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Research Article

PREVENTION OF LOWER RESPIRATORY TRACT INFECTION- NURSES ROLE- A REVIEW

Kulanthanie A, Sumathy P* and Renuka K

Department of Child Health Nursing, Kasturba Gandhi Nursing College, Sri BalajiVidyapeeth, Puducherry

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ABSTRACT

Lower respiratory tract infection in infants and children are the most common cause of hospitalization among infant and children. It is a major cause of morbidity and mortality throughout the world. In India, acute respiratory infection is also a serious problem accounting for 14.3% deaths during infancy and 15.9% death among children aged between 1-10 years. Recurrent Lower respiratory tract infection can be regarded as >3 annual episodes of documented Bronchitis, Bronchiolitis or Pneumonia. A literature search was conducted with the following search terms, key-words and phrases –‘Lower respiratory tract infections’, ‘Pneumonia’, ‘Bronchitis’, ‘Bronchiolitis’ ‘children’. The search was performed in the following databases – PubMed and Google Scholar. Considerable debate exists regarding the causes for the high prevalence of lower respiratory tract infection of children. The common risk factors of Lower respiratory tract infections including community acquired pneumonia are lack of exclusive breast feeding, poor sanitary conditions, under nutrition, lack of vaccination etc. There is a paucity of studies indicating the true burden of Lower respiratory tract infection in children and the nurses, role in the management of Lower respiratory tract infections. Hence identification of risk factors associated with Lower respiratory tract infection will help to effectively plan and implement the preventive measures for its reduction. Nurses can play a key role in identification and prevention of respiratory tract infections by early identification and educating the parents which in turn can reduce the incidence of morbidity and mortality.

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INTRODUCTION

Lower respiratory tract infection is a major cause of infant and children morbidity and mortality throughout the Globe. It is one of the commonest causes of hospitalization among infant and children.¹WHO recognized respiratory diseases as the second important cause of death for children under five years.²

A respiratory tract infection is responsible for the death of 4.5 millions of children in the world each year, mainly from the developing countries. In Southeast Asia, it was estimated the acute respiratory infection causes 4 million child death every year. i.e., 2.6 million infants (0-1 year) and 1.44 million in children aged 1-4 year. Respiratory infection occurs more frequently than any other illnesses.¹

Recurrent Lower respiratory tract infection can be regarded as >3 annual episodes of documented Bronchitis, Bronchiolitis or Pneumonia.²

A literature search was conducted with the following search terms, key-words and phrases –‘Lower respiratory tract infections’, ‘Pneumonia’, ‘Bronchitis’, ‘Bronchiolitis’ ‘children’.

The search was performed in the following databases - PubMed, and Google Scholar.

There is a paucity of studies indicating the true burden of Lower respiratory tract infection in children and the nurses, role in the management of Lower respiratory tract infections. Hence identification of risk factors associated with Lower respiratory tract infection will help to effectively plan and implement the preventive measures for its reduction.³

Indian Scenario of Lower Respiratory Tract Infection

In India, acute respiratory infection is also a serious problem accounting from 14.3% deaths during infancy and 15.9% deaths among children aged between 1-10 years. India accounts for 1/3rd of the total WHO Southeast Asian burden of under-five Mortality.³The most common LRIs in children are Pneumonia, Bronchiolitis and Bronchitis.

Pneumonia in Children

In India, pneumonia is the commonest cause of high morbidity and mortality among children below 5 years of age. The report from All India Medical Science opines that Pneumonia causes

*Corresponding author: **Sumathy P**

Department of Child Health Nursing, Kasturba Gandhi Nursing College, Sri BalajiVidyapeeth, Puducherry

1.4 lakhs deaths in kids every year. India accounts for 1/3rd of the total WHO Southeast Asian burden of under-five Mortality.^{3,4} In India, annually, 0.35–0.37 million deaths in children under 5 years of age have been reported due to Community Acquired Pneumonia(CAP)that accounts to 13–16% of total annual mortality in this age group.⁵

The incidence of Pneumonia was higher in male children in all age group except in 2-3 years in a study done in Maharashtra.⁶

Risk Factors for Pneumonia

Childhood pneumonia is caused mainly due to exposure to risk factors such as lack of exclusive breast feeding, under nutrition, indoor air pollution, overcrowding, poor hand hygiene and lack of Measles immunization. Overcrowding and inadequate ventilation provides a nurturing environment for respiratory viruses.⁷

The most important nutritional risk factor for CAP was due to lack of exclusive breast feeding for first 6 months of life. It is found that this can increase the risk of CAP up to 1.5–2.6 times.¹⁰ This can result in 30–42% increased incidence of respiratory infections in children.⁸ Therefore, the WHO and UNICEF recommends exclusive breast feeding in first 6 months of life in their global action plan to prevent pneumonia (GAPP). Despite these, in India, only 46.4% children were exclusively breast fed for their first 6 months⁹

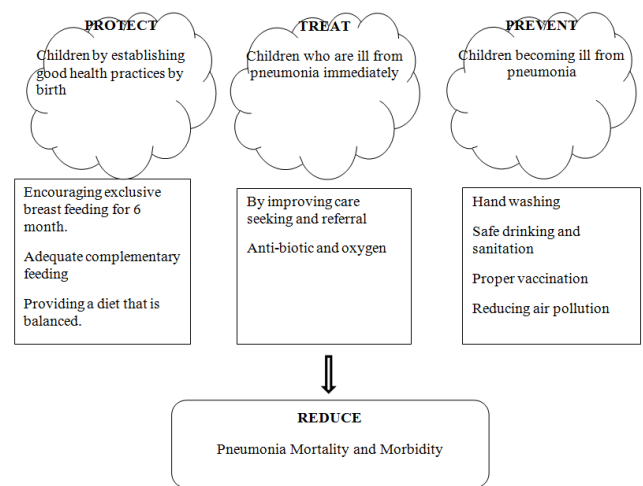
Various studies reported 5–7 times that there is an increased risk of CAP in children with anemia. Because in India, 69.5% of children are anemic the CAP-related mortality is high. Undernutrition is an independent risk factor for mortality in children under 5 years of age. In India, 42.5% of children are undernourished.¹⁰

Another important risk factor that increases the risk of CAP is poor hand hygiene. Studies state the incidence of CAP can come down by 24% if the step of simple hand washing is followed.⁸

Indoor air pollution due to use of biomass fuel for cooking has been extensively studied. Ambient air pollution has led to two- to fourfold increased risk of CAP.⁹ Still in rural India, 61.7–65.4% of households use coal and wood as source of fuel for cooking.¹⁰ Other cause includes upper or lower respiratory infection in a family member¹¹, poor housing and indoor or parental smoking.¹²

Recommendation

Nurses can play an active role in surveillance and measures can be taken to prevent the incidence of pneumonia to a greater extent. In order to achieve the Sustainable Development Goal Nurses play a pivotal role.



Bronchitis in Children

Studies have reported that about 30–35% of housing on First Nations reserves in Canada are in need of major repairs. The prevalence of bronchitis was 17.9% (63/351). Of those, 34.9% (22/63) had been hospitalized.⁹

Risk Factors

Housing, well-being, health status, income and wealth, and environmental quality. These conditions are characterized by personal, social and physical factors that can be associated. Exposure to parental smoking, either one or both parents, any smoking in the home, number of people living in the home, signs of mold or mildew in any living areas in home, whether the house had any damage caused by dampness (e.g., wet spots on walls, floors). Housing conditions such as the presence of natural gas heating, air conditioner, air filter, humidifier in the home, dehumidifier in the home; and pet in the home.¹⁴

In addition child’s age, being the first born child, lack of breast feeding, birth weight, respiratory allergies, including allergies for house dust, grain dust, pollen, trees, grasses, dogs, cats or bird feathers.^{14,15}

Recommendation

Avoid air conditioners, humidifiers and smoking areas, and overcrowded areas. Be in natural ventilation. Maintain proper hygienic practices while handling pet animals. Advice to live in ventilated areas.

Bronchiolitis in Children

During recent years, several studies from Europe and the USA have included children only up to 12 months of age as bronchiolitis.¹⁶ The prevalence of bronchitis was 17.9%. While 86.6% had at least one parent who smoked, smoking inside home was 43.9%.¹⁷

In India, it is the most common reason for hospitalization among children. A substantial proportion of children experiences at least one episode with bronchiolitis, and as much as 2-3% of all children will be hospitalized with bronchiolitis during their first year of life.¹⁸

Approximately 20% of children develop bronchiolitis during their first year of life, and studies from the USA have found increasing rates of bronchiolitis 188/1000 infants.¹⁹ This

retrospective study included 134 children 2 years or younger with severe viral bronchiolitis, and 134 healthy age-matched controls.¹⁸

Risk Factors

Prematurity, Dysmaturity, Environmental factors, Neurological disease, Cardiac disease, Airways anomalies, Immune deficiency, chronic lung disease, Age under 3 months, Formula feeding.¹⁹

Recommendation

Campaigns to reinforce the importance of avoiding childhood exposure to cigarette smoke are also needed.²⁰ Future quality improvement efforts should focus more on the limitation of unnecessary testing and treatments. Future research should include identification of subgroups of children with bronchiolitis that may benefit from focused clinical interventions.²¹

CONCLUSION

As Respiratory tract infections are a major cause of morbidity and mortality in India and to a greater extent preventable, Nurses can play a prime role by doing an active surveillance and also by educating and providing information to the parents.

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