

Prevalence of Upper Respiratory Tract Infection among Under 5 Children: A Prospective Analysis

Prathyusha A¹, Vikasini A V S¹, Dr. D. Rizpah²

¹Pharm D student, ²Assistant professor, Department of pharmacy practice, Hindu College of Pharmacy, Amaravathi Road, Guntur - 522002, Andhra Pradesh, INDIA.

Abstract

Background: Respiratory infections account for major acute illness among children. Upper Respiratory Infection are majorly influenced by the age of the child, season, living conditions and associated family history. Upper respiratory tract infection (URTI) in infants is often accompanied by fever and may lead to lethargy and poor feeding. Respiratory illnesses are common in children under five years of age. Children are more susceptible because they have not yet developed resistance to many types of viruses.

Objective: To assess the prevalence of upper respiratory tract infections among under five children, especially in demographic characteristics.

Materials and Methods: An observational, Prospective study was conducted for a period of 6 months, comprising a cumulative sample of 201 children from outpatients of Raghu ram children hospital. Child with cough, cold or fever singly or in combination were considered. Level of significance was set at $P < 0.05$.

Results: A total of 201 subjects were divided into 4 groups as neonate, infant, toddler and preschool. Most of the subjects are toddler age group and also most of the subjects are male patients. 112 subjects are with family history. Rhinitis is the most common type of URTI in all age groups under age 5. Of all 201 subjects, 61.5% are prone to rhinitis and 27.8% are prone to ear infection. Pharyngitis is not observed in any age group under age .

Conclusion: From our study we conclude that prevalence of URTI are common in under 5 age children especially in males than females and most of the cases are rhinitis.

Key Word: URTI, URI, upper respiratory tract infections, under five children, prevalence

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I. Introduction

Respiratory tract infections (RTI) are a number of infectious diseases involving the respiratory tract. An infection of this type is further classified as an upper respiratory tract infection (URI or URTI) or a lower respiratory tract infection (LRI or LRTI). The upper respiratory tract is the airway above the glottis or vocal cords, sometimes the tract above the cricoid cartilage. This part of the tract includes the nose, sinuses, pharynx, and larynx.^[1] Upper respiratory tract infections including nasopharyngitis, pharyngitis, tonsillitis and otitis media constitute 87.5% of the total episodes of respiratory infections.^[2]

Infection of the specific areas of the upper respiratory tract can be named specifically. Examples of these may include rhinitis (inflammation of the nasal cavity), sinus infection (sinusitis or rhino sinusitis) -- inflammation of the sinuses located around the nose, common cold (nasopharyngitis) -- inflammation of the nares, pharynx, hypo pharynx, uvula, and tonsils, pharyngitis (inflammation of the pharynx, uvula, and tonsils), epiglottitis (inflammation of the upper portion of the larynx or the epiglottis), laryngitis (inflammation of the larynx), laryngotracheitis (inflammation of the larynx and the trachea), and tracheitis (inflammation of the trachea).^[3,4,5] Infections of the upper respiratory tract include otitis media, certain types of influenza, etc... Symptoms of URIs can include cough, sore throat, runny nose, nasal congestion, headache, low grade fever, facial pressure and sneezing.^[6,7]

URTI occurs most commonly in childhood. Children experience more because their immune system is still developing.^[8,9,10] On an average, a healthy under five year child suffers from 6–10 colds per year. The symptoms seen is fever and makes children irritable, lethargic, and uncomfortable. The present study is about the prevalence of URTI in children below 5 years with different treatments.^[11,12]

A usual pathophysiology that involves direct invasion of the upper airway mucosa by the organism. The organism is usually acquired by inhalation of infected droplets. Barriers that prevent the organism from attaching to the mucosa include hair lining, the mucus, the angle between the pharynx and nose, ciliated cells in the lower airways. The adenoids and tonsils also contain immunological cells that attack the pathogens.^[13,14,15]

II. Material And Methods

This prospective observational study was carried out on patients of Department of pediatrics at Dr. Raghu ram pediatric Hospital, Pattabhipuram, Guntur from October 2019 to March 2020 . A total 201 pediatric subjects (both male and females) of age <5years were taken for this study.

Study Design: Prospective observational study.

Study Location: This was a tertiary care hospital based study done in Department of pediatrics at Dr. Raghu ram pediatric Hospital, Pattabhipuram, Guntur.

Study Duration: October 2019 to March 2020.

Subjects & selection method: The study population was taken from consecutive patients who presented to Dr. Raghu ram pediatric Hospital with URTI and were prescribed with medication between October 2019 to March 2020. Patients were divided into four groups according to their age.

Group A : Neonates(05)

Group B : Infants (48)

Group C : Toddlers (82)

Group D : Pre School (66)

Inclusion criteria:

1. Patients with age <5 years.
2. Patients with acute respiratory infection.
3. Both sex patients.
4. Patients who have no objection to participate in the study.

Exclusion criteria:

1. Patients not willing to participate in the study.
2. Patients with other co-morbid condition.
3. Above age 5years.

Procedure Methodology

Patients who attended to Raghu ram pediatric hospital and who meet the study criteria are enrolled into the study. A written informed consent was obtained, a well-designed questionnaire was used to collect the data of the recruited patients. The questionnaire included socio-demographic characteristics such as age, gender, nationality, height, weight, disease history, allergic status, diagnosis, treatment chart, case notes, adherence, adverse effects are collected and documented. A suitable data collection form was designed for use in the study.

Statistical analysis

Data was analyzed using SPSS version 20 (SPSS Inc., Chicago, IL). Student's *t*-test was used to ascertain the significance of differences between mean values of two continuous variables and confirmed by nonparametric Mann-Whitney test. In addition, paired *t*-test was used to determine the difference. The level $P < 0.05$ was considered as the cutoff value or significance.

III. Result

The parameters which are included in our study are:

1. Age
2. Gender
3. Family history
4. Type of URI

Demographic and baseline characteristics of the study:

In this study, a total number of 201 subjects who met the eligibility criteria were categorized into four groups. Based on age, they are classified as neonates(28days), Infants(1month- 1year), Toddlers(1-3years) and Preschool(3-5years) with number of patients 5,48,82,66 respectively. Collected data was analyzed using One sample t-test, we have obtained p-value <0.05 (0.032) which is regarded as significant.

Table no1: Age wise patient distribution.

From table no1 & fig no1 age wise distribution reveals that very less number of subjects with URI are found in neonates(5) and highest number of subjects with URI are found in the age group of toddlers(82) i.e.; from 1-3years.

Groups	Number of patients	Percentage(%)
Neonate (28days)	05	2
Infants (1month-1 year)	48	24
Toddlers(1-3yrs)	82	41
Pre School(3-5yrs)	66	33

Fig no 1: Age wise patient distribution.

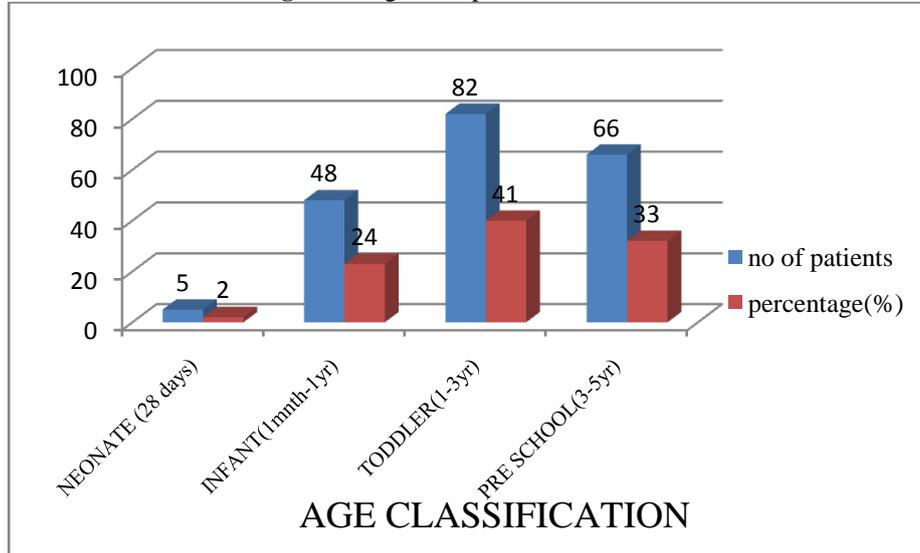
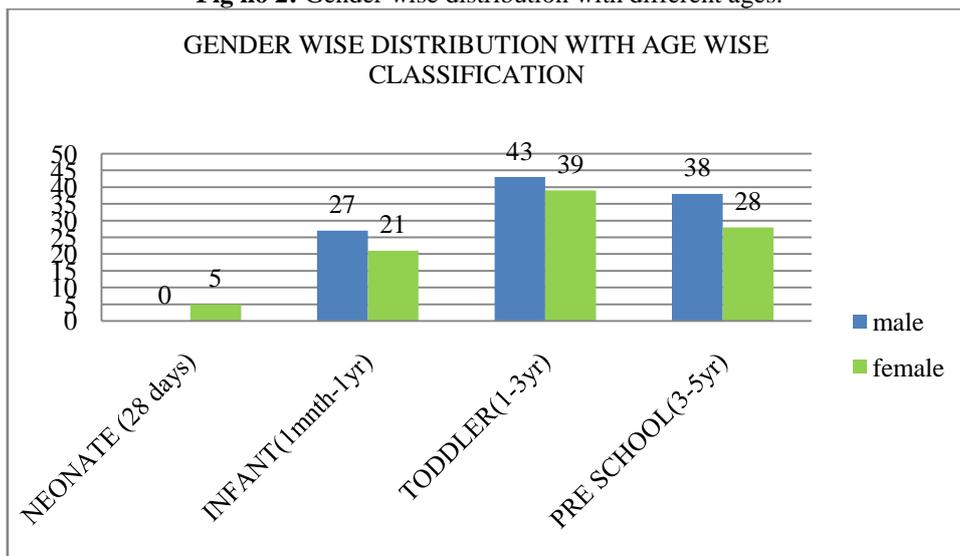


Table no 2: Gender wise distribution with different ages.

Groups	Male	Female
Neonate (28days)	00	05
Infants (1month-1 year)	27	21
Toddlers(1-3yrs)	43	39
Pre School(3-5yrs)	38	28

Fig no 2: Gender wise distribution with different ages.

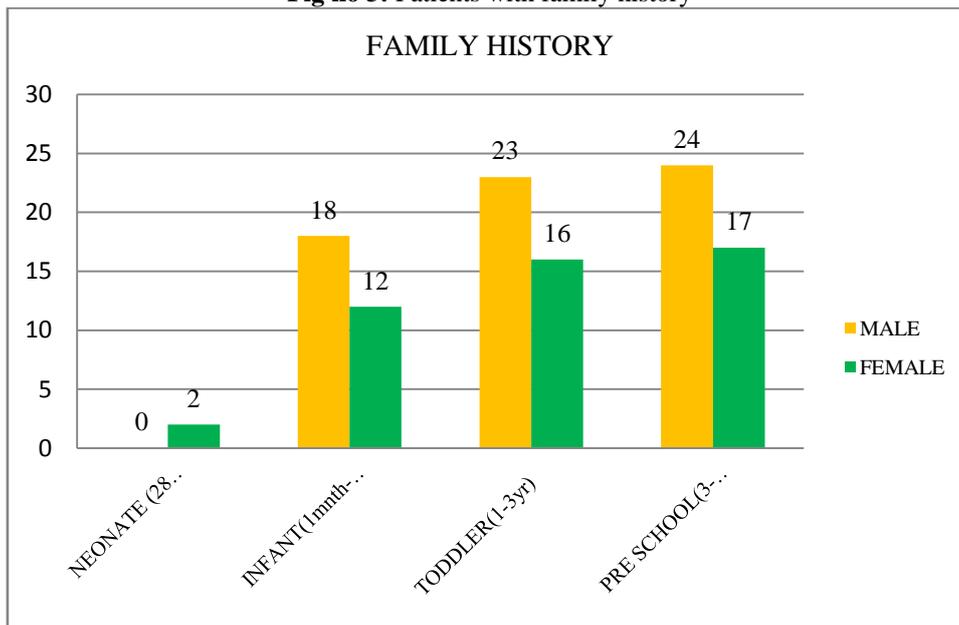


From Table no 2 & Fig no 2 we can observe that highest number of males and female subjects attending to hospital with upper respiratory infection are found in the age group of toddlers (1-3yrs) i.e.; 43 and 39 respectively.

Table no 3: Patients with family history

Groups	Male	Female	Total
Neonate (28days)	00	02	02
Infants (1month-1 year)	18	12	30
Toddlers(1-3yrs)	23	16	39
Pre School(3-5yrs)	24	17	41

Fig no 3: Patients with family history



From table no 3 & fig no 3, male and female subjects with family history are shown. Highest number of male subjects with family history are found in the preschool age(24) and females also highest in preschool age itself(17). Lowest number of male and female subjects with family history is found in neonates.

Table no 4 & Fig no 4: Different upper respiratory infections in pediatrics under age 5

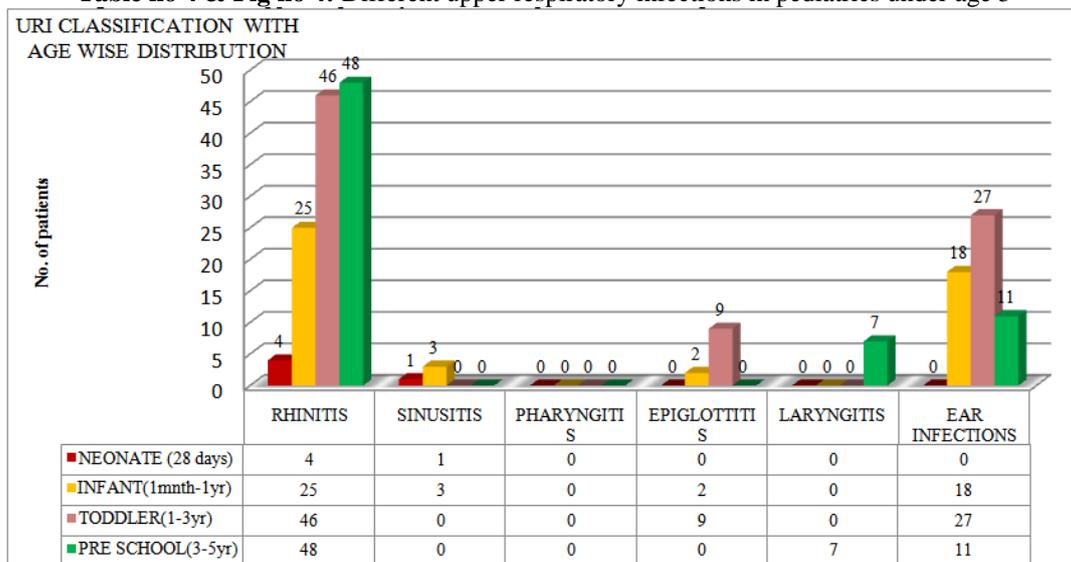
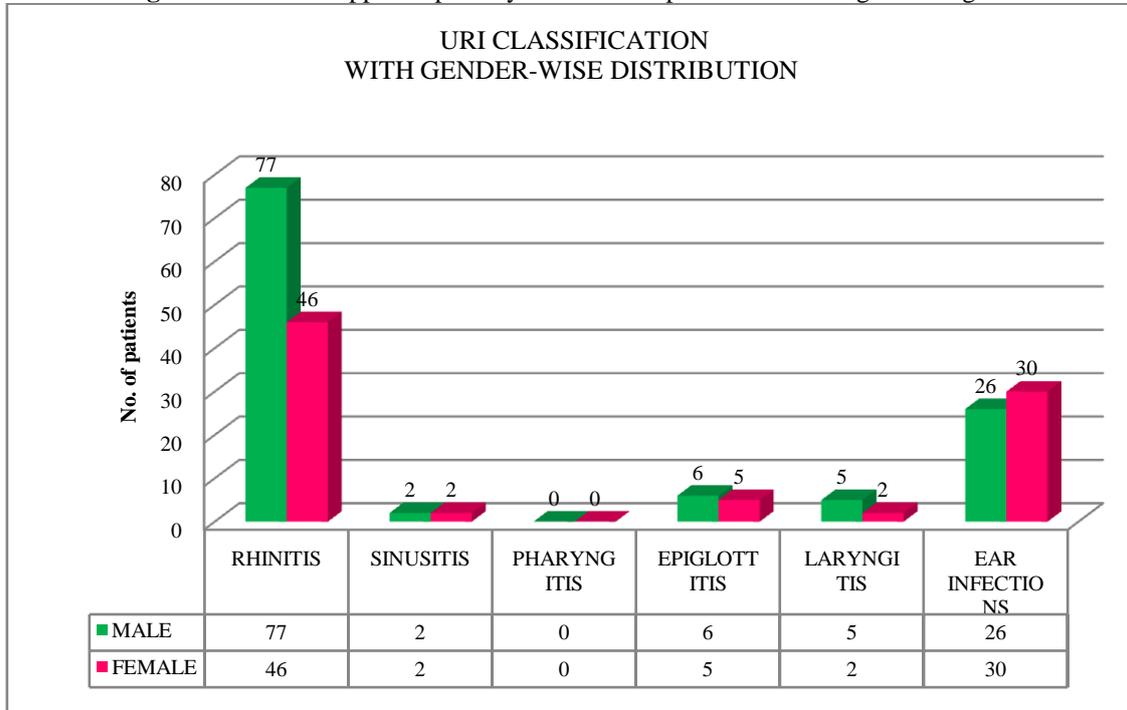


Table no 4 & Fig no 4 represents the distribution of different age group subjects with different infectious conditions. Rhinitis is the most common type of upper respiratory infection seen in all age groups under 5. Pharyngitis is not found in any group under age 5.

Table no 5 & Fig no 5: Different upper respiratory infections in pediatrics under age 5 with gender distribution.



From table no 5 & fig no 5, males and females with highest number of susceptibility is found for rhinitis and less number of males and females are prone to laryngitis.

IV. Discussion

Upper respiratory infection is most commonly observed condition in children under age 5. Our study is about the assessment of prevalence of URTI in children under age 5. A total of 201 patients data with different URI conditions is collected for the study.

All the 201 subjects are classified into four individual groups based on age as neonates, infants, toddlers, preschool.

From table 1 we can observe that most of the subjects with respiratory discomfort symptoms are seen in the age of toddlers i.e., 82 subjects with 41% of the total count. Lowest number of subjects are found in neonates group with a count of 5 which is 2% of 100%.

In this study, the subjects are classified based on gender, highest number of males(43) and females(39) are in toddlers age group. Lowest number of females(5)are in neonates group. Whereas, no male subjects are found in the age of neonates. Among the 201 subjects, most of the subjects are male 108 and 93 are females.

From the study, we can observe that subjects with family history of URI are prone to infections, 112 patients are with family history among 201 patients. Preschool group subjects are mostly with family history(41). Male subjects are with more family history than compared to females.

In our study, most of the cases are suffering with rhinitis and ear infections. Rhinitis constitute about 61.5% of the total sample i.e.; 123 of 201 patients and ear infections constitute about 27.8% of the total sample i.e.; 56 of 201 subjects. Sinusitis, epiglottitis, laryngitis are found minimally in 4, 11, 7 number of subjects respectively. No subject is found with pharyngitis. In all age groups highest number of cases are with rhinitis infection.

From table 5& table 6 we can say that in neonates, rhinitis and sinusitis are the commonly seen infections. In infants, rhinitis and ear infections are most commonly seen whereas, sinusitis and epiglottitis are seen minimally as 3 and 2 cases respectively. Rhinitis, ear infections and epiglottitis are observed in toddlers. No case of sinusitis, pharyngitis and laryngitis are observed among 82 toddler subjects. Among preschool subjects most of the cases are with rhinitis. Laryngitis and ear infections are found in 7 and 11 number of subjects respectively. Sinusitis, pharyngitis and epiglottitis are not observed in preschool subjects.

Among 123 subjects with rhinitis, 77 are male subjects and 46 are female subjects and ear infections are observed in 56 subjects with 26 male subjects and 30 female subjects.

V. Conclusion

From our study we conclude that prevalence of URTI are common in under 5 age children especially in males than females and most of the cases are rhinitis.

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