
	ScheduleTribe(ST)	11 (11.02%)	
	OtherBackwardCaste(OBC)	3 (2.96%)	
Religion	Muslim	62 (63.38%)	
	Hindu	31 (32.04%)	
	Others	5 (4.6%)	
Family Type		**No. of Families**	**No. of Children**
	Joint	36 (36.40%)	58 (58.98 %)
	Nuclear	36 (63.60%)	40 (41.02 %)
Birth History	Fullterm	73 (74.08%)	
	Preterm	2 (2.96%)	
	Cannotsay	23 (22.96%)	
Place of delivery	Institutional	54 (55.00%)	
	Home	44 (45.00%)	
Birth weight	<2.5kg.	22 (22.04%)	
	>2.5kg.	50 (51.02%)	
	Can'tsay	26 (26.94%)	
Birth Order	1st	42 (42.96%)	
	2nd	22 (22.04%)	
	3rd	21 (21.02%)	
	4th or more	13 (13.98%)	
Immunization Status	Fullyimmunized*	51 (52.04%)	
	Partlyimmunized	19 (19.18%)	
	Nonimmunized	3 (2.76%)	
	Can’tsay/detect	16 (16.43%)	
	Notapplicable**	9 (9.59%)	

* Fully immunized means BCG, Measles (one dose), 3 doses of OPV, 3 doses of DPT (3 doses of Hepatitis-B vaccine completed by one year of age) ** 21 children yet to complete 1 year of age)

Table 1 reveals that a total of 98 children were included in the study, with females constituting a slightly higher proportion than males. The majority of female children were in the 0–11 months age group (20.92%), while most males belonged to the 48–59 months category (13.27%). Most participants belonged to the General caste (72.04%), followed by Scheduled Caste (13.98%) and Scheduled Tribe (11.02%). Muslims formed the majority religion (63.38%), followed by Hindus (32.04%). More children belonged to joint families (58.98%) compared to nuclear families (41.02%). Most children were born full-term (74.08%), whereas only 2.96% had preterm birth history. Institutional deliveries (55.00%) were slightly more common than home deliveries (45.00%). More than half of the children had a birth weight above 2.5 kg (51.02%), while 22.04% had low birth weight. First-born children constituted the largest group (42.96%). Regarding immunization, 52.04% of children were fully immunized, whereas 19.18% were partially immunized and only 2.76% were non-immunized.

Table 2: Distribution of morbidities in the study population.

Morbidity	**Number (Percentage)**	
	Children	**Morbidity Episodes**
ARI	30 (30.92%)	31 (31.12%)
Diarrhea	36 (36.53%)	36 (36.05%)
Measles	3 (2.76%)	3 (2.72%)
Anemia	1 (0.82%)	1 (0.81%)
Fever	9 (9.08%)	9 (8.96%)
Malaria	1 (1.43%)	1 (1.41%)
Worm expulsion	10 (10.10%)	10 (9.97%)
Skin infection	8 (8.16%)	8 (8.06%)
Other*	0 (0.20%)	0 (0.91%)
Total	**98 (100.00 %)**	**98 (100.00 %)**

**indicates the following morbidities: Refractive errors, Chicken Pox, Dental caries, Night blindness, Paediatric TB & Ear Infection.*

Table 2 reveals Among the reported morbidities, diarrhea was the most common condition affecting children, accounting for 36.53% of cases and 36.05% of morbidity episodes. Acute Respiratory Infection (ARI) was the second most prevalent morbidity, observed in 30.92% of children and contributing to 31.12% of episodes. Worm expulsion was reported in 10.10% of children, followed by fever in 9.08% and skin infections in 8.16% of cases. Measles constituted 2.76% of morbidities, while anemia and malaria were the least common conditions, each affecting approximately 1% of children. The distribution of morbidity episodes closely paralleled the distribution of affected children,

indicating a relatively uniform disease burden across the study population. Overall, infectious diseases such as diarrhea and ARI accounted for the majority of childhood morbidity in the study area.

Table 3: Sex-wise distribution of morbidities in the study population

Morbidity	Number (Percentage)	
	Female children	Male children
ARI	17 (30.63%)	13 (30.48%)
Diarrhea	21 (37.84%)	14 (32.46%)
Measles	1 (1.62%)	2 (3.95%)
Anemia	0 (0.72%)	0 (0.88%)
Fever	5 (8.83%)	4 (8.77%)
Malaria	1 (0.90%)	1 (1.97%)
Worm expulsion	5 (9.73%)	4 (9.87%)
Skin infection	5 (8.11%)	3 (7.68%)
Other*	1 (1.62%)	1 (3.95%)
Total	**56(100%)**	**42 (100%)**

Table 3 reveals Sex-wise distribution of morbidities showed that diarrhea was the most common morbidity among both female (37.84%) and male children (32.46%), followed by ARI in females (30.63%) and males (30.48%). Fever, worm expulsion, and skin infections were observed in comparable proportions among both sexes. Measles, malaria, anemia, and other morbidities were reported only in a small proportion of children. Overall, morbidity episodes were slightly higher among female children compared to male children.

Table 4: Association of different morbidities with nutritional status (WHO weight for age criteria)

Morbidities		Nutritional status		Total	Chi-square Test
		Normal	Underweight		
Diarrhoea	Did not occur	51 (52.55%)	11 (10.92%)	62 (63.47%)	X^2 (1) =15.39, p <0.001
	Occurred	16 (16.33%)	20 (20.20%)	36 (36.53%)	
ARI	Did not occur	51 (52.04%)	17 (17.04%)	68 (69.08%)	X^2 (1)=4.26, p <0.001
	Occurred	17 (16.84%)	13 (14.08%)	30 (30.92%)	
Fever	Did not occur	66 (67.35%)	23 (23.57%)	89 (90.92%)	X^2 (1)= 12.36, p <0.001
	Occurred	2 (1.53%)	7 (7.55%)	9 (9.08%)	
Skin infections	Did not occur	66 (67.55%)	24 (24.29%)	90 (97.26%)	X2 (1)= 11.25, p <0.001
	Occurred	1 (1.33%)	7 (6.84%)	8 (2.74%)	
Measles	Did not occur	67 (68.06%)	28 (29.18)	95 (97.26)	X2 (1)= 1.99 p =0.0000
	Occurred	1 (0.82%)	2 (1.94%)	3 (2.74%)	
Malaria	Did not occur	66 (67.76%)	0 (0.31%)	97 (1.43%)	X2 (1)= 0.62 p =0.429
	Occurred	1 (1.12%)	31 (31.12%)	1 (100%)	
Worm expulsion	Did not occur	63 (64.39%)	25 (25.51)	88 (91.32%)	X2 (1)= 3.07 p <0.0001
	Occurred	4 (4.49%)	6 (5.61%)	10 (8.68%)	
Anaemia	Did not occur	67 (68.06%)	30 (31.12)	97 (99.18%)	Fisher Exact Probability Test p=0.05
	Occurred	1 (0.82%)	0 (0.00)	1 (0.82%)	

Table 4 shows the association between different morbidities and nutritional status of children according to WHO weight-for-age criteria. Significant associations were observed between undernutrition and diarrhoea, ARI, fever, skin infections, and worm expulsion ($p<0.001$). Underweight children experienced a higher proportion of these morbidities compared to children with normal nutritional status. Although measles and anaemia were reported in a small number of children, their occurrence was also higher among underweight children. No statistically significant association was observed between malaria and nutritional status ($p=0.429$).

DISCUSSION

The present study highlights a considerable burden of childhood morbidities among under-five children in the rural area of Gurugram. Diarrhoea and acute respiratory infections emerged as the most common health problems, indicating the persistent impact of poor environmental sanitation, inadequate hygiene, and recurrent infections in rural settings. Female children showed a slightly higher proportion of morbidity episodes compared to males. Most children were born full term and institutionally delivered; however, incomplete immunization and low birth weight were still observed among a notable proportion of participants. A significant association was found between nutritional status and common morbidities such as diarrhoea, ARI, fever, skin infections, and worm infestation, emphasizing the close interrelationship between undernutrition and infectious diseases. Underweight children were more vulnerable to recurrent illnesses, which may further worsen their nutritional status and overall growth. These findings underline the need for

integrated child health interventions focusing on nutrition, immunization, hygiene promotion, early disease management, and strengthening primary healthcare services in rural communities.

CONCLUSION

The findings of the present study highlight the continued burden of morbidity among children under five years of age and underscore the importance of enhancing community awareness regarding common childhood illnesses, their prevention, and the timely utilization of healthcare services. Despite the sustained efforts of the Government of India to improve child health through a comprehensive and multi-pronged strategy under the National Rural Health Mission (NRHM), acute respiratory infections (ARI) and diarrhoeal diseases remain among the most prevalent morbidities affecting under-five children. The study also observed a marginally higher frequency of morbidity episodes among female children compared to male children. Strengthening health education initiatives, improving healthcare accessibility at the primary care level, and promoting early healthcare-seeking behaviour among caregivers may contribute substantially to reducing the burden of childhood morbidity and improving overall child health outcomes.

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