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Research Article

DEMOGRAPHIC STUDY TO EVALUATE THE MORBIDITY STATUS OF CHILDREN IN JODHPUR CITY

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ABSTRACT

Every nation's foundation is its children, and that nation's top priority is to ensure their health. Their early years of life are characterized by their development and growth. The first few years of life are the most important time because of the fast growth and development that is common at this age and necessitates ongoing observation. During this time, roughly 40% of physical growth and 80% of mental development take place. Any obstacle they face at this age could severely restrict their ability to develop and grow. A child who lacks access to health care during these formative years is denied the chance to develop into a healthy adult, and the harm caused in the early years may be permanent or in the long run. Children under the age of five continue to die from ailments that are treatable or preventable. Despite the significant progress in immunization to strengthen the immune system, medical research has not yet developed a fully effective defense against virulent organisms, and occasionally we fail in the struggle for survival. To understand the primary causes of death and the carers' patterns of seeking medical attention before the deaths of such children, a cross-section study encompassing the area of Jodhpur, Rajasthan, was done. The survey was conducted on 1000 children living in the surroundings of the Post Graduate Institute of *Ayurved*, Dr. S. R. Rajasthan Ayurved University, Jodhpur. Demographic studies show that Respiratory tract Infection is the main cause of morbidity in children. In Respiratory tract Infection recurrent cough, recurrent running nose, recurrent nasal obstruction, recurrent sore throat, and breathlessness are included. Out of which maximum number of children suffered from recurrent running nose.

INTRODUCTION

The under-five age group is a crucial and susceptible segment of society because its morbidity profile has a significant impact on the whole nation's progress. There are certain preventive factors for frequent childhood morbidities, even though the morbidity pattern differs from nation to nation. The child's health and development are influenced by a variety of sociocultural factors, including age, gender, the mother's literacy level, the family's socioeconomic situation, the child's immunization status, and feeding practices. UNICEF views this as the best indication of social development in terms of rates of morbidity and mortality in children under the age of five [1]. Due to their susceptibility to morbidities and mortalities as well as their relevance as possible future assets for any nation, children under the age of five play a significant role in any plan relating to health care. Despite economic progress and increased attempts to improve basic healthcare India is known for having healthcare disparities. From an estimated rate of 93 deaths per 1000 live births in 1990 to 39 deaths per 1000 live births in 2017, the under-five mortality rate has fallen globally by 58%. This translates to 1 in 11 children dying before they had 5 in 1990 to 1 in 26 in 2017. [2] Around 14 times higher than the average rate in high-income nations (5 deaths per 1000 live births), the under-five mortality rate in low-income countries in 2017 were 69 deaths per 1000 live births. The target is for all nations to lower the death rate for children under five years of age to at least 25 per 1,000 live births. The Sustainable Development Goals (SDG) target for under-five mortality has already been

achieved by 117 Member States, and if current trends continue, 26 additional nations are anticipated to do the same by 2030 [3]. India has pledged to reduce the under-five mortality rate to 25 deaths per 1,000 live births by 2030 as part of the Sustainable Development Goals outlined by the United Nations. By 2025, India's National Health Profile has set a goal of 23[4]. The statistics of childhood morbidities have essentially remained the same despite numerous government measures, such as the national immunization scheme and other infection control programs. Additionally, immunizations are disease-specific, and additional infectious diseases are always emerging at the same time. So, the greatest threat to human health is the rise of superbugs because of the misuse of antibiotics. Therefore, exploring wealth with the help of traditional medicine for human benefit is urgently required.

AIMS AND OBJECTIVES

To observe the demographical status of morbidity in children in a defined population.

### Institutional ethics committee clearance

The institutional ethics committee of the University Post Graduate Institute of Ayurved Studies and Research, approval was obtained before starting this study vide letter no. DSRRAU/UPGIAS&R/IEC/20-21/408, Dated: 12/06/2022.

MATERIALS AND METHODS

The materials and methods were required for conducting the present clinical trial.

Cross-section Demographic Study

To assess the morbidity status of children residing in rural areas of Jodhpur, a survey was conducted on 1000 children living in the surroundings area of Post Graduate Institute of Ayurved, Dr.S.R. Rajasthan Ayurved University, Jodhpur.
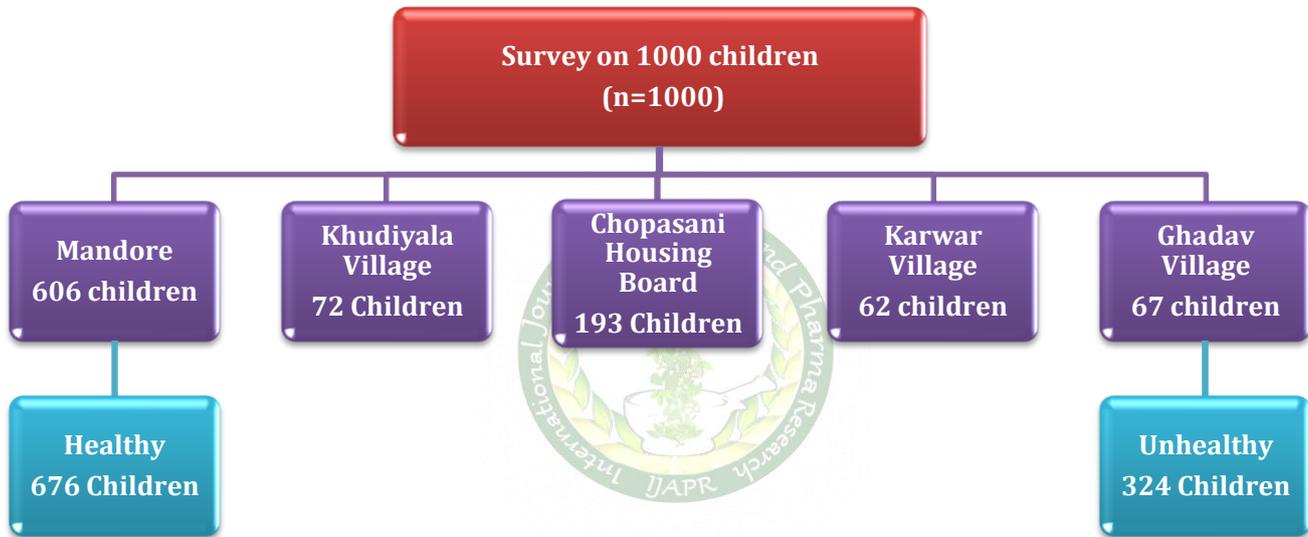
Inclusion Criteria

- Children age group from 1 Year to 05 years.
- Children were suffering from recurrent URTI.
- Children were suffering from recurrent GIT disease.
- Children who had other recurrent diseases.

Exclusion Criteria

- Children aged below 1 year and above 05 years of age.
- Children had a history of participation in any trial past 6 months.

Observation of Demographic study

Table 1: Showing area-wise distribution of total children in the survey

Age Group	Chopasni Housing Board (CHB)	Ghadav Village	Karwar Village	Khudiyala Village	Mandore Town	Total
1-2 Years	33	32	48	6	44	163
2-3 Years	33	29	4	2	39	107
3-4 Years	51	2	0	32	129	214
4-5 Years	76	4	10	32	394	516
Total	**193**	**67**	**62**	**72**	**606**	**1000**

Table 2: Observations

Observations	Maximum morbidity	Percentage
Age	1-2 year	46.63
Sex	Male	35.53
Religion	Muslim	43.24
Habitat	Urban	37.05
Immunization	Partially Immunized	46.15

Table 3: Showing the age-wise distribution of morbidity status in total surveyed children

Age of Children	1-2 Years	2-3 Years	3-4 Years	4-5 Years	Total	Chi-Square Value	P-Value	Remark
Recurrent H/O loose stool	10	1	1	8	20	20.517	0.000	Sig
Recurrent H/O Abdominal Problem (Abdominal distention)	8	1	1	2	12	25.539	0.000	Sig
Recurrent H/O Abdominal Problem (Abdominal pain)	15	14	10`	49	88	3.617	0.306	NS
Recurrent H/O Constipation	7	9	5	24	45	1.359	0.715	NS
Recurrent H/O Vomiting	5	2	5	7	19	4.496	0.213	NS
Recurrent H/O Respiratory Tract Infection	76	55	73	185	389			
Recurrent H/O Respiratory Tract Infection (recurrent H/O running nose)	23	25	36	68	152	6.875	0.076	NS
Recurrent H/O Respiratory Tract Infection (recurrent H/O cough)	30	23	30	88	171	1.361	0.715	NS
Recurrent H/O Respiratory Tract Infection (recurrent H/O breathlessness)	7	3	2	7	19	8.162	0.043	Sig
Recurrent H/O Respiratory Tract Infection (recurrent H/O sore throat)	8	2	3	13	26	6.285	0.099	NS
Recurrent H/O Respiratory Tract Infection (recurrent H/O tonsillitis)	8	2	2	9	21	9.839	0.020	Sig
Recurrent H/O Fever	10	15	14	31	70	2.212	0.530	NS
Recurrent H/O Food Allergy	1	3	2	8	14	1.354	0.716	NS
Recurrent H/O Anemia	3	1	1	10	15	3.739	0.291	NS
Recurrent H/O Earache	3	2	3	21	29	6.691	0.082	NS
Recurrent H/O Conjunctivitis	1	1	0	6	8	4.260	0.235	NS
Corneal xerosis	2	0	0	2	4	2.792	0.425	NS
Acral / Dermatitis	1	2	0	2	5	1.284	0.733	NS
Oral Disease	8	17	13	57	95			
Oral Disease (glossitis/ cheilosis)	1	0	0	1	2	2.396	0.494	NS
Oral Disease (Angular Stomatitis)	3	5	4	17	29	3.100	0.377	NS
Oral Disease (Bleeding Gums)	1	1	0	0	2	0.830	0.842	NS
Oral Disease (Spongy Gums)	1	1	1	4	7	2.374	0.498	NS
Oral Disease (delayed dentition)	1	2	1	8	12	1.701	0.637	NS
Oral Disease (dental caries)	1	8	7	27	43	9.683	0.021	Sig

NS- non-significant, Sig- Significant

Showing the age-wise distribution morbidity status in total surveyed children
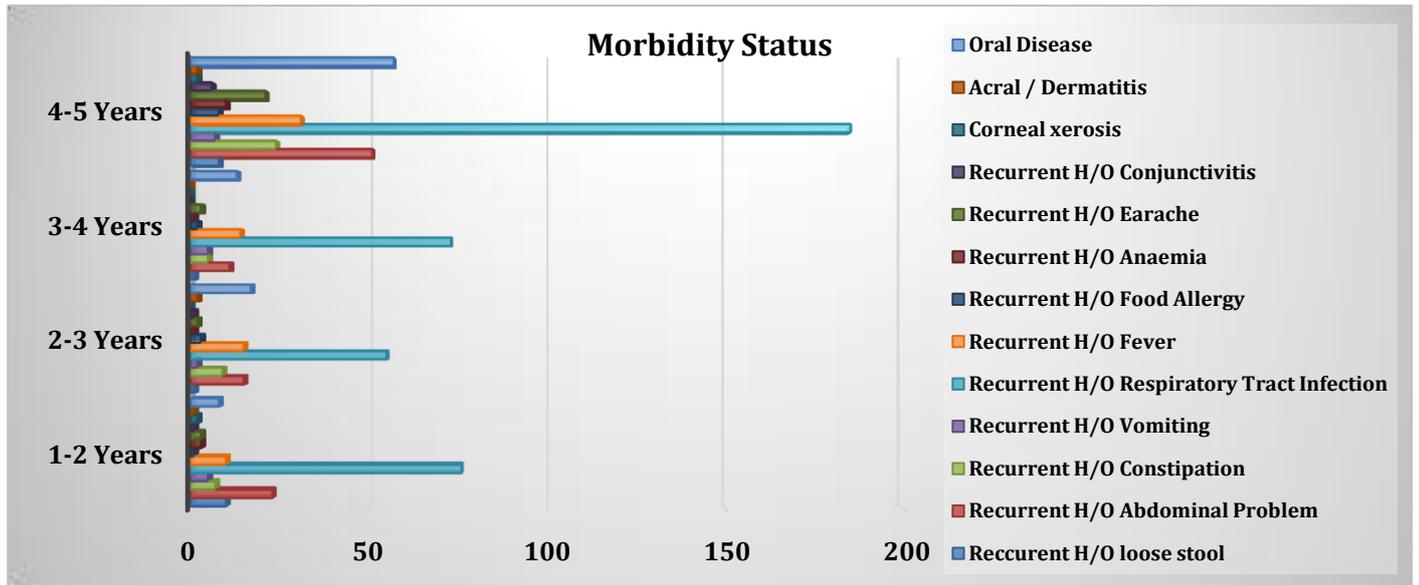
DISCUSSION

Demographic Study

The survey was conducted on 1,000 children out of whom 676 children are healthy and 324 children are unhealthy whose demographic data is given below-

Age

The maximum percentage of children 46.63% were found with morbidities in the 1–2 years age group. This justifies the WHO data that children under the age of five are the most vulnerable to infectious diseases. Previous research found that communicable illness morbidity was higher than non-communicable disease morbidity among under-five children in peri-urban areas. [5]

Sex

The maximum percentage of children 35.53% was found with morbidities in male children. The study shows that Indian society is more concerned about male children in both urban and rural areas of Rajasthan, it is also reported that there are more males than females in the age group under 5 years old (statement-5, percentage distribution of population by broad age groups to total population by sex and residence, India, 2011).

It turns out that girls' serum IgM levels were typically higher and considerably different from boys. (1980, Herna Roode). Boys were therefore more frequently found with morbid traits than females.

Religion

A maximum percentage of children 43.24% were found with morbidities in Muslim children. In India, Muslim children are substantially more likely than Hindu children to survive until their fifth birthday, despite Muslim parents being poorer and less educated on average than Hindu parents. The phenomenon has been documented by numerous researchers over the past 20 years, including most recently by Bhalotra et al. (2010). The present result does not support that theory.

Habitat

The maximum percentage of children 37.05% were found with morbidities in Urban children because the study area covers mainly urban areas the maximum percentage of children 37.05% were found with morbidities in urban children could be the explanation.

Immunization

A maximum percentage of children 46.15% were found with morbidities in Partially immunized children because the rate of morbidity rises when immunization is either absent or partially immunized.[6]

Recurrent loose stool

Children who had a history of more than 3 episodes in the last 3 months were considered as affected by recurrent loose stool. A maximum percentage of 10 (6.13%) children were found in the 01-year to 02-year age group 08 (1.55%) were found in the 04-05 years of age group, 01 (0.93%) were found in the 02-03 years of age group, a minimum of 1 (0.47 %) were found in the 03-04 years of age group. On statistical analysis relation between age and prevalence of diarrhoeal infection was found to be significant ($P<0.05$).

Recurrent loose stool episodes are mostly caused by inadequate hygiene, polluted water, worm infestation, and poor sanitation in children under the age of five. Episodes of diarrhoea should be actively handled. Dehydration and other associated morbidities, as well as long-term malnutrition, are risks of delayed management.

Acute diarrhoea is also a prominent cause of morbidity and mortality among children under the age of five in developing countries. The typical child has 3.3 episodes of diarrhoea per year, while in some locations, the average approaches 9 episodes per year. It is estimated that diarrheal illness kills more than 2 million children under the age of five each year. [7]

Recurrent Abdominal distension

Children who had a history of more than 3 episodes in the last 3 months were considered as affected by recurrent abdominal distension. A maximum percentage of children 8 (4.91%) were found with recurrent abdominal distension in the age 1–2 years age group, 01 (0.93%) were found in the 02-03 years of age group, 01 (0.47%) were found in the 03-04 years of age group, a minimum of 2 (0.39%) were found in the 04-05 years of age group. On statistical analysis relation between age and prevalence of abdominal distension was found to be significant (P<0.05).

Recurrent abdominal distension occurring in the survey area may be due to GIT disorders such as constipation, and gastroesophageal reflux disease.

Recurrent Abdominal Pain

Children who had a history of more than 3 episodes in the last 3 months were considered as affected by recurrent abdominal pain. The maximum percentage of children 14 (13.08%) were found with recurrent abdominal pain in the age 2–3 years age group, 49 (9.50%) were found in the 04-05 years of age group, 15 (9.20%) were found in the 01-02 years of age group, a minimum of 10 (4.67%) were found in the 03-04 years of age group. On statistical analysis relation between age and prevalence of abdominal pain was found not significant (P>0.05).

Recurrent Constipation

Children who had a history of more than 3 episodes in the last 3 months were considered as affected by recurrent history of constipation. The maximum percentage of children 09 (8.41%) were found with recurrent history of constipation in the age 2-3 years age group, 24 (4.65%) were found in the 04-05 years of age group, 07 (4.29%) were found in the 01-02 years of age group, a minimum of 05 (2.34%) were found in the 03-04 years of age group. On statistical analysis relation between age and prevalence of constipation was found not significant (P>0.05).

Insufficient dietary fibre intake is a very common practice among preschool children. Constipated children had significantly lower intakes of dietary fibres and micronutrients including vitamin C, folate, and magnesium than non-constipated counterparts, which was attributable to the under-consumption of plant foods. However, milk intake was marginally higher in the constipated children. Education for parents to help develop healthy dietary habits and bowel habits in early life to prevent childhood constipation.[8] However, study data shows that morbidity of recurrent history of constipation is higher in the 2–3-year age group but 24 children affected from recurrent history of constipation in the 4-5 year age group which is the maximum in terms of number.

Recurrent Vomiting

Children who had a history of more than 3 episodes in the last 3 months were considered as affected by a recurrent history of vomiting. The maximum percentage of children 5 (3.07%) were found with recurrent history of vomiting in the age 1-2 years age group, 5 (2.34%) were found in the 02-03 years of age group, 02 (1.87%) were found in the 02-03 years of age group, a minimum of 7 (1.36%) were found in the 04-05 years of age group. On statistical analysis relation between age and prevalence of vomiting was found not significant (P>0.05).

Vomiting is a common sign of illness in children aged between 1 and 5 years, but it can be hard to know for sure what the cause might be. Vomiting is generally a symptom of an infection. Young babies are more likely to vomit, particularly if they have reflux.

Respiratory Tract Infection

Children who had a history of more than 3 episodes in the last 3 months were considered as affected by recurrent history of respiratory tract infection. Out of the total 1000 children, 152 (15.2%) were suffering from recurrent running nose, 171 (17.1%) were suffering from a recurrent history of cough, 19 (1.9%) were suffering from a recurrent history of breathlessness, 26 (2.6) were suffering from a recurrent history of sore throat, 21 (2.1) was suffering from a recurrent history of tonsillitis. The maximum percentage of children 17.1% were found with a recurrent history of cough.

Infections of the respiratory tract are more common in children under the age of five, particularly in the first three years of life. [9] According to Ayurveda, childhood is the stage where *Kapha Dosha* predominates, and *Urah* is a *Kapha Dosha Sthana*. So *Vikara* of *Kapha Dosha* is hence more likely to occur.

Fever

Children who had a history of more than 3 episodes in the last 3 months were considered as affected by recurrent history of fever. The maximum percentage of children 15 (14.02%) were found with recurrent history of fever in the age 2-3 years age group, 14 (6.54%) were found in the 03-04 years age group, 10 (6.13%) were found in the 01-02 years of age group, and a minimum of 31 (6.01%) were found in the 04-05 years of age group. On statistical analysis

relation between age and prevalence of Fever was found not significant (P>0.05).

Recurrent episodes of fever are brought on by numerous illnesses and low immunity levels, especially in children under the age of five.

Food Allergy

Children who had a history of more than 3 episodes in the last 3 months were considered as affected by recurrent history of food allergy. The maximum percentage of children 3 (2.80%) were found with recurrent history of food allergy in the age 2-3 years age group, 8 (1.55%) were found in the 04-05 years of age group, 02 (0.93%) were found in the 03-04 years of age group, and a minimum of 01 (0.61%) were found in the 01-02 years of age group. On statistical analysis relation between age and prevalence of Food Allergy was found not significant (P>0.05).

The worldwide prevalence of food allergy is estimated to be around 4% of children and 1% of adults, with an increased prevalence in the past two decades [10-12]. Differences in reported prevalence are because food allergy is not fully understood, and some of the adverse reactions to food are not allergic. Although in the Western world, it is believed that approximately 25% of adults suffer from a food allergy, when accurately diagnosed by testing and oral food challenge (OFC), its true prevalence is found to be much lower, closer to 8% in young children and less than 4% in adults.

Anemia

The maximum percentage of children 1.94% were found with recurrent history of anemia in the age 4-5 years age group, 3 (1.84%) were found in the 01-02 years of age group, 01 (0.93%) were found in the 02-03 years of age group, and a minimum of 01 (0.47 %) were found in the 03-04 years of age group. On statistical analysis relation between age and prevalence of food allergy was found not significant (P>0.05).

Iron deficiency is thought to be the cause of anemia in 50% of instances, but this percentage can change depending on the local conditions in different regions and among different demographic groups.

The current finding was consistent with the fact that anemia is common and a major source of morbidity. Anaemia affects 1.62 billion individuals globally, accounting for 24.8% of the population. Preschool-age children had the highest prevalence (47.4%). Several surveys, notably the "National Family Health Survey (NFHS)," have found that anemia is most prevalent in children aged 6 to 35 months. [13]

Earache

Children who had a history of more than 3 episodes in the last 3 months were considered as affected by recurrent history of earache. The maximum percentage of children 21 (4.07%) were found with recurrent history of earache in the age 4-5 years age group, 2 (1.87%) were found in the 02-03 years of age group, 03 (1.84%) were found in the 01-02 years of age group, and a minimum of 03 (1.40%) were found in the 03-04 years of age group. On statistical analysis relation between age and prevalence of Earache was found not significant (P>0.05).

Ear diseases in children are a major public health problem in developing countries [14]. Diseases of the middle ear have inflicted a significant burden on the health system and account for almost one-third of healthcare visits made to pediatricians, especially in the child's first five years of life. [15, 16]

Conjunctivitis

Children who had a history of more than 3 episodes in the last 3 months were considered as affected by a recurrent history of conjunctivitis. The maximum percentage of children 6 (1.16%) were found with recurrent history of conjunctivitis in the age 4-5 years age group, 1 (0.93%) were found in the 02-03 years of age group, 01 (0.61%) were found in the 01-02 years of age group, and no subject was found in the 03-04 years of age group. On statistical analysis relation between age and prevalence of conjunctivitis was found not significant (P>0.05).

Corneal Xerosis

The term "recurrent history of corneal xerosis" was used to describe children who had experienced more than three episodes in the previous three months. The maximum percentage of children 2 (1.23%) were found with corneal xerosis in the age 1-2 years of age group. 2 (0.39%) were found in the 04-05 years of age group, and no subject was found in the 02-03 and 03-04 years of age group. On statistical analysis relation between age and prevalence of corneal xerosis was found not significant (P>0.05).

Acral/Dermatitis

The maximum percentage of children 2 (1.87%) were found with acral/dermatitis in the age 2-3 years of age groups, 1 (0.61%) was found in the 01-02 years of age group, 02 (0.39%) were found in the 04-05 years of age group, and no children were found in the 03-04 years of age group. On statistical analysis relation between age and prevalence of acral / dermatitis was found not significant (P>0.05).

Recurrent Oral Disease

In this study, 95 (9.5%) children were suffering from oral diseases out of the maximum of 43 (4.3%) were having dental carries, 29 (2.9%) suffering from angular stomatitis, 12 (1.2%) suffering from delayed dentition, 7 (0.7%) were suffering from spongy gums, 2 (0.2%) suffering from glossitis and 2 (0.2%) were suffering from bleeding gums.

All of the children who had oral illnesses lived in village and semi-urban regions. Poor oral hygiene and ineffective mouth-cleansing techniques were the main causes of oral disease.

Other Disease

Out of 1000 children very few cases of ADHD, cerebral palsy, DMD, nephrotic syndrome, pneumonia, speech delay, etc.

Morbidity Pattern

Out of the total surveyed 1000 children maximum of 389 was showing recurrent respiratory tract infection. followed by 100 children, 95 children, 70 children, 45 children, 29 children, 20 children, 19 children, 15 children, 14 children, 08 children, and 05 children suffering from other morbidities like recurrent h/o abdominal problems (abdominal pain and abdominal distension), oral diseases, recurrent fever, recurrent h/o constipation, recurrent h/o earache, recurrent h/o loose stool, recurrent vomiting, recurrent h/o anemia, recurrent h/o food allergy, recurrent h/o conjunctivitis, acral/dermatitis respectively. Min 04 subject showed corneal xerosis. According to WHO data, upper respiratory tract infection is a leading cause of morbidity in children. [17] the most common symptoms of URTI include recurrent cough, running nose, nasal blockage, etc.

CONCLUSION

The above study concluded that respiratory tract infection was the main cause of morbidity in children which included recurrent cough, recurrent running nose, recurrent nasal obstruction, sore throat, and breathlessness. Out of which maximum number of children suffered from recurrent running nose.

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