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A STUDY TO EVALUATE THE EFFECTIVENESS OF BALLOON THERAPY ON SELECTED RESPIRATORY PARAMETERS AMONG CHILDREN WITH ACUTE RESPIRATORY TRACT INFECTION IN DHANALAKSHMI SRINIVASAN MEDICAL COLLEGE AND HOSPITAL, PERAMBALUR

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CHAPTER - I INTRODUCTION

"The way you are breathing can make you sick but it can also make you well."

- by Dr Konstantin Pavlovich Buteyko

Childhood age is an important period of life, since most of the behaviors, healthy practices and positive attitudes develop the period. Learning takes place through various institutions such as family, school, and the common, **(NICOLE, 2000).**

The child is the most precious of mankind, most loved and perfect in its innocence. The child represents that face of man which is always new with every child weare again and we play in the courtyard of the world in the bright sunshine of love laughter,**(WONG, 2018).**

School going children is to grow according to time and to know everything about the world to be literate, to be good person. Health is a —state of complete physical mentaland social well- being and not merely absence of disease or infirmity, **(WHO, 2013)**

The school age children facing the common problems like physical, psychological,social problems. The physical problems such as chronic illness, experience of trauma, dental carries, resistance to doing homework. The social problems such as inferiority, jealous of siblings, egocentric, poor relationship with

peers or teachers. The psychological problems such as regression, separation anxiety, negativism, depression, phobia, unrealistic fear, **(PARUL DATTA, 2019)**

Child health is a state of physical, mental, intellectual, social and emotional well-being and not merely the absence of disease or infirmity. Healthy children live in families, environments, and communities that provide them with the opportunity to reach their fullest developmental potential, **(Health Workgroup, 2017).**

–The goal of the Child Health and Development Unit is to end preventable child deaths and promote the healthy growth and development of all children in the first decade of their life.‖

Children cannot achieve optimal health alone. They are dependent upon adults in their family and community to provide them with an environment in which they canlearn and grow successfully. In addition, because they are continually growing physically and mentally, measuring First Things First (FTF) success in achieving optimal child health will be challenging, **(National Center for Biotechnology Information, 2018).**

Achieving optimal child health is dependent upon optimizing the health and well-being of a child‘s mother. Child health is foundational to adult health and well- being. When children‘s health is nurtured and supported and there is an absence of physical and mental abuse, or other intentional childhood trauma; and there exists opportunities to gain habits that support good health during childhood, the stage is set for a healthy adulthood less likely to include chronic health problems such as overweight/obesity, poor oral health, diabetes and other chronic physical and mental health problems, **(WHO, 2019).**

The respiratory tract conveys air from the mouth and nose to the lungs, where oxygen and carbon dioxide are exchanged between the alveoli and the capillaries. Human respiratory system, the system in humans that takes up oxygen and expels carbon dioxide. The human gas-exchanging organ, the lung, is located in the thorax, where its delicate tissues are protected by the bony and muscular thoracic cage. The lung provides the tissues of the human body with a continuous flow of oxygen and clears the blood of the gaseous waste product, carbon dioxide, **(Medical Council of India, 2017).**

Nasal cavity is subdivided into a left and right canal by a thin medial cartilaginous and bony wall, the nasal septum. Each canal opens to the face by anostril and into the pharynx by the choana. The floor of the nasal cavity is formed by the palate, which also forms the roof of the oral cavity. The complex shape of the nasal cavity is due to projections of bony ridges, the superior, middle, and inferior turbinate bones (or conchae),from the lateral wall. The passageways thus formed below each ridge are called the superior, middle, and inferior nasal meat uses, **(National Cancer Institute, 2016).**

Healthy children brought up in healthy surroundings are not only source of joy to everyone, but also India‘s greatest resource tomorrow. Children are not little adults.They are in a dynamic process of growth and development, and are particularly vulnerable to acute and chronic effects of pollutants in their environment, which leads to diseases like respiratory tract infections, diarrhea etc, **(Child Care India, 2015).**

On each side, the intranasal space communicates with a series of neighbouring air-filled cavities within the skull (the paranasal sinuses) and also, via the nasolacrimalduct, with the lacrimal apparatus in the corner of the eye. The duct drains the lacrimal fluid into the nasal cavity. This fact explains why nasal respiration can be rapidly impaired or even impeded during weeping: the lacrimal fluid is not only overflowing into tears, it is also flooding the nasal cavity, **(E-Medicine India, 2019).**

Respiratory system is a frequent site of illness in children. Respiratory infectionand allergies together are responsible for many disruptions in family life and which force them miss their school work. Children respond differently to respiratory illness than adults. The respiratory changes that occur during childhood as new lung tissue continues to form and existing structure changes in shape and function.However, mostrespiratory conditions are more stressful for children than adult, more often leading to airway obstruction or respiratory failure. In respiratory tract, Acute respiratory infections is one of the leading common diseases occur during childhood, (**Narayana Medical Research Foundation, 2019).**

Acute respiratory tract infection may be diagnosed in children of all ages; they tend to occur most frequently in young children who have not yet developed resistance to infectious disease. The infections that occur during the childhood includebronchitis and pneumonia. The respiratory rate is a valuable clinical sign for diagnosing acute respiratory infection in children who cough and breath rapidly. The presence of chest wall in drawing identifies more severe diseases, **(Forum of International Respiratory Societies, 2017).**

Acute respiratory tract infection, is the inflammation of the pulmonary parenchyma, is common in childhood but occur more frequently in infancy and early childhood. Clinically, Acute respiratory tract infectionmay occur either as a primary disease or as a complication of another illness. In young children, the pathogenesis of bacterial pneumonia has been recognized due to upper respiratory tract colonizationby organisms and aspiration of the contaminated excretions. Viruses account for 40 to 50 percent of pneumonia hospitalizations for children in developing countries. Respiratory syncytical virus, parainfluenza viruses, adenoviruses and influenza type Avirus are the most significant causes of viral pneumonia, **(William A. SodemanJr, 2018).**

NEED FOR THE STUDY

Children are the world‘s most valuable resources; children represent the wealth of the country. They are truly the foundation of our nation. Hence the focus of every citizen should be to promote their health and safeguard them. Healthy children are the greatest resource and pride of any nation. But millions of children suffer from short and long-term illness that impacts their well-being and options in life, including fewer educational opportunities. In 2013, 150 million new episodes of pneumonia were identified per year worldwide. More than 90% of which occurred in developingcountries. Nearly 30% of total annual deaths occur in children below 5 years. Viruses remain the most common cause of respiratory tract infection. Streptococcalpneumonia and Hemophilus influenza are the main causes of bacterial pneumonia in the world.

Unicef (2012), about 100-150 million people around the world suffered from asthma. Worldwide deaths from this condition have reached over 18, 000 annually. India has an estimated 15-20 million asthmatics. The prevalence rateis between 10% and 15% in 5to 11year old children. Approximately 80% of asthmatics report disease onset before 6 years of age.

In worldwide, Acute Respiratory Tract Infection among children place a considerable strain and serious on the health budget. In 2020 Acute Respiratory Tract Infection was still the leading cause of deaths among all infectious diseases, and they accounted for 3.9 million deaths worldwide, **(Therese Umuhoza, 2016).**

In ,Acute respiratory tract infection was more prevalent among children and young children aged 0-17 years (14%) . It is the most commonly reported long-term condition for children aged 0-14 years (13%) .Boys (15%) were more likely to have asthma than girls (12%).

More than half of the world‘s annual new pneumonia cases are concentrated in just five countries where 44% of the world‘s children aged less than 5 years live: India(43million) , China (21 million) and Pakistan (10 million) and in Bangladesh, Indonesia and Nigeria (6 million each) . In India (2010) , Acute Respiratory Tract Infection is also a serious problem accounting for 14.3 per cent deaths during infancy and 15.9 per cent deaths among children aged between 1-10 years.

(AIIMS, 2016) All India Institute of Medical Sciences says that, lung infection-pneumonia is curable; it kills 1.6 million children, including 1.4 lakh Indian kids, every year. In Simla (2010) ,there is limited data on asthma prevalence among school children aged 6-13 years. Acute respiratory tract infection in the study was found to be 2.3 percent. Boys had a higher prevalence (3.1%) than girls (1.4%). In Chennai, the incidence of respiratory illness has been increasing several folds in the past few years. Between March 2010 and March 2011, there was a two-fold increase in the number of children with pneumonia. In the last one year, 296 children were detected with pneumonia in one city hospital of

Chennai and minimum three to five cases admitted every week in one hospital.

Hospital records from states with high infant mortality rate shows that up to 13% of inpatient deaths in paediatric wards are due to acute respiratory tract infection.On an average, children below 5 years of age suffer about five episodes of acute respiratory tract infection thus accounting for about 238 million attacks. Althoughmost of the attacks are mild and self-limiting episodes, acute respiratory tract infection is responsible for about 30-50% visits to health facilities and for about 20-40%admissions to hospital, **(J. ARUL VIMALA MARY, 2012).**

The disability-adjusted life lost due to acute respiratory tract infection in Southeast Asia is about 33 million. National Acute respiratory tract infection control programme was launched in 1999 to help millions of people with Acute respiratory tract infection to gain control over their disease. The programme goals include reducing the number of deaths, hospitalization and emergency department visit.National Acute respiratory tract infection Control Programme funds that states, cities and school programmes to improve surveillance of Acute respiratory tract infection, train health professionals, educate individuals with asthma and explainAcute respiratory tract infectionto public, **(Bill & Melinda Gates Foundation, 2017).**

In India, acute respiratory disease control programme is the standard case management of Acute Respiratory Tract Infection (ARI) and prevention of deaths due to pneumonia is now an integral part of Reproductive and Child Health Programme. Peripheral health workers are being trained to recognize and treat pneumonia. Cotrimoxazole is being supplied to the health workers through the child survival and safe motherhood programme drug kit. Pediatric nurses are in a position to identify the knowledge, attitude and practice of ARI in children. This will enable the nurse to plan with specialized service to help children to understand balloon therapys that will makea significant difference in the reduction of respiratory signs and improvement in lung function, **(Child Health Priorities, 2011).**

Respiratory tract infection is responsible for death of 4.5 million children in theworld each year, mainly from the developing countries. Respiratory infection occurs more frequently than any other illness. Balloon therapy is very easy to learn, and is therefore specially helpful for children problems with breathing difficulty; on theother hand, absence of exercise aggravates symptoms and respiratory infection. Solution of this paradox - exercise that specifically develops muscles and blood vessels, applying stress on the lungs during breath in and by using increased air resistance strictly due to nasal fast breath in or ―sniff‖, **(Science news for students, 2018)**

Though India‘s under-five mortality rate deaths per 1,000 live births -- has improved to 48 in 2015 from 126 deaths in 1990, it still has a lot of catching up to do. ARI remains a leading cause of under 5 mortality(3).Globally annual death from ARI decreased by 47% from 2000 to 2005 from 1.7 million to

920000(3).According to a research done as a part of million death study, India has avoided about 1 million deaths of children under age five since 2005, due to reduction in mortality from ARI, pneumonia, diarrhea, tetanus and measles, **(Klugman KP, Madhi SA, 2015).**

In young children, ARI has been recognized due to upper respiratory tract colonization by organisms and aspirationof the contaminated excretions. Viruses account for 40 to 50% of pneumonia hospitalizations for children in developingcountries. Respiratorysyncytical virus, parainfluenza viruses, adenoviruses andinfluenza type A virusare the most significant causes of viral pneumonia.Lower respiratory tract infection is more fatal than upper respiratoryinfection. Moreover in 2013, 6.9% of occured due to respiratory illness which is the leading cause when compared to other diseases. Lower respiratory tractinfection manifests symptoms like wheezing, fever, tachypnea and chestretraction. **Global Health (2018)**

Government is introducing various measures to further reduce under5 mortalityin India, especially death due to vaccine preventable diseases.One such measure is the introduction of pneumococcal vaccine inimmunization schedule as a pilot programme in some states (13,14). PCV protects against severe forms of pneumococcal disease, like pneumoniaand meningitis. Currently, the vaccine is being introduced to approximately21 lakh children in Himachal Pradesh and also in some parts of Bihar andUttar Pradesh in the first p has e, **(NCBI, 2019)**

Balloon Therapy‘s involving, a group of muscles interacting to adapt thoracic dimensions to certain breathing stages. Basic respiratory muscles are the diaphragm, the internal intercostals and external intercostals. Accessory muscles, or muscles that contribute to lift the ribcage, so that lungs can expand and take in air, are frequently used during vigorous physical activities, like weight training, stressful situations or when someone suffers from an asthma attack. Steadily blowing up several balloons, one after another, effectively exercises these muscles, builds lung capacity and stamina,**(National Center for Biotechnology Information, 2017).**

Children with Acute Respiratory Tract Infection may be very anxious and may feel uncomfortable. They have increased chance of allergic reaction, and are not able to do normal activities. They require frequent hospitalization, whichdisrupts family life and school attendance. There are a number of acute and chronic infections that canaffect the lower respiratory tract. In Acute Respiratory Tract Infection, Pneumonia is adangerous type of lung infection with a mortality rate of around 25%and possible complications are emphysema or lung abscess, **(Adal berto Torres Jr MD, 2016).**

Teresa, Paul., (2018) conducted a study to compare the effectiveness of steam inhalation versus twin technique on respiratory function among children with Acute Respiratory Tract Infection at Government Headquarters Hospitals, Erode. Sixty samples were selected. The design used for the study

was quasi experimental pre test and post test of two experimental groups were selected to evaluate the effectiveness ofsteam inhalation versus twin technique on respiratory function.

Essential new-born care like immunizing mothers against tetanus, ensuringclean delivery practices, drying and wrapping the baby immediately after birth, providing adequate warmth and promoting immediate and continued breastfeeding, immunization as per schedule and treatment of infections with antibiotics - could save the lives of about 3 million new-borns annually. Improved sanitation and access to clean drinking can reduce childhood infections and diarrhea, **(Vashishtha V Indian Pediatr,2010).**

Respiratory system is a frequent site of illness in children. Respiratory infectionand allergies together are responsible for many disruptions in family life and which force them miss their school work. Children respond differently to respiratory illness than adults. The respiratory changes that occur during childhood as new lung tissue continues to form and existing structure changes in shape and function. Blowing up a

balloon is a key health test that most people have been taking their whole life without realizing it. A simple exercise that creates lung capacity is blowing up a certainamount of balloons each day. Blowing balloons works out the intercostals muscles responsible for spreading and elevating your diaphragm and ribcage. This allows lungs to absorb oxygen, alter its chemical composition while still in the lungs, and expel carbon dioxide as exhaling is commenced. Balloon blowing, while effectively exercising the lungs' ability to expand and take in air, does not affect the size or number of alveoli contained in the lungs. Alveoli are air sacs that disperse carbon dioxide during exhalation and oxygen into the blood during inhalation. The more oxygen supplied to the body during exercise, the longer a trainer is able to exercise without becoming breathless and fatigued. Oxygen restores energy to cells and muscles by removing carbon dioxide, **(Dr.B.Mahalakshmi, 2020)**

STATEMENT OF PROBLEM

A Study to evaluate the effectiveness of balloon therapy on selected respiratoryparameters among children with Acute respiratory tract infection in Dhanalakshmi Srinivasan Medical College and Hospital, Perambalur.

OBJECTIVES

- To assess the level of acute respiratory tract infection before and after intervention in experimental and control group.
- To evaluate the effectiveness of balloon therapy on respiratory parameters among children with acute respiratory tract infection in experimental and control group.
- To find out the association between the post test level of respiratory parametersamong children with

acute respiratory tract infection with their selected demographic variables in experimental and control group.

HYPOTHESES

- **H_1 :** There is a significant difference between the pre-test and post-test level of respiratory parameters among children with acute respiratory tract infection in experimental group and control group.
- **H_2 :** There is a significant effectiveness of balloon therapy on respiratory parameters among children with acute respiratory tract infection in experimental and control group.
- **H_3 :** There is a significant association between the post test level of balloon therapy on respiratory parameters with selected demographic variables betweenthe experimental group and control group.

OPERATIONAL DEFINITION

Evaluate

It refers to the identification of difference between the pre-test and post test level of respiratory parameters and judging the effectiveness of balloon therapy on respiratory parameters.

Effectiveness

It refers to the desired change that can be brought about by balloon therapy on respiratory parameters among children with acute respiratory tract infection as measured by a modified pediatric respiratory severity score scale.

Balloon therapy

It refers to a simple exercise that creates lung capacity by blowing up balloons each day and it works out the intercostal muscles responsible for spreading and elevating diaphragm and ribcage. Balloon therapy had eight steps and the child is encouraged to do the steps to inflate a new ordinary balloon to a diameter of 7 inches at 10 times a day for 3 day and each time blowing for 30 minutes.

Respiratory Parameters

It refers to respiratory parameters are set of assessment that include cough, nutrition, fever, rhinorrhoea, dyspnoea, respiration rate, heart rate, oxygen saturation, respiratory sound, secretions, which is quantifiable and measurable in nature of rating scale.

Children with ARI:

Who those are 30 children‘s age of 6 - 12 years are have the symptoms of Rhinitis, sinusitis, laryngitis,

pneumonia, bronchiolitis.

ASSUMPTION

- Children with Acute respiratory tract infection may have ineffective breathingpattern.
- The balloon therapy will be effective on respiratory parameters of children withAcute respiratory tract infection.
- Balloon therapy are easy to perform, cost effective and have beneficial effectson respiratory parameters.

DELIMITATIONS

The study delimited to,

- School age children‘s with Acute respiratory tract infection.
- Children belong to age of 6 to 12 years.
- Four weeks of data collection.
- School age children‘s who are all inpatient in Dhanalakshmi SrinivasanMedical College and Hospital, Perambalur.

Projected outcome

The study enables to identify the level of respiratory parameters among children with Acute Respiratory Tract Infection and provide an opportunity to teach Balloon Therapy. At the end of the study, children can understand and develop

practice of Balloon Therapy to improve lung function and the findings of the study help to evaluate the effectiveness of Balloon Therapy among children with Acute Respiratory Tract Infection.

CONCEPTUAL FRAMEWORKBASED ON MODIFIED PENDER‟S HEALTHPROMOTION MODEL

The conceptual framework is based on modifications made on “Nola. J. Pender‟s Health Promotion Model (2002-Revised)”

A Study to evaluate the effectiveness of balloon therapy on selected respiratory parameters among children with Acute respiratory tract infection in Dhanalakshmi Srinivasan Medical College and Hospital, Perambalur.

The Health Promotion Model (HPM) proposed by Nola IJ. Pender (1982:revised, 2002) was designed to be a ‒Complementary counterpart to the models of health protection‖. It defines health as a positive, dynamic state nit merely the absence of disease. Health promotion model describes the multi-

dimensional nature of persons as they interact with in their environment to pursue health.

The model focuses on the following areas

- Individual characteristics & experience
- Behaviour specific knowledge & affect
- Behaviour outcome

INDIVIDUAL CHARACTERISTIC AND EXPERIENCE

1. Prior related behaviour

According to the theorist, prior related behaviour describes frequency of the similar behaviour in the past direct and indirect effects on the likelihood of engaging in health promoting behaviour. In this study, the prior related behaviour includes the assessment of respiratory parameters such as by using modified respiratory parameter score scale.

2. Personal factors

According to the theorist, personal factors are categorized as biological, psychological and socio-cultural. These factors are predictive of a given behaviour and shaped by the nature of the target behaviour. In this study, the personal factors include age, sex, type of family, order of birth, residence, and frequency of respiratoryinfection in the last year and previous habit of balloon therapy.

BEHAVIOUR SPECIFIC COGNITIONS AND AFFECT

a) Perceived benefit of action

According to the theorist, perceived benefits of action are anticipated behaviour. In this study, the perceived benefits of action help the child to reduce the episodes of Acute Respiratory Infection.

b) Perceived barriers of action

According to the theorist, perceived barriers of actions are anticipated, imagined or real blocks and personal costs of understanding a given behaviour. In this study, the perceived barriers of action are children may have lack of knowledge, lack of practice and lack of motivation regarding balloon therapy.

c) Perceived self-efficacy

According to the theorist, perceived self efficacy is judgment of personal capability to organize and

execute a health promoting behaviour. Perceived self efficacy influences perceived barriers to action. So higher efficacy results in lowered perceptions of barriers to the performance of the behaviour.

In this study, the self efficacy is that the child realizes the importance ofballoon therapy to improve the knowledge and practice which will prevent the recurrent occurrence of Acute respiratory tract infection.

d) Activity related affect

According to the theorist, activity related affect describes subjective positive ornegative feelings that occur before, during and following behaviour based on the stimulus properties of the behaviour itself. Activity related affect influences perceived self efficacy, which means the more positive the subjective feeling, the greater the feeling of efficacy. In turn, increased feeling of efficacy can generate further positive effects. In this study, activity related affect is reduction of respiratory tract infection and episodes of children with Acute respiratory tract infection.

e) Interpersonal influences

According to this theorist, Interpersonal influences cognition concerns behaviours, beliefs, or attitudes of the others. Interpersonal influences include, norms (expectations of significant others), social support (Instrumental & emotional encouragement) and modeling (vicarious learning through observing others engaged in a particular behaviour). Primary sources of interpersonal influences are families, peers and health care providers.

In this study interpersonal influence is Intervention for reduction of respiratory tract infection by Balloon Therapy. The exercise is done 10times in the morning, afternoon and evening one hour before and one hour after feeding for 3 consecutive days.

f) Situational influences

According to this theorist situational influences are personal perceptions and cognitions of any given situation or context that can facilitate or impede behaviour include perceptions of options available, demand characteristics and aesthetic features of the environment in which given health promoting is proposed to take place. Situational influences may have direct or indirect influences on health behaviour.

In this study, situational influence is that the child needs to modify the lifestyle,balloon therapy and maintain health status which influences lung function and prevent recurrent occurrence of the respiratory tract infection.

IV. Behavioural outcome

a) Immediate competing demands and preferences

According to the theory, competing demands are those alternative behaviours over which individuals have low control, because there are environmental contingencies such as work or family care responsibilities. Competing preferences are alternative behaviour over which individuals exert relatively high control.

In this study, balloon therapy may influence the children to gain knowledge on exercises and practice them in reducing the occurrence of respiratory infection and improve lung function among school age children with acute respiratory tract infection.

b) Commitment to plan of action

According to the theorist, commitment to a plan of action is the concept of intention and identification of a planned strategy leads to implementation of health behaviour.

In this study, the plan of action is the child with acute respiratory tract infectiondevelops a positive attitude and makes the decision to continue the practice of balloon therapy to a healthy lifestyle and maintain health status which prevent recurrent occurrence of the respiratory infection in future.

c) Health promoting behavior

According to the theorist, health promoting behaviour is an end point or action outcome directed towards attainment of health outcomes such as optimal well- being, personal fulfilment and productive living.

In this study, health promoting behaviour of children with Acute respiratory tract infection may practice balloon therapy to maintain health status which improves lung function and prevent recurrent occurrence of the respiratory signs.

Post test Assessment

In this study, Post-test assessment of respiratory tract infection by modified respiratory parameter score scale was done in Experimental group and Control group. The respiratory tract infections were graded as normal, moderate and severe. Behaviour modification was seen among children. They are motivated to practice balloon therapy regularly and maintain normal respiratory function.

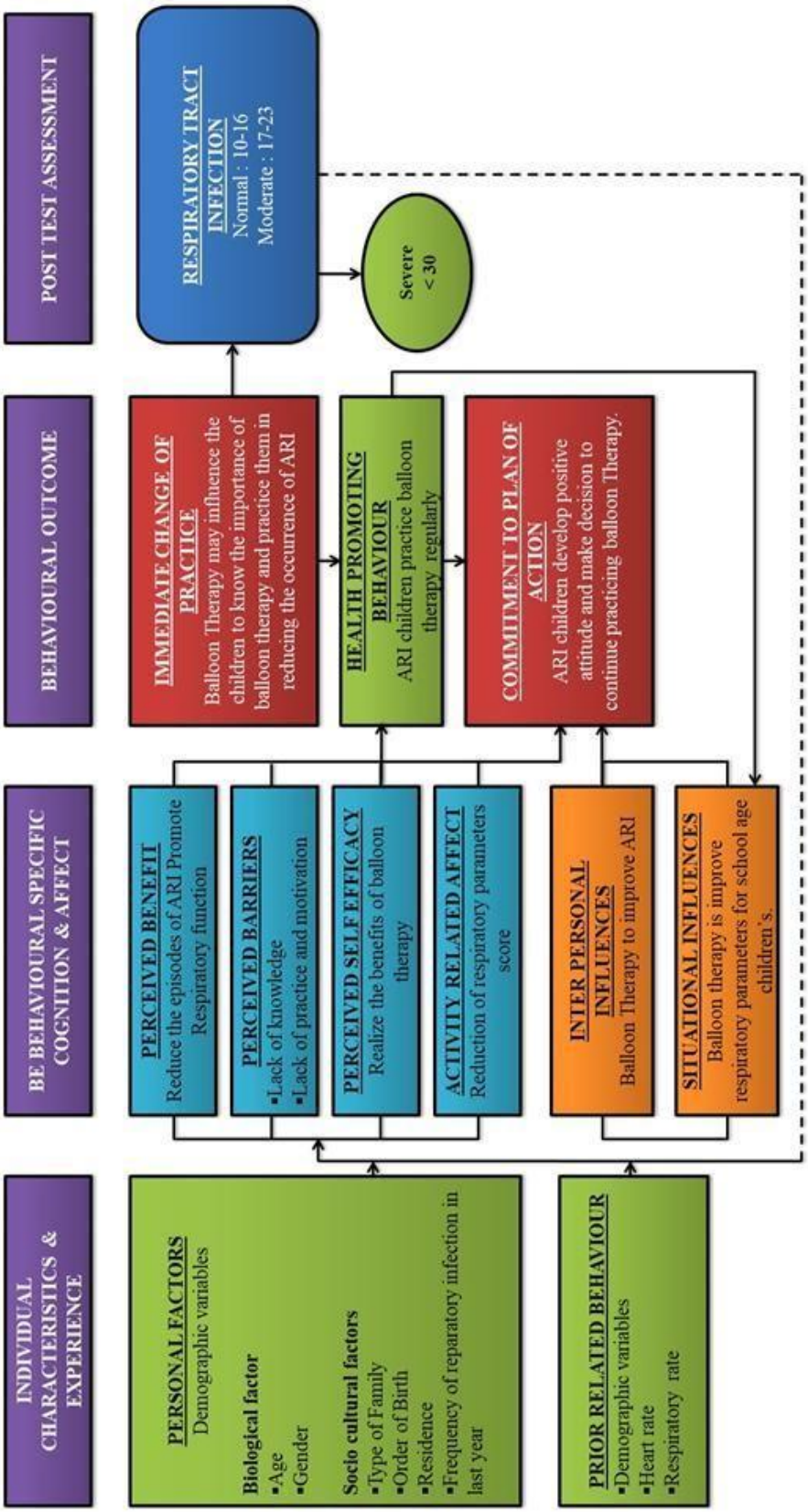

FIG: 1.1 CONCEPTUAL FRAMEWORK BASED ON MODIFIED PENDER"S HEALTH PROMOTION MODEL (REVISED 2002)

CHAPTER - II REVIEW OF LITERATURE

The Review of Literature is defined as _a broad, comprehensive in depth, systemic and critical review of scholarly publications, unpublished scholarly print materials, audio- visual materials and personal communications‘.

Review of Literature of the present study was arranged in the following headings:

Section A **:** Studies related to Acute Respiratory Tract Infection among children

Section B **:** Studies related to respiratory parameters

Section C **:** Studies related to Balloon Therapy

Section D **:** Studies related to Balloon therapy among children with AcuteRespiratory Tract Infection

SECTIONA : STUDIES RELATED TO ACUTE RESPIRATORY TRACTINFECTION AMONG CHILDREN

Ekram M. Abdel Khalek, Doaa M. Abdel-Salam (2016) has conducted a study on Acute respiratory infection (ARI) is a serious problem that causes four and a half million deaths among children every year, the overwhelming majority occurringin developing countries. Untreated ARIs often lead to pneumonia, which is more serious and causes 15% of under five deaths in Egypt. The present study were to identify the prevalence of ARIs in children 6 to 12years of age in Upper Egypt and its determinants. Secondary analysis was done in the present study based on data sets of Egypt Demographic Health Survey (EDHS), 2008.The present study involved 4,745 children under 5 years of age living in Upper Egypt Governorates who included in EDHS, 2008. The mean age of the studied children was 28.27 months. It was found that 18.8% of the children had cough during the two weeks period before the survey. Medical consultations were sought from health care providers among 90% of children.

Nearly two thirds of the children were given any drugs. Cough drugs and oral antibiotics were given most frequently. Also, 30% of children did not receive any medical treatment .Children aged 6-12years and male children were affected most likely with ARIs. Immunization status of the studied children showed significantassociation with ARIs. Children aged 6-12years and male children were affected most likely with ARIs. Paediatricians and general practitioners should take their role in proper counselling of caregivers on the proper child care at home.

K. Zaman,* A. H. Baqui (2017) has conducted a study community-based longitudinal study conducted in Matlab, a rural area in Bangladesh, investigated acute respiratory infections (ARI) among children. A cohort of 696 children 6 to 12 years ofage was followed for 1 year yielding 183,865 child-days of observation. Trained field workers visited the study children every fourth day. Data on symptoms suggesting ARI, such as fever, cough, and nasal discharge, were collected for the preceding 3days by recall., The field workers conducted physical examinations (temperature, rate of respiration, and chest indrawing) of children reporting cough and/or fever. ARI was
5.5 episodes per child-year observed; the prevalence was 35.4 per hundred daysobserved. Most of the episodes (96 per cent) were upper respiratory infections (URI). acute lower respiratory infections (ALRI) was 0.23 per child per year. URI washighest in 6 to 12-years-old children, ALRI episodes. About 46 per cent of URI and65 per cent of ALRI episodes lasted 15 days or more. The incidence rates of URI werehigher during the monsoon and pre-winter periods, and that of ALRI at the end of the monsoon and during the pre-winter periods. Sociodemographic variables were not associated with the incidence of URI or ALRI. The study documents ARI to be a major cause of morbidity among rural Bangladeshi children.

R Kishore Kumar (2020) has conducted a study on Studies on prevalence of acute respiratory tract infections (ARTIs) exclusively on the infant population in India, and their association with mode of delivery are lacking. ARTIs in children aged 6 to 12 years and to delineate its association with the mode of delivery (cesarean and vaginal). We also evaluated the antibiotic use for management of ARTIs in the study population. Study design: This single-center retrospective analysis was carried out in a private hospital (Cloudnine Hospitals) in Karnataka, India, over a period of 12 years from 2007 to July 2019. Participants: The study included 51,850 children up to 12 years of age who were outpatients or admitted to the hospital with infections. Intervention: In this retrospective study, infection type, mode of delivery, and antibiotic use were recorded. Both upper and lower respiratory tract infections (URTI and LRTI) were observed. Mode of delivery recorded included both cesarean and vaginal, and some infants received antibiotics for ARTI treatment. Higher prevalence of cesarean mode of delivery (71%) was recorded, which was associated with a higherincidence of ARTIs, compared to vaginal delivery (5,648 vs 2,420). Among the ARTI patients, antibiotics were prescribed to 2,635 (21.7%) children. The commonly prescribed antibiotics were penicillin-type and aminoglycoside antibiotics. The incidence of ARTIs in infants was 23.4%, with URTIs being more prevalent than LRTIs. The prevalence of cesarean delivery was found to be highest and was associated with a higher incidence of ARTIs. Use of antibiotics was observed in 21.7% of infants with ARTIs.

Santos AO1, Botelho-Souza LF1 (2017) has conducted a Acute Respiratory Infections (ARIs) are classified according to the compromised anatomical site. It can be associated with viruses, bacteria and fungi. The etiological agents that are responsible for the highest incidence in children, around 50 to

90% of occurrences, areviruses. It characterize the factors that contribute to acute respiratory infection in children from 6 to 12 years old and the main symptoms that are presented, thus classifying the etiological agents. This is a descriptive quantitative study carried out by the molecular virology laboratory of the Research Center in Tropical Medicine- CEPEM/RO and the Oswaldo Cruz Foundation Rondonia-FIOCRUZ/RO. Data collection was performed through a questionnaire with 660 patients of both sexes,with questions about socioeconomic data and clinical manifestations, from February to December 2013. Prevalent clinical manifestations were cough, coryza, pulmonary secretion, fever, nasal obstruction, otalgia, adventitious sounds, apnea, dyspnoea and ocular pruritus of the 113 children diagnosed with acute respiratory infection, the highest incidence was in males. The proposed pathogens in the study were rhinovirus, parainfluenza 1, 2, 3, and adenovirus. Parainfluenza 2 and rhinovirus are the most prevalent.

BipinPrajapati (2012) has conducted a study on Acute respiratory tract infection is a major cause of morbidity and mortality in developing and also developed countries. About 13 million children under 5 years of age die every year in the world; 95% of them in developing countries and one third of total deaths due to ARI. To study some of the risk factors which are responsible for occurrence of ARI in under five age groups living in urban and rural areas of Ahmedabad district. A cross sectional study covering 500 under five children in urban (five zone) and rural (five PHC of sanandtaluka) area of Ahmedabad district from September 2008 to March 2009. A significant association was found between ARI and low birth weight, timely initiation of breast feeding, prelactal feeding, timely given complementary feeding andimmunization status. No significant association was found between ARI and duration of breast feeding. Occurrence of ARI was found to be 22%. It was more in low birth weight babies (<2.5 kg) (36.18%).Occurrence of ARI was lower in urban area (17.2%)as compared to rural area (26.8%). In rural area, it is more because of lack of basic health services, lack of awareness etc.,

Abdul-AzizSeidu (2016) has conducted a study on Acute Lower Respiratory Infections (ALRIs) account for 5.8 million deaths globally and 50% of these deaths occur in sub-Saharan Africa. In this paper, we examined the prevalence and determinants of ALRIs among children under-five years in 28 sub–Saharan African countries. We used data from the most recent (2011–2016) Demographic and Health Surveys of the 28 countries. Women aged 15–49 (N = 13,495) with children under- five years participated in the study. Data were extracted and analysed using STATA version 14.2. Bivariate and multivariate analyses were done to establish associations between the outcome and explanatory variables. The prevalence of ALRI for all the countries was 25.3%. Congo (39.8%), Gabon (38.1%), Lesotho (35.2%), and Tanzania(35.2%) were the countries with the highest prevalence of ALRIs. The results from themultivariate analyses showed that children aged 24–59 months (AOR = 1.15; 95% CI = 1.04–1.28), and children who received intestinal parasite in the 6 months preceding the survey (AOR = 1.11; 95% CI = 1.02–1.22) had higher odds of developing ALRIs. However, children whose

mothers were employed (AOR = 0.77; 95% CI = 0.64–0.94) and those whose households used improved toilet facilities (AOR = 0.72; 95% CI = 0.64–0.97) had lower odds of contracting ALRIs. Our findings underscore the need for stakeholders in health in the various sub-Saharan African countries, especially those worst affected by ALRIs to implement programmes and develop policies at different levels aimed at reducing infectionsamong children 6 to 12 years. Such strategies should specifically focus on improving the administration of medications for intestinal worms, health education to mothers with children 6 to 12 years on ALRIs and improving the sanitation situations of households through the provision of improved toilet facilities.

Authors Gebertsadik A (2014) has conducted a study on Acute respiratory tract infection (ARI) remains the major cause of child mortality in Sub-SaharanAfrica. Various factors are associated with its occurrence and vary by context. However, available large-scale, population-based data are not fully exploited to identify locally relevant risk factors to identify factors associated with ARI in childrenage 6 to 12 years in Ethiopia. Further analysis of the 2011 Ethiopia Demographic and Health Survey was carried out involving 11,645 children 6 to 12 years and their mothers. Information relevant to the current study was extracted from the main dataset and a working data set was prepared. A complex survey logistic regression analysis was applied. ARI in this study was associated with severe malnutrition.Children who were severely wasted were highly likely to develop ARI (adjusted odds ratio [AOR] 1.7; 95% confidence interval [CI] 1.1–2.5). ARI was less likely to occurin children from families with an educated father and professional mother (AOR 0.4; 95% CI 0.2–0.6 and AOR 0.1; 95% CI 0.01–0.6, respectively). Malnourished children from a lower socioeconomic category are more likely to suffer from ARI. Targeting disadvantaged children for effective interventions can help reduce the burden of morbidity and death due to ARI.

SECTION B: STUDIES RELATED TO RESPIRATORY PARAMETERS.

R. K. Gupta, N. Mitra, M. Savitha (2011) has conducted a study on Acute respiratory tract infection is a major cause of morbidity and mortality in developing and also developed countries. About 13 Million 6 to 12 years children dies every year in the world, 95% of them in developing countries, one third of total deaths are due to ARI. To find out prevalence of ARI in under 5 children living in urban and rural areas of Ahmedabad district Materials and Methods, A cross sectional study was covering 500 under 5 children living in urban (five zone) and rural (five PHC of sanandtaluka) area of Ahmedabad district from September 2008 to March 2009. The main study Prevalence of ARI was found to be 22%, it was higher in low social class (III,IV and V)(26.56%), Illiterate mothers (24.4%) and primary (23.9%) mothers, Overcrowded houses (28.5%). Prevalence of ARI was lower in urban area (17.2%) as compare to rural area (26.8%) (Combine is 22%). In rural area, it is more because of lack of availability of basic health services, lack of awareness, and other associated factors like overcrowding, low socio-economic status, absence of cross ventilation, indoor air pollution are

responsible factors.

KapilGoel (2012) has conducted a study on Acute respiratory infection (ARI)is a leading cause of morbidity and mortality 6 to 12 years children worldwide. On an average, children 6 to 12 years of age suffer about 5 episodes of ARI per child per year, thus accounting for about 238 million attacks and about 13 million deaths every year in the world. Identification of modifiable risk factors of ARI may help in reducing the burden of disease. the social demographic factors and prevalence of ARI in 6 to 12 years children living in urban and rural area of Meerut district. A cross sectional study covering 450 under-five children living in urban and rural area of Meerut district from October 2011 to March 2012. Prevalence of ARI was found to be52%. It was higher in children with lower socioeconomic status (35.89%), illiterate mother (49.14%), overcrowded conditions (70.94%), inadequate ventilation (74.35%),and use of smoky chullah (56.83%), malnutrition (26.49) and parental smoking (78.20%). The present study found that low socioeconomic status, maternal illiteracy, poor nutritional status, overcrowding, indoor air pollution and parental smoking behavior were the significant social and demographic risk factors responsible for ARI in children. These observations emphasize the need for research aimed at health system to determine the most appropriate approaches to control acute respiratoryinfection and thus could be utilized to strengthen the ARI control programme.

Dr.Yuvaraj B Chavan (2018) has conducted a study on Acute respiratory infection isa major public health problem particularly in developing countries like India where most of people belong to poor economic strata and reside in slums and are exposed to fatal illnesses. children are particularly vulnerable to this Sort of infections and it has posed a great economic burden to the developing world particularly in the urbanslums. The prevalence of acute respiratory infections amongst children in an urban slum; sociodemographic profile of study population & assess health seeking behaviourof parents for these morbidities. It was a Cross-sectional study carried out in 256 children which was conducted in vulnerable urban slum in UHC field practice area of tertiary care hospital for 12 months duration. The overall prevalence of ARI was found to be 30.4%. Children in age group of 6 to 12 years were most commonly affected with ARI (57.1%). In social class IV & V, prevalence of ARI was highest with 40.70 %. There was a significant association between immunization status, birth weight, family composition, malnutrition status and Occurrence of ARI in under-five children. The present study found poor birth weight, low socio economic class, delay in initiation of breast feeding, pre-lacteal feeding, and immunization status as significant risk factors for ARI in underfives.

Dr.ManoharBekkam (2018) has conducted a study on Acute respiratory infections are a leading cause of morbidity and mortality in 6 to 12 years children in developing countries with nearly 156 million new episodes each year, of which India accounts for a bulk of 43 million. According to Child Health Epidemiology Reference Group(CHERG) latest estimates for 2010, pneumonia was responsible for

0.397 million of total estimated 1.682 million under-5 deaths in India. The main aim of the study was The present study was undertaken to study the various risk factors of Acute lower respiratory tract infections (ALRTI) in children aged 6 month to 12 years. In the present study100 ALRTI cases belong to the age group of 6 to12 years fulfilling WHO

criteria for pneumonia who were attended to the department of Pediatrics, ASRAM Medical College from August 2017 to August 2018 were evaluated for risk factors after obtaining parental consent. Parental illiteracy (p=0.000*), overcrowding(p=0.0000*), incomplete immunization (p=0.0000*), lack of exclusive breast feeding (p=0.0004*), low birth weight (p=0.000*), use ofbiomass fuels for lighting (p=0.0002*), mud/ cowdung flooring (p=0.0088*) were identified as potential risk factors for severe ALRTI. The present study has identified various socio- demographic, nutritional and environmental risk factors for ALRTI which can be tackled by effective health education of the community and effective training of peripheral health personnel.

AK Savitha, S Gopalakrishnan (2018) has conducted a study on Acute respiratory infection (ARI) is an infection of the respiratory tract. It may interfere with normal breathing of the individual and is communicable in nature. There are several modifiable risk factors that predispose younger age group of children to ARI. The risk factors that contribute to occurrence of ARI among 6 to 12 years children. This community based cross sectional study was carried out among 380 rural under five children in Kancheepuram district, by systematic random sampling method. A pretested structured questionnaire was used for data collection that was analyzed usingSPSS software version 16. The analytical statistics such as Chi – square test, Odds Ratio, and Confidence Interval were used to determine the association of ARI with its determinants. In this study, the prevalence of ARI among 6 to 12 years children was 41.6%.The prevalence of ARI was predominant among boys (50.6%) and those residing in semi pucca and kutcha type of house (50.3%) with poor ventilation (61.3%), history of parental smoking (57%), respiratory infection among family members (51.1%) children who did not cry immediately after birth because of any complication (60.9%), and malnourished children (66.4%). These factors contributed to increased prevalence of ARI with a statistically significant association with a P value < 0.05. Conclusion: The high prevalence of ARI in this study was contributed by multiple factors. The primary care physician can play a vital role to create awareness on hazards because of exposure to the various contributing factors by lifestyle modifications, good nutrition, and healthy and safe environment.

Xuting Jin (2021) has conducted a study on Upper respiratory infections (URIs) are among the most common diseases. However, the related burden has not been comprehensively evaluated. Thus, we designed the present study to describe the global and regional burden of URIs from 1990 to 2019. Methods: A secondary analysis was performed on the incidence, mortality, and disability-adjusted life years (DALYs) of URIs in different sex and age groups, from 21 geographic regions, 204 countries and territories, between 1990 and 2019, using the Global Burden of Diseases, Injuries, and Risk Factors

Study (GBD) 2019. Countries and territories werecategorized according to Socio-demographic Index (SDI) quintiles. • Globally, the incident cases of URIs reached 17·2 (95% uncertainty interval: 15·4 to 19·3) billion in2019, which accounted for 42·83% (40·01% to 45·77%) cases from all causes in the GBD 2019 study. The age-standardized incidence rate remained stable from 1990 to 2019, while significant decreases were found in the mortality and DALY rate. The highest age-standardized incidence rates from 1990 to 2019 and the highest age- standardized DALY rates after 2011 were observed in high SDI regions. Among allthe age groups, children under five years old suffered from the highest incidence and DALY rates, both of which were decreased with increasing age. Fatal consequences ofURIs occurred mostly in the elderly and children 6 to2 years old. Interpretation: The present study provided comprehensive estimates of URIs burden for the first time. Our findings, highlighting the substantial incidence and considerable DALYs due to URIs, are expected to attract more attention to URIs and provide future explorations in the prevention and treatment with epidemiological evidence.

DiengAssane (2018) has conducted a study on Acute respiratory infections (ARIs) arethe leading cause of infectious disease–related morbidity, hospitalization, and morbidity among children worldwide. The viral and bacterial causes of ARI morbidity and mortality in children 6 to 12 years in Senegal. Nasopharyngeal samples were collected from children 6 to 12 years who had ARI. Viruses and bacteria were identified using multiplex real-time reverse transcription-polymerase chain reaction and conventional biochemical techniques, respectively. Adenovirus was the mostprevalent virus (50%; n = 81), followed by influenza virus (45.68%, n = 74), rhinovirus (40.12%; n = 65), enterovirus (25.31%; n = 41), and respiratory syncytial

virus (16.05%; n = 26), whereas Streptococcus pneumoniae (17%; n = 29), Moraxella catarrhalis (15.43%; n = 25), and Haemophilusinfluenzae (8.02%; n = 13) were the most commonly isolated bacteria. Virus pathogens seem more likely to be more prevalent in our settings and were often associated with bacteria and S. pneumoniae (6%; 16) coinfection.

SECTION C: STUDIES RELATED TO BALLOON THERAPY AMONG CHILDREN WITH ACUTE RESPIRATORY TRACT INFECTION

Seada has sen (2020) has conducted a study on Acute respiratory infection (ARI) leads to morbidity and mortality among 6 to 12 years in developing countries, especially in rural settings. ARI ranks among the top 10 diseases in under-five children in Legambo District, South Wollo Zone, Ethiopia. The evaluate determinant factors for ARI in Legambo District in 2019. A community-based matched case– control study was conducted, involving 139 cases and 278 controls under 5 years of age, from mid-January to mid-February 2019. Data were collected using a structured questionnaire. Bivariate and multivariable conditional logistic regression analyses were performed. From the multivariable

conditional logistic regression analysis, variables with a significance level of $p < 0.05$ were taken as significantly associated with ARI among under-five children. ARI among children 6 to 12 years of age was significantly associated with age of the mother/ caregiver being 35 years, occupation of mother/caregiver being housewife, the family being of medium wealth status, the type of stove used in the house, carrying the child while preparing food, absence of windows in the house, and nutritional status of the child. The occurrence of ARI couldbe reduced by improving economic status, stove use, and nutrition of children, and by increasing community awareness regarding indoor air pollution and ventilation.

Elizabeth Kwiyolecha (2020) has conducted a study on Upper-respiratory tract infections (URTI) are the leading causes of childhood morbidities. This study investigated etiologies and patterns of URTI among children in Mwanza, Tanzania. A cross-sectional study involving 339 children was conducted between October-2017 and February-2018. Children with features suggestive of URTI such as nasal congestion, dry cough, painful swallowing and nasal discharge with/without fever were enrolled. Pathogens were detected from nasopharyngeal and ear-swabs by multiplex-PCR and culture respectively. Full blood count and C-reactive protein analysis were also done. The median age was 6 years (IQR: 8–34) Majority (82.3%) had fever and nasal-congestion (65.5%). Rhinitis (55.9%) was the commonest diagnosis followed by pharyngitis (19.5%). Viruses were isolated in 46% of children, the commonest being Rhinoviruses (23.9%). Nineteen percent of children had more than 2 viruses; Rhinovirus and Enterovirus being the commonest combination. The commonest bacteria isolated from ears were Staphylococcus aureus and Pseudomonas aeruginosa. Children with viral pathogens had significantly right shift of lymphocytes (73%—sensitivity). Majority (257/339) of children were symptoms free on eighth day. Viruses are the commonest cause of URTI with Rhinitis being the common diagnosis. Rapid diagnostic assays for URTI pathogens are urgently needed in low-income countries to reduce unnecessary antibiotic prescriptions which is associated with antibiotic resistance.

ZewuduAndualem (2020) has conducted a study on Acute respiratory infections area serious public health concern across the globe, they are, however, prominentlypresent in Sub-Saharan Africa. In Ethiopia, different primary studies were conducted in regard to the link between household biomass fuel use and acute respiratory infections among under-five children. However, there is no national study on the association between household biomass fuel use and acute respiratory infections among under-five children. Thus, the aim of this systematic review and meta-analysis to estimate the pooled prevalence of acute respiratory infections and its predictors among under-five children in Ethiopia. The systematic review was reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guideline. PubMed/Medline, Cochrane library, Google Scholar, Web of Science, and Scopus were searched to access potentially relevant articles conducted in Ethiopia about acute respiratory infections among 6 to 12 years children. Stata/SE

14.00 statistical software was used for analysis and the pooled prevalence with 95% confidence interval (CI) were presented using tables and forest plots. To assess the heterogeneity among studies, I square (I2) tests were used. Publication bias was checked by Begg's and Egger's regression test. The random effects meta-analysis model was employed to estimate the pooled prevalence and predictors of under-five acute respiratory infections A total of 7 studies with 8,529 study participants were included in this meta-analysis. The pooled prevalence of acute respiratory infection was 17.75% (95% CI: 16.95, 18.55). Child holding during cooking (OR: 2.84, 95%CI: 1.48, 5.47) and using unclean sources of energy for cooking (OR: 0.38, 95% CI: 0.21, 0.70) were identified predictors of 6 to 12 years children acute respiratory infection. In the current study, the pooled prevalence of acute respiratory infection among under-five children was relatively high. Child holding during cooking and using unclean sources of energy for cooking were significantly associated with acute respiratory infections. Therefore, the policies and regulations enacted should address the barriers that impede the development of clean and efficient energy sources.

Dirce M.G. Duarte (2000) has conducted a study on The main aim of the study wasto describe the clinical and epidemiological profile of acute respiratory infections (ARI) in children 6 to 12 years old, of both sexes, diagnosed at the UniversityHospital Júlio Müller. Methods: this is a descriptive and cross sectional study. A standard questionnaire was answered by the children's parents, during the period of October/1996 to February/1997. The cases were classified according to the Health Ministry criteria in Upper Airway Infection (UAI) or Acute Lower Respiratory Infection (ALRI). The following data were analyzed: signs and symptoms, clinical diagnosis, socioeconomic variables, nutritional appraisal and passive smoking. The data were analyzed with EPI-Info 6.02b program. The $\chi 2$ test was used with confidence interval of 95% (α = 5%). The result of the main study the ARI prevalence in children under five years was 25.6%. From the total number of 491 children, 76.4%(n=375) had UAI and 23.6% (n=116) ALRI. The most frequent diagnosis was nasopharyngitis. The most frequent respiratory symptoms were nasal discharge (82.1%) and cough (80.4%). Around 6.1% of the total number of the cases were due to pneumonia (77.7% of the cases involving hospitalization). There were no associations of ARI with children s nutritional status, family income or passive smoking. There was statistical association between maternal educational status and ALRI ($\chi 2$= 16.57). The findings show that most of the children presented nasopharyngitis (UAI), being most of them male. Pneumonia (ALRI) was the main cause of hospitalization. The most common symptoms were nasal discharge and cough. Besides, the most important risk factor associated was the mother's educational status.

Anders Koc (2001) has conducted a study on Context Hospital-based studies have found that increased susceptibility to certain infections is associated with low serum levels of mannose-binding lectin (MBL) due to MBL variant alleles. However, the contribution of MBL insufficiency to incidence of common childhood infections at a population level is unknown. To investigate the effect of MBL insufficiency

on riskfor acute respiratory tract infection (ARI) in unselected children 6 to 12 years. Design and Setting Population-based, prospective, cohort study conducted in Sisimiut, Greenland. Participants Two hundred fifty-two children younger than 2 years who were followed up weekly between August 1996 and August 1998 for morbiditysurveillance. Main Outcome Measure Risk of ARI, based on medical history and clinical examination, compared by MBL genotype, determined from blood samples based on presence of structural and promoter alleles. Results A 2.08-fold (95% confidence interval [CI], 1.41-3.06) increased relative risk (RR) of ARI was found in MBL-insufficient children (n = 13) compared with MBL-sufficient children (n = 239; P<.001). The risk association was largely restricted to children aged 6 to 12 years (RR, 2.92; 95% CI, 1.78-4.79) while less effect (RR, 1.47; 95% CI, 0.45-4.82) and no

effect (RR, 1.00; 95% CI, 0.42-2.37) was shown among children aged 6 to 12years, respectively.These data suggest that genetic factors such as MBL insufficiency play animportant role in host defense, particularly during the vulnerable period of childhood from age 6 through 17 months, when the adaptive immune system is immature.

Jothieswari Dhamotharan (2020) has conducted a study on Acute Respiratory Tract Infections (ARTIs) are one of the most commonly occurring diseases. Importantly, ARTIs are the most prevalent disease among children, especially for 6 to 12 year old children. ARTIs are often related to genetic factors, lower immune functioning, vitamin and mineral deficiencies, improper feeding and nursing, residential environment and other variables. This research aimed to provide scientific insight intoways to address and improve health related quality of life in children with ARTIs and their caregivers. To observe the quality of life with acute respiratory infection and to minimize the acute respiratory infections. A prospective cross sectional study was conducted on 200 patients, majority of the subjects belongs to the age group of 0.3 to 4years on contrast, least number of subjects were observed between the ranges of 6 to

11 years. ARTIs found insignificant relationship between the social history and disease outcome. 18.5% of the subject parents found to be smokers. On a deeper analysis of smoking pattern and behavior among the parents, we found great impact of such attitude contributing to acute respiratory tract infection. Results of the study reveal that 81% of cases were reported in excellent score. Most of the parents were aware and they did not smoke near child. So this factor not involved effectively in child to get respiratory tract infection. We noticed partial correlation coefficient in case of parental smoking. This suggested us that parental smoking had very less impact on quality of life of patients with ARTIs.

SECTION D: STUDIES RELATED TO BALLOON THERAPY

SongulCinaroglu (2019) has conducted a study on acute respiratory tract infections (ARIs) are the most common diseases observed in children aged 6–12 years in Turkey. This study was conducted to

investigate ARIs in 6–12 year–old children in Turkey. Data of children aged 6–12 years who were included in the 2014 Turkey Health Survey conducted by the Turkish Statistical Institute were collected from their parents. The result of the main study In total, 1,293 and 1,732 children with and without URIs, respectively, were identified. The weighted point prevalence of URIs was 42.23%. Compared with the uninsured and female children belonging to high- income families, insured male children belonging to low-income families were more likely to develop URIs ($p < .001$). Moreover, comorbidities such as communicable diseases, anemia and diarrhea, and factors like health services utilization were associated with URIs. Analysis of health services utilization highlights that URIs were reported more among the children who had not visited a hospital than among those who had visited a hospital, with an odds ratio of 1.23. The results of this study providea deeper understanding of socio demographic, comorbid, and health services utilization factors associated with ARIs. These results provide useful insights for pediatric nursing professionals to improve the quality and efficiency of pediatric respiratory nursing services.

MdZakiul has san (2020) has conducted a study on Acute Respiratory Infections are the common and leading cause of morbidity and mortality in children 6 to 12years in human throughout the world. Particularly, it is affecting children under the age of five.The incidence and prevalence of ARI are a great burden in low and middle income countries in comparison to high income ARI. In context to Nepal, ARI is considered as number one killer disease. The study was to identify the prevalence and determinants of ARI among fewer than five children in Gorkha Municipality and its prevalence [1]. A cross-sectional analytical study was conducted with the total sample size of 200. The respondents were the mothers of the children 6 to 12 years in Gorkha municipality, Gorkha. Structured questionnaire were used for data collection, simple random sampling was carried out for selecting the respondents. From the study, the prevalence of ARI in children under age 6 to 12years was found to be 21.5%. The study found a significant association between prevalence of ARI and crowding ($p<0.05$), type of house ($p<0.05$), educational status of father ($p<0.05$) and presence ofmoisture and cold in room ($p<0.05$). However, no significant association was found between nutritional factor and ARI.

Mohammad RiashadMonjur(2020) has conducted a study on introduction Despite acute respiratory infections (ARIs) being the single largest reason for antibiotic use in under-5 children in Bangladesh, the prevalence of antibiotic use in the community for an ARI episode and factors associated with antibiotic use in this age group are unknown. Methods We analysed nationally representative, population-based, household survey data from the Bangladesh Demographic and Health Survey 2014 to determine the prevalence of antibiotic use in the community for ARI in 6 to 12years children. Using a causal graph and multivariable logistical regression, we then identified and determined the sociodemographic and antibiotic source factors significantly associated with the use of antibiotics for an episode of ARI. Results We analysed data for 2 144 children aged <5 years with symptoms of ARI

from 17 300 households. In our sample, 829 children (39%) received antibiotics for their ARI episode (95% CI 35.4% to 42.0%). Under-5 children from rural households were 60% (adjusted OR (aOR): 1.6; 95% CI 1.2 to 2.1) more likely to receive antibiotics compared with those from urban households, largely driven by prescriptions from unqualified or traditional practitioners. Private health facilities were 50% (aOR: 0.5; 95% CI 0.3 to 0.7) less likely to be sources of antibiotics compared with public health facilities and non-governmental organisations. Age of children, sex of children or household wealth had no impact on use of antibiotics. In this first nationally representative analysis of antibiotic use in under-5 children in Bangladesh, we found almost 40% of children received antibiotics for an ARI episode. The significantprevalence of antibiotic exposure in children supports the need for coordinated policy interventions and implementation of clinical practice guidelines at point of care to minimise the adverse effects attributed to antibiotic overuse.

Seng Hock Quak (2016) has conducted a study on Acute respiratory infections(ARIs) are important cause of mortality and morbidity in children under five indeveloping country. This observational study was conducted over two-year period in atertiary care teaching hospital of Eastern India. Nasal and throat swabs were collected,transported to the laboratory at 2–8°C in viral transport media, and then processed for detection of viruses using mono/multiplex real-time polymerase chain reaction. Results. A total of 300 children aged 6–12 years with ARIs were included. The most common age group affected with LRI was 6 years and with URI was >6 years.Viruses were detected in 248 cases. In URI, 77 were positive for single virus and 19 were positive for more than one virus; in LRI, 113 were positive for single virus and 12 were positive for more than one virus. The most common viruses isolated from URI cases were rhinovirus and adenovirus. The most common viruses isolated from LRI cases were respiratory syncytial virus and influenza virus. Most cases occurred in the months of January, December, and August. Viruses constitute a significant causeof ARI in children under five. RSV, ADV, RV, and IFV were the most prevalent viruses isolated.

Andrew Mitra (2011) has conducted a study on AURIs in children are one of the most common reasons for people seeking advice from general practitioners (GPs);

however, little is known about the natural history of AURIs in terms of the length and severity of symptoms, because the majority of illnesses are contracted at home. Method: After an initial pilot study to test the feasibility of parents recording symptoms in a diary based on the Canadian Acute Respiratory Illness and Flu Scale (CARIFS), a random selection of primary schools operating in the region was carried out in order to minimise selection bias. Meetings were arranged at the 20 schools to obtain written consent from parents and to give out diaries with a stamped addressed envelope. The diaries recorded daily symptom severity for one episode of AURI, and the data were analysed using SPSS programmes. Diaries were returned from 223 children, of whom 146 had had an AURI. The average age was eight years, and there were almost equal numbers of boys and girls. The most frequent

symptoms were runny nose, cough, feeling unwell and sore throat. There was a bip has ic distribution with systemic symptoms in the first three days characterised by fever, poor sleep, irritability, not playing and headache. By day four, symptoms localising the infection to the upper respiratory tract appeared with runny nose, cough, sore throat and poor appetite; these continued into the second and occasionally third week. Most symptomslasted for 5–11 days, with a median length for all symptoms of seven days. Symptomsdefined by parents tended to be scored less for severity than symptoms defined by children.

Asuman Demirbuğa (2020) has conducted a study on We aimed to determine the frequency of viral pathogen and clinical characteristics of patients hospitalized in the pediatric intensive care unit with the diagnosis of acute Acute respiratory tract infection. Eighty patients with laboratory-confirmed viral infections among children admitted to the pediatric intensive care unit (PICU) between November 2016 and September 2017 with a suspicion of viral infection were included. Diagnosis wasmade using a respiratory viral panel including adenovirus (AV), metapneumovirus (MV), parainfluenza virus (PIV) 1, PIV 2, PIV 3, PIV 4, influenza virus (IV) A and IVB, rhinovirus (RV), respiratory syncytial virus (RSV) A and RSV B, and multiplex polymerase chain reaction (PCR). Tracheal aspiration specimens were obtained from intubated patients and nasopharyngeal swab specimens were obtained from the remaining patients. A total of 514 children were admitted to our PICU. Of 123 patients with lower respiratory tract infection, specimens from a nasopharyngeal swab or tracheal aspiration were obtained and tested using a viral infection panel andmultiplex PCR. Mean age of the patients was 6.1 ± 3.6 months, 60% (n= 48) of the children were boys. Ninety-three positive results were obtained from 80 patients. The most common viral pathogens were RSV (A + B) (n= 36, 45%), RV (n= 26, 32.5%), PIV 1 (n= 7, 8.7%), AV (n=6, 7.5%), human MV (n= 5, 6.2%), IVA (n= 4, 5%), and
IVB (n= 4, 5%). The most common dual infection was RV and RSV B. Viral pathogen detection was the highest in december (n= 15) and february (n= 13). High- flow oxygen therapy was needed in 57.5% of patients, and 12.5% had non-invasive mechanical ventilation. Twenty-seven (33.7%).

Rajesh Kumar (2019) has conducted a study on Mortality and morbidity indicators represent the traditional measures of health status of community. These indicators continue to be used as the starting point in health status evaluation. The knowledge, attitude and practice of mothers play an important role in the reduction of morbidity inunder 5 children. Socio economic conditions have long been known to influence human health. To evaluate the health seeking behavior of mothers, regarding ARI in above 6 years children and to assess the knowledge, attitude and practices of mothers regarding ARI. It is a cross sectional study conducted from Nov 2008 to March 2009 at Civil Hospital Mithi of TharparkarDesert. 1000 mothers were selected by convenience sampling and interviews were conducted. Data was entered and analyzed on SPSS 10. The duration of illness was less than 2 days in 3% and more than 2 days in 97% of children. 11% children are less than 12 years age, 31% between 1 year and3 years age and 58% between the age of 3 to 5 years. 72% mothers had knowledge about

ARI and could recognize it but 28% had no knowledge about ARI. 56%mothers took ARI as a serious disease while 44% did not. 76% mothers said thatbreast feeding should be continued during illness, while 24% said routine feeding should not be continued during ARI. Knowledge of less educated mothers of children with ARI is low. Interventions like health education sessions, media campaign, lady health workers (LHW), banners and NGOs etc. are needed to improve situation.

Restu Windi (2021) has conducted a study on Acute respiratory infection (ARI) among children under five years has been identified as a risk factor for child morbidity, leading to child mortality in Indonesia. Many factors may cause ARI; however, determinants associated with ARI remain unclear in Indonesia. This study sought to analyze the determinants of ARI among children aged above 6 years in Indonesia. This study was cross-sectional and utilized secondary data from the 2017 Indonesian Demographic and Health Survey (IDHS). A total of 15,993 children above6 years were selected as respondents. Chi-squared test and binary logistic regression were used to examine the determinants of ARI among children under five years in Indonesia. Children aged 1 year [Odds Ratio (OR) = 1.43, 95% CI = 1.04–1.97], children aged 2 years [OR = 1.54, 95% CI = 1.12–2.11], mother's occupation [OR = 1.24, 95% CI = 1.01–2.154], poorest wealth index [OR = 1.91, 95% CI = 1.26–2.89],
poor [OR = 1.50, 95% CI = 1.01–2.21], region of residence: Western Indonesia [OR =1.96, 95% CI = 1.28–2.00], Middle of Indonesia [OR = 2.19, 95% CI = 1.44–3.33]
were significantly associated with ARI among children under five years in Indonesia. This study revealed that the determinants of ARI among children above 6 years in Indonesia remain related to the socio-demographic aspect. This research highlighted that the family's and the living area's wealth index remains essential in improving children's health outcomes.

CHAPTER III RESEARCH METHODOLOGY

Research methodology is a method to solve research problem systematicallythe method used structured a study, to gatherand analysed information in a systemic fashion

-Polit&Beck2011

This chapter deals with the methodology adopted for the study. It includes research approach, research design, variables,setting, population, sample, sample size, sample technique, criteria for data collection, description of the tool and plan for data analysis.

RESEARCH APPROACH:

Research approach and research design are the two terms that are frequently used interchangeably however research design is a broader plant to conduct study and research approach is an important element of a research design which governs it,

-Basavanthapa BT, 2009.

The research approach is most essential part of any research. In this study, **quantitative evaluative** approach was used to assess the effectiveness of balloon therapy among children with acute respiratory tract infection.

RESEARCH DESGIN

Research design is the plan, structure and strategy of investigations of answering the research question is the overall plan or blue print the researchers select to carry out their study, **(Basavanthappa.BT, 2019).**

The research design selected for the study was quasi experimental before and after control group design. The diagrammatic representation of the design is represented below.

TABLE 3.1 DIAGRAMMATIC PRESENTATION OF THE RESEARCHDESIGN

CONVENIENTLY SELECTED SAMPLES	PRETEST	INTERVENTION	POSTTEST
Experimental Group	O_1	X	O_3
Control Group	O_2	-	O_4

The symbols used were

O_1 – Pre test score of the level of respiratory parameters in experimental group.O_2 – Pre test score of the level of respiratory parameters in control group.

X – Balloon therapy

O_3 – Post test score of the level of respiratory parameters in experimental group.O_4 – Post test score of the level of respiratory parameters in control group.

SETTING OF THE STUDY

Location for conducting research: can be natural, partially controlled, or highly controlled.

-SharmaK.S,2011

The study was conducted for experimental group in Dhanalakshmi Srinivasan Medical College and hospital. Perambalur, which is situated away 8 kms away from college. Hospital has 1000 bedded with

5 floors. Pediatrics ward at third floor with 60 beds. The hospital has well equipped Paediatric Intensive Care Unit, monthly outpatient census around 500 children and inpatient census around 50 children. Forty to fifty children were admitted with acute respiratory tract infection per month.

VARIABLES

Qualities, properties, or characteristics of the person, things, or situation thatchanges or vary and are manipulated or measured in research.

-Sharma K.S, (2015)

Independent variables

Variable that are purposely manipulated or changed by the researcher, alsocalled manipulated variables,

-Sharma K.S, (2011)

In this study balloon therapy was the independent variable.

Dependent variable

Dependent variables that change as the independent variables are manipulateby the researcher. Sometimes called the criterion variables,

-Sharma K.S, (2011)

In this study respiratory parameters was the dependent variable.

POPULATION

All elements (people, objects, events, or substances) that meet the samplecriteria for inclusion in a study, sometimes refer to as a target population,

- **Sharma K.S, (2011)**

The population included for this study was children with Acute respiratory tractinfection.

SAMPLE

A subset of a population, selected to participate in a study.

-Polit& Beck,2011.

The Sample selected were selected from who are all children‘s admitted due to Acute Respiratory Infection Tract at Dhanalakshmi Srinivasan Medical College and Hospital, Perambalur.

SAMPLE SIZE

Sample is normally decided by nature of the study, nature of population, type of sampling technique, tool variables, statistical test adopted for data analysis sensitivity of measures,

-Polit& Beck,2011.

Sampling were totally 30 children with Acute Respiratory Tract Infection, 15 samples were split for Experimental Group and 15 samples were taken for Control group.

SAMPLING TECHNIQUE

The sample technique is defined as ―the process of selecting a portion of the population to represent to the entire population.

-Denise F Polit, 2011.

For this study school age children‘s who are all having acute respiratory tract infection in the age of 6 to 12 years was selected in a convenience sampling techniques.

Convenient sampling technique define most commonly fast, inexpensive, easy and subjects are readily available,

-Suresh K. Sharma, 2018.

CRITERIA FOR SAMPLE SELECTION

Inclusion Criteria

Children who were,

- aged 6-12 years.
- understand and speak Tamil.
- able to do balloon therapy.
- willing to participate.

Exclusion Criteria

Children who were,

- critically ill.
- not willing to study.
- affect foreign body aspiration
- poisoning, chemical pneumonitis
- error of Metabolism

DEVELOPMENT OF THE TOOL

The instrument selected in a research must be the vehicle that obtained bestdata for conclusion of the study,

-Treeca and Treeca, 1996.

The modified pediatric respiratory severity score scale selected in the researchmust be obtained best data for drawing conclusions of the study.

DESCRIPTION OF THE TOOL

Tool/Instrument is the device used to collect data,

-Polit& Beck,2011.

The tool has two sections,

SECTION A (Demographic Variables)

It consists of demographic variables of subjects which include Age, Gender, Type of family, Order of birth, Residence, Frequency of respiratory infection in last year.

SECTION B

Modified paediatric Respiratory severity score scale can be used to assess the respiratory parameters which consists of assessment of cough, nutrition, fever, rhinorrhoea, dyspnoea, respiration rate, heart rate, oxygen saturation, respiratory sound, secretions.

TABLE 3.2 SCORING PROCEDURES FOR MODIFIED PEDIATRIC RESPIRATORY SEVERITY SCORE SCALE

LEVEL OF RESPIRATORY FUNCTION	ACTUAL SCORE
POOR	30
AVERAGE	17-23
GOOD	10 - 16

Based on percentage of scores level of respiratory function was gradedinto 3 categories i.e. poor, average and Good. The minimum score is 10 to 16and maximum score is 30.

VALIDITY

Validity refers o the degree to which an instrument pressures what it is support to be measuring,

-Polit&Hungler,2011.

The content validity of the demographic variables, and modified clinical respiratory score was validated in consultation with guide and field of exports. The experts were paediatric nursing personnel, pediatrician, pulmonologist, physiotherapist, and statistician. Their opinion and valuable suggestions were incorporated in the tool and it was finalized by the guide.

RELIABILITY

In quantitative research, the stability of a measuring instrument over time.

-Polit& Beck,2011.

The reliability of the tool was tested by implementing the tool on 6-12years school age children at Dhanalakshmi Srinivasan Medical College and Hospital, Perambalur. Which is other than sample area.

PILOT STUDY

A pilot study is the process of carrying out a preliminary study, going through
the entire research procedure with a small sample,

-Bhaskara Raj. ED., 2010

The pilot study was conducted in Arputha Medical Care Hospital at Perambalurfor a period of 7 days. The researcher has obtained permission from the institution andfrom the participants prior to the study. The purpose of the study was explained to the subjects. The participants who fulfilled the inclusion criteria were selected. The convenience sampling technique was used to select 2 samples for study group and 2 samples for control group. Demographic variables and pre-test were conducted on the first day for both study and control group. In study group, the intervention of balloon therapy was taught to the child and made them to do the exercises daily for 20 minutesin the morning, afternoon and evening for 3 consecutive days. In control group, the existing hospital routine was practiced. On 3rd day post-test was done to assess respiratory signs measured by observational checklist Analysis of the data was done by using descriptive and inferential statistics. The tool was found feasible and practicable. No changes were made inthe tool and the researcher proceeded with the main study conducted.

DATA COLLECTION PROCEDURE

Data collection is the gathering of information needed to address the research problem. The word ―data‖ means information that is systematically collected in the course of a study.

-Polit and Hungler, (2001)

The study was conducted to school age children were selected by convenient sample technique at Dhanalakshmi Srinivasan Medical College and Hospital, Perambalur.

Ethical consideration

Prior to the collection of data, permission was obtained was obtained from the Dean of Dhanalakshmi Srinivasan Medical College and Hospital, Perambalur. Informed oral consent was obtained from the mothers of school age children.

Period of data collection

The data was collected two weeks. The investigator collected the data from both the experimental group and control group.

Pre-test

School age children were divided into 2 groups as experimental group and control group. The demographic data were collected from the school age children in the experimental and control group. Respiratory function levels was checked for bothgroup and recorded the values.

Intervention

Immediately after pre-test, level of respiratory function assessed among the school age children with acute respiratory infection duration in the 10 minutes, 3 timesper day for 5 days.

Post test

After 30 days of intervention the post test was conducted by using respiratory score for both experimental and control group.

PLAN FOR DATA ANALYSIS

Level of respiratory parameters among school age children before and after balloon therapy technique by using frequency percentage.

Ratio between the effectiveness of balloon therapy technique on acute respiratory infection among

school children was analysed by using **mean, standard deviation, mean percentage, paired „t" test.**

Association between the post test scores of respiratory function among school age children with acute respiratory tract infection and their selected demographic variables was analysed by using **chi-square test**.

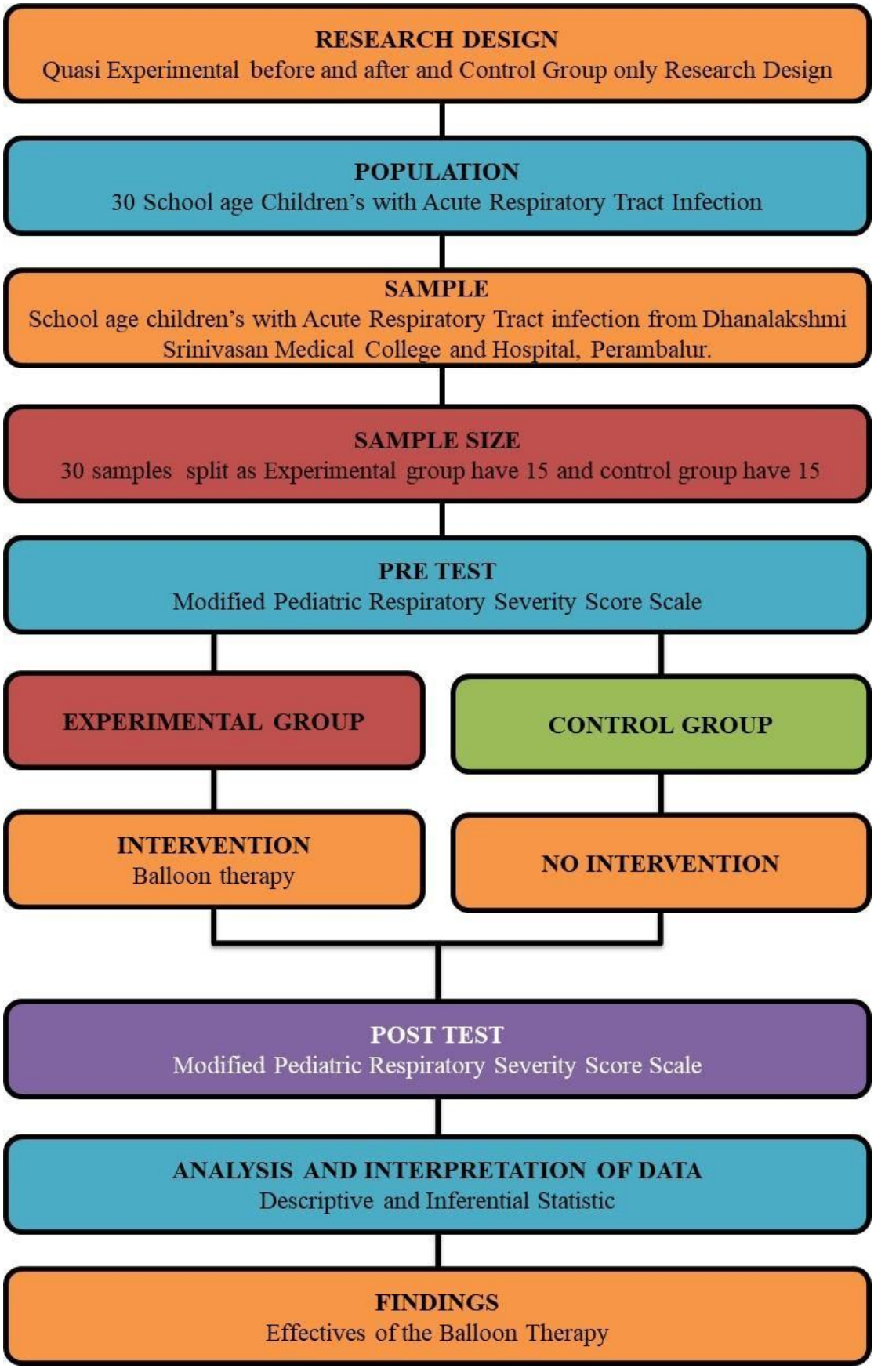

FIGURE 3.1 SCHEMATIC REPRESENTATIONS

CHAPTER IV ANALYSIS AND INTERPRETATION

Analysis and interpretation of the data is the most important phase of the research process, which involves computation of the certain measures along with searching for pattern of relationship that exists among data groups. It includes compilation, editing, coding, classification and presentation of data. The main purposes of analysis of data are to make the raw data meaningful, to estimate parameters of collected data, to test the hypothesis, to test the statistical significanceof the data, to draw inferences and make the generalization, **(Suresh K Sharma, 2014)**

This chapter deals with the analysis and interpretation of the collected data from school age children's from Dhanalakshmi Srinivasan Medical College and Hospital, Perambalur to evaluate the effectiveness of Balloon therapy among school age children's with Acute Respiratory Tract Infection.

The findings of the study are presented in four sections and are as follows:

SECTION A: Distribution of demographic variables of school age children with Acute Respiratory Tract Infection.

✓ Frequency & percentage distribution of demographic variables of school agechildren with Acute Respiratory Tract Infection.

SECTION B: Assess the level of school age children with Acute RespiratoryTract Infection in experimental group

✓ Frequency and percentage distribution of pre test & post test scores of schoolage children with Acute Respiratory Tract Infection in experimental group.

SECTION C: Evaluate the effectiveness of school age children with Acute Respiratory Tract Infection, in Experimental group.

✓ Frequency of Paired 't' test value of Balloon therapy among school age children with Acute Respiratory Tract Infection in Experimental and Control group.

✓ Frequency of Unpaired 't' test value of Balloon therapy among school age children with Acute Respiratory Tract Infection in Experimental and Control group.

✓ Frequency of Comparison of mean, SD and mean percentage of Balloon therapy among school age children's with Acute Respiratory Tract Infection

SECTION D: Find out the association between the post tests levels of school age children with Acute Respiratory Tract Infection with their demographic variables in experimental group.

✓ Frequency of Chi square between Experimental group post test scores of children with Acute Respiratory Tract Infection demographic variables in experimental group

✓ Frequency of Chi square between Experimental group post test scores of schoolage children with

Acute Respiratory Tract Infection demographic variables in control group.

Towards the attainment of the above objectives, the raw data were collectedand they were presented in tabular and graphical form for statistical analysis insubsequent pages.

SECTION A: DISTRIBUTION OF DEMOGRAPHIC VARIABLES OF SCHOOL AGE CHILDREN WITH ACUTE RESPIRATORY TRACT INFECTION.

Table 4.1 Frequency & percentage distribution of demographic variables of children with Acute Respiratory Tract Infection.

$n_1 = 15$, $n_2 = 15$

Sl.No	Demographic Details	Frequency (n)	Percentage %	Frequency(n)	Percentage %
1	**Age**				
	a) 6 to 8yrs	8	53	10	67
	b) 8.1 to 10yrs	3	20	1	7
	c) 10.1 to 12yrs	4	27	4	27
2	**Gender**				
	a) Male	4	27	6	40
	b) Female	11	73	9	60
3	**Type of family**				
	a) Nuclear	6	40	4	27
	b) Joint	6	40	8	53
	c) Extended	1	7	1	7
	d) Single parent family	2	13	2	13
4	**Order of Birth**				
	a) First Child	4	27	6	40
	b) Second child	5	33	4	27
	c) Third Child	6	40	5	33
5	**Residence**				
	a) Urban	5	33	3	20
	b) Rural	8	53	11	73
	c) Semi Urban	2	13	1	7
6	**Frequency of Respiratory infection in past years**				
	a) No Infection	7	47	9	60
	b) 1 - 2 times	5	33	4	27
	c) 3 – 4 times	3	20	2	13
	d) Above 4 times	0	0	0	0

Table 4.1 reveals that the frequency and percentage distribution of demographic variables of children with Acute Respiratory Tract Infection.

Regarding Age, in experimental group, majority of school age children were 8 (53%) belongs to the age

of 6 to 8 years, 4 (27%) belongs to the age 10.1 to 12 years and 3 (20%) belongs to 8.1 to 10 years. In Control group, Majority of children 10 (67%) belongs to the age of 6 to 8 years, 4 (27%) 10.1 to 12 years and 1 (7%) belongs to 8.1 to 10 years.

Regarding Gender, in experimental group, majority of school age children were11 (73%) belongs to the Gender of female, 4 (27%) belongs to the Gender Male. In Control group, Majority of children 9 (60%) belongs to the Gender of Female and 6 (40%)belongs to the Gender of male.

Regarding type of family, in experimental group, majority of school age children were 6 (40%) belongs to the type of family of Joint, 6 (40%) belongs to the type of familyNuclear, 2 (13%) belongs to Single parent family and 1 (7%) belongs to Extended type of family. In Control group, Majority of children 8 (53%) belongs to the type of family as Joint, 6 (40%) belongs to the type of family 4(27%), 2(13%) belongs to single parent family and 1 (7%) belongs to extended type of family.

Regarding Order of Birth, in experimental group, majority of school age children were 6 (40%) belongs to the Third children, 5 (33%) belongs to the Order of Birth SecondChild, 4 (27%) belongs to Third child. In Control group, majority of children were 6 (40%) belongs to the First child, 5 (33%) belongs to the Order of Birth Third Child, 4 (27%) belongs to Second child.

Regarding residence, in experimental group, majority of school age children were8 (53%) belongs to the rural locality, 5(33%) belongs to the Residence as Urban, 2 (13%) belongs to Semi urban. In Control group, majority of children were 11 (73%) belongs to the rural locality, 3 (20%) belongs to the Residence as Urban, 1 (7%) belongsto Semi Urban.

Regarding frequency of infection, in experimental group, majority of school age children were 7 (47%) belongs to the No prior infection history, 5 (33%) belongs to the 1 – 2 times infection history, and 3 (20%) belongs to 3 to 4 times prior infection history. In control group majority of children were 9 (60%) belongs to the No prioir infection history, 4 (27%) belongs to the 1 – 2 times infection history, and 2 (13%) belongs to 3 to4 times prior infection history.

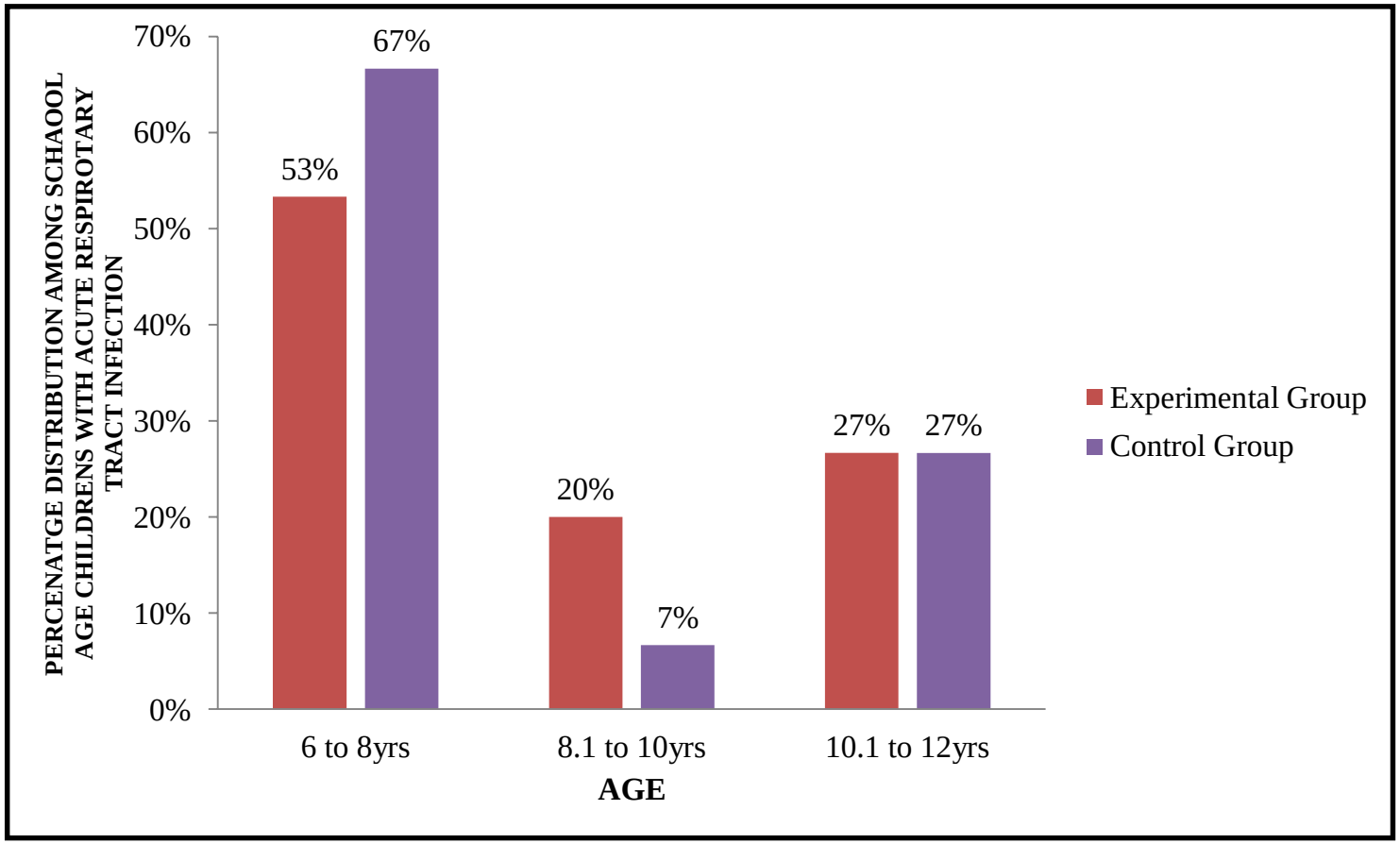

Figure 4.1 Bar Diagram shows the percentage distribution of Age among School age children with Acute Respiratory TractInfection

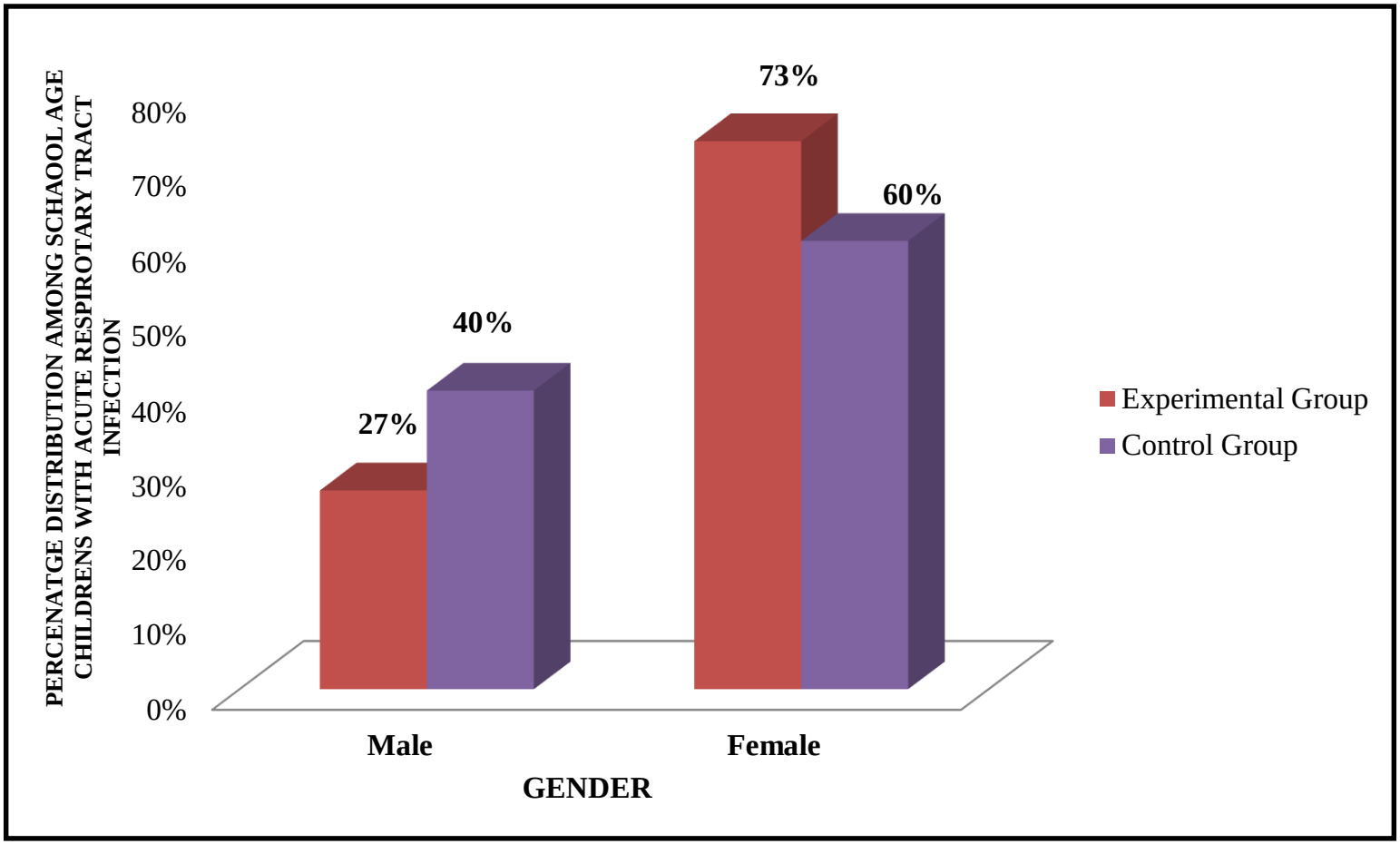

Figure 4.2 3D Clustered Diagram shows the percentage distribution of Gender among School age children with AcuteRespiratory Tract Infection

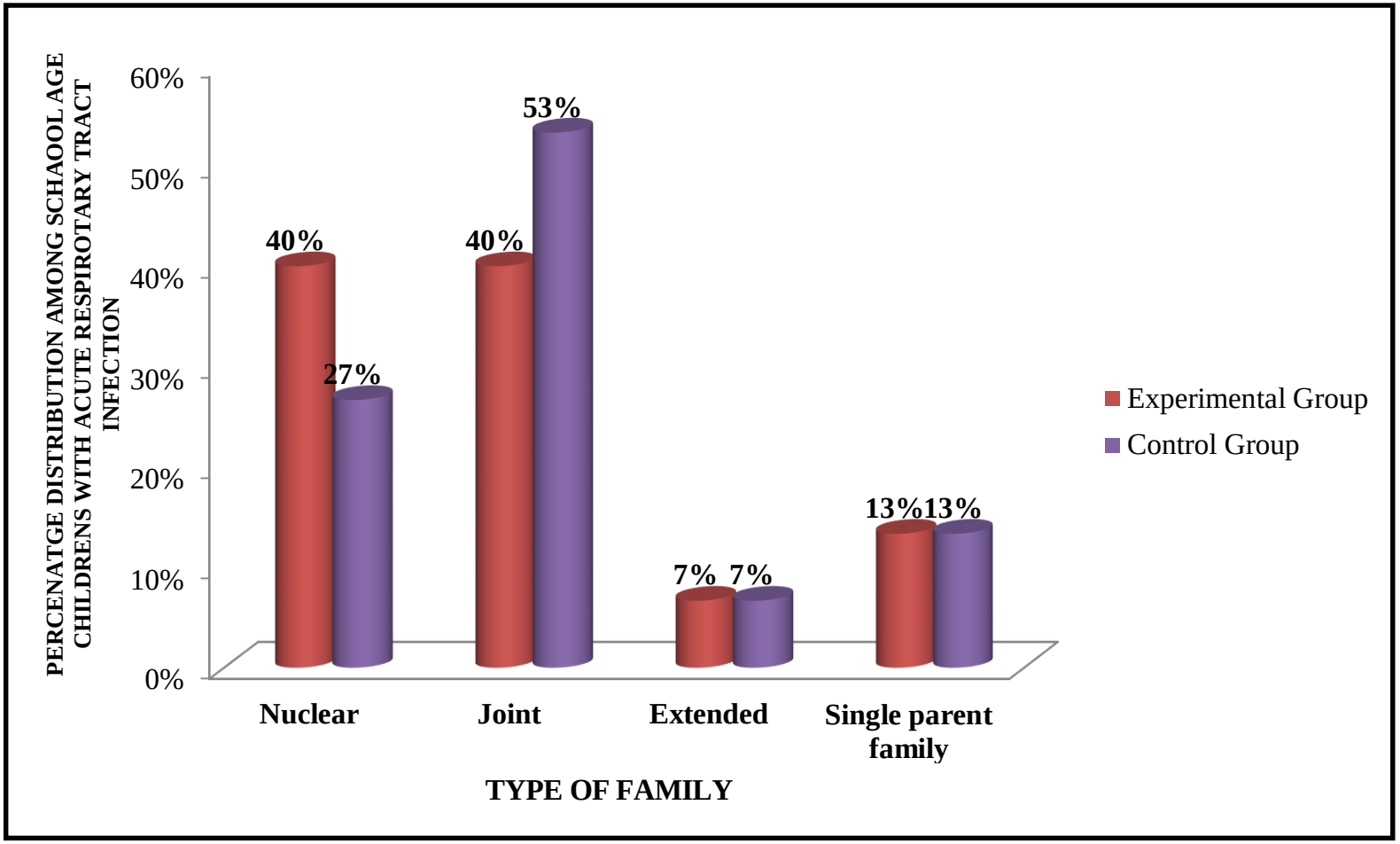

Figure 4.3 Cylindrical Diagram shows the percentage distribution of type of family among School age children with AcuteRespiratory Tract Infection

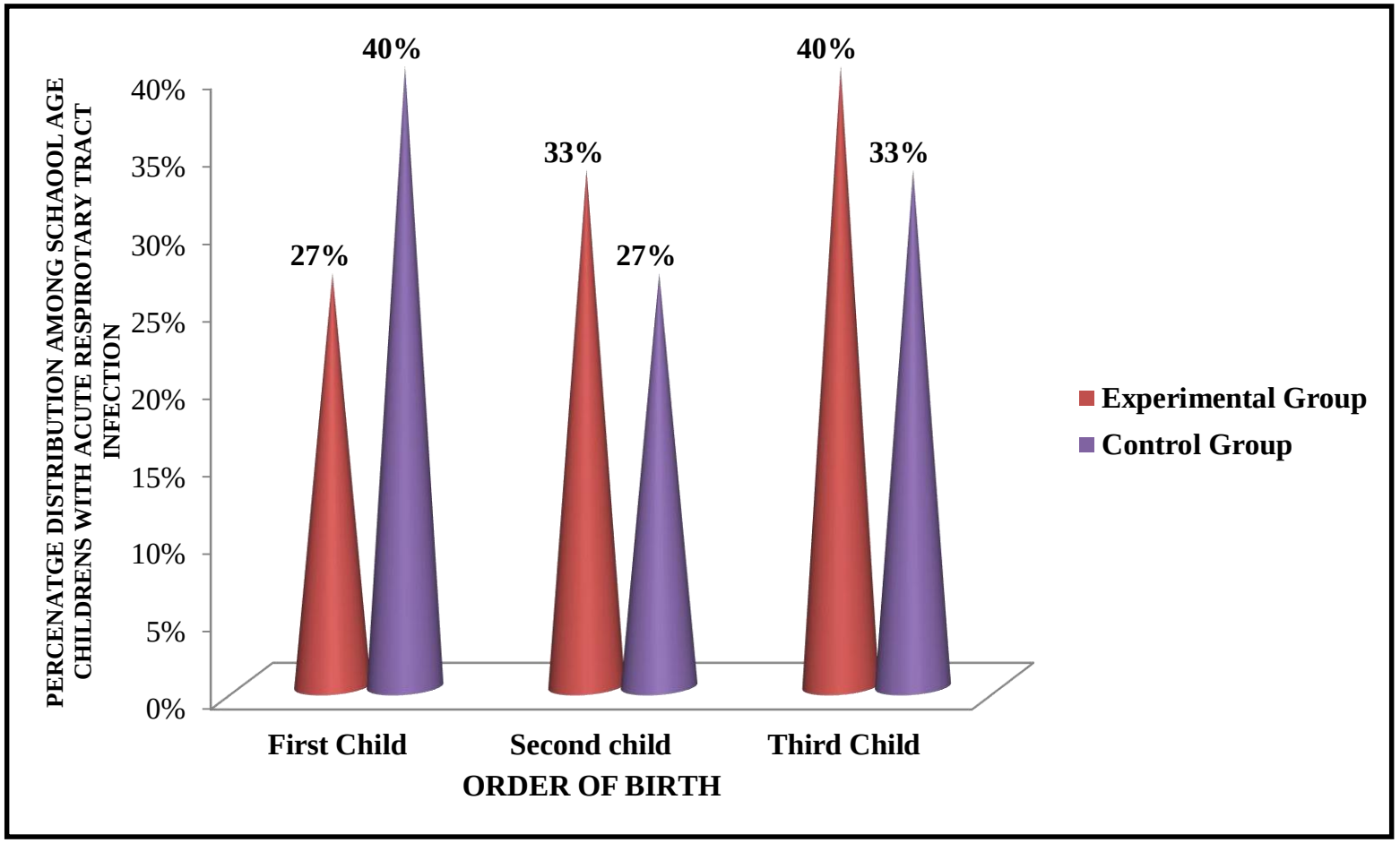

Figure 4.4 Conical Diagram shows the percentage distribution of order of birth among School age children with AcuteRespiratory Tract Infection

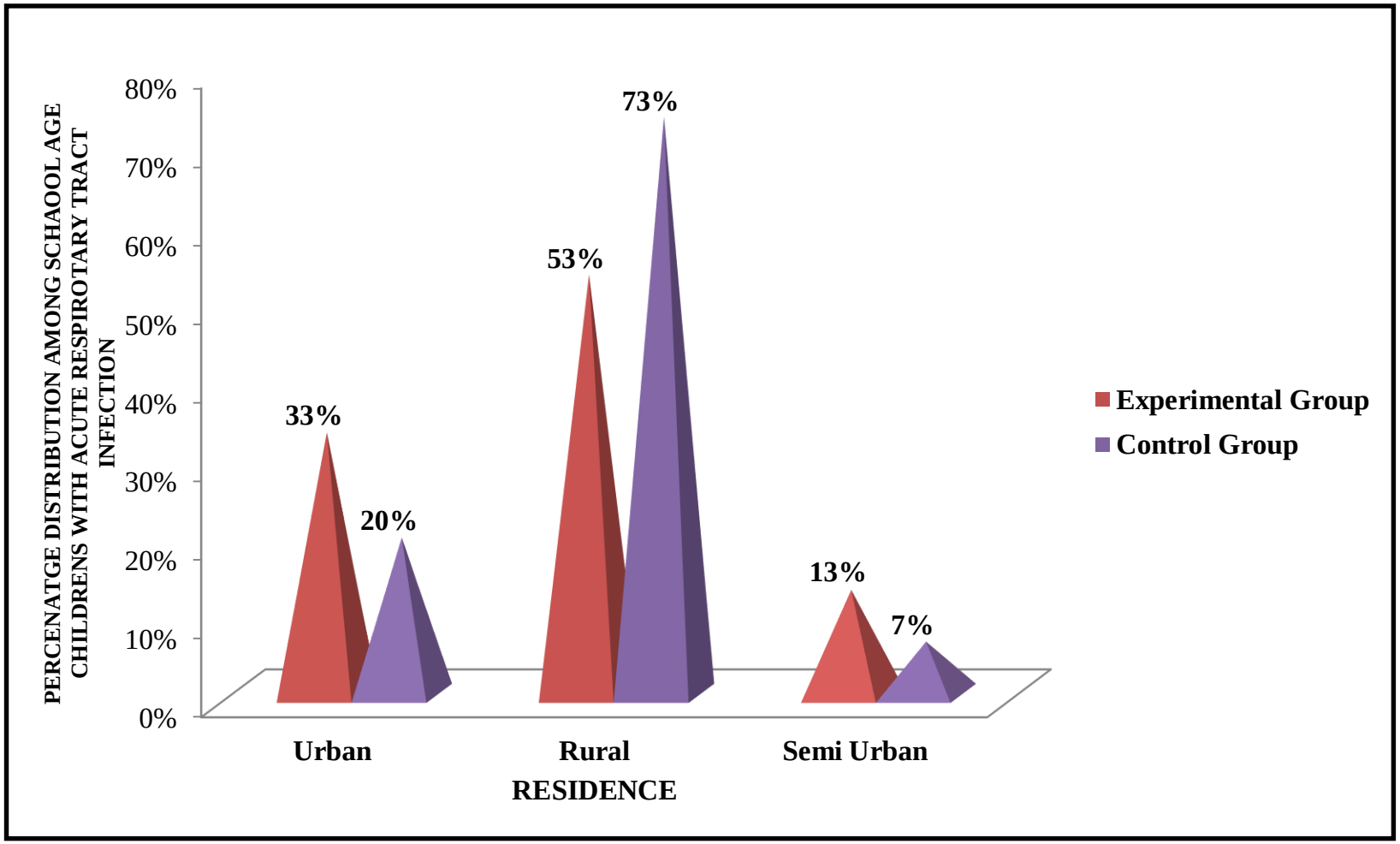

Figure 4.5 Pyramid Diagram shows the percentage distribution of residence among School age children with Acute RespiratoryTract Infection

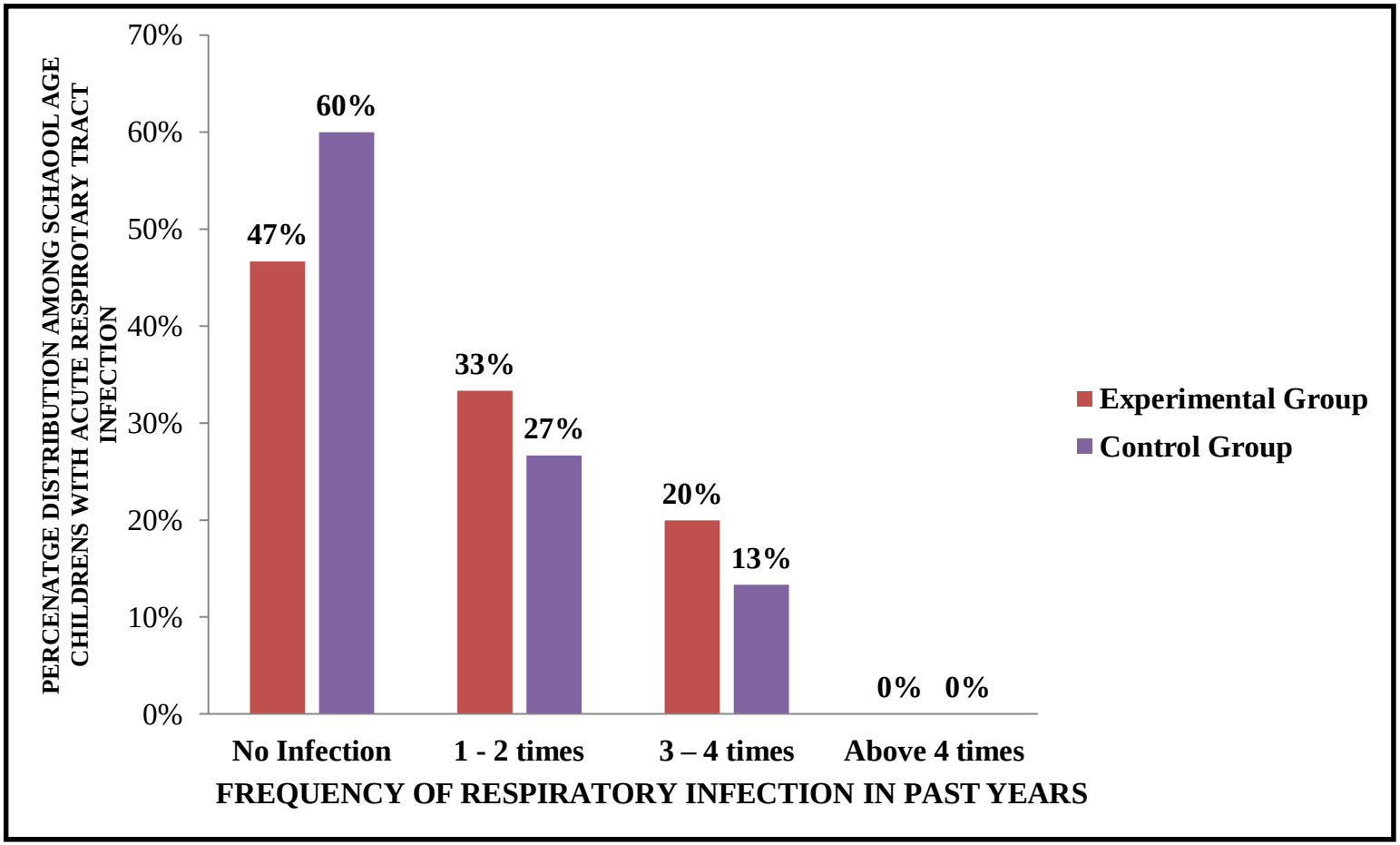

Figure 4.6 Bar Diagram shows the percentage distribution of frequency of Respiratory infection in past years among School agechildren with Acute Respiratory Tract Infection

SECTION B: ASSESS THE LEVEL OF CHILDREN WITH ACUTE RESPIRATORY TRACT INFECTION IN EXPERIMENTAL GROUP.

Table 4.2 Frequency and percentage distribution of pretest & posttest scores ofchildren with Acute Respiratory Tract Infection in experimental group.

(n_1=15, n_2=15)

S.No	Level of Balloon therapy	Experimental Group				Control Group			
		Pre test		Post test		Pre test		Post test	
		Frequency	%	Frequency	%	Frequency	%	Frequency	%
1	Poor	7	46	2	13	9	60	10	67
2	Average	5	33	8	53	4	27	3	20
3	Good	3	20	5	33	2	13	2	13

Table 4.2: shows the Experimental group, Frequency and percentage distribution of pre-test and post-test scores of Balloon therapy among the school age children's with Acute Respiratory Tract Infection, for experimental group in pre-test most 7 (46%) of them having poor level of Acute Respiratory Tract Infection, 5 (33%) of them having average level of Acute Respiratory Tract Infection and 3 (20%) of them having Good level of Acute Respiratory Tract Infection recover status. and there is improvement in the Balloon therapy on Acute Respiratory Tract Infection problems were the poorlevel was reduced to 2 (13%). Whereas in post-test majorities 8 (53%) of them have only average level of infection and 5 (33%) were having good level of improvement against Acute Respiratory Tract Infection. It seems that Balloon therapy among schoolage children with Acute Respiratory Tract Infection was effective.

For Control group, Frequency and percentage distribution of pre-test and post- test scores of Balloon therapy among the school age children's with Acute RespiratoryTract Infection, group in pre-test most 9 (60%) of them having Poor Acute Respiratory Tract Infection, 4 (27%) of them having Average level of Acute Respiratory Tract Infection, Good occurrence of Acute Respiratory Tract Infection with 2 (13%) . Whereas in post-test most 10 (67%) of them having Poor level on Acute Respiratory Tract Infection, 3 (20%) of them having Average level of Acute Respiratory Tract Infection, Good level of Acute Respiratory Tract Infection with 2 (13%). It seems that Balloon therapy among school age children with Acute Respiratory Tract Infection was not effective without intervention.

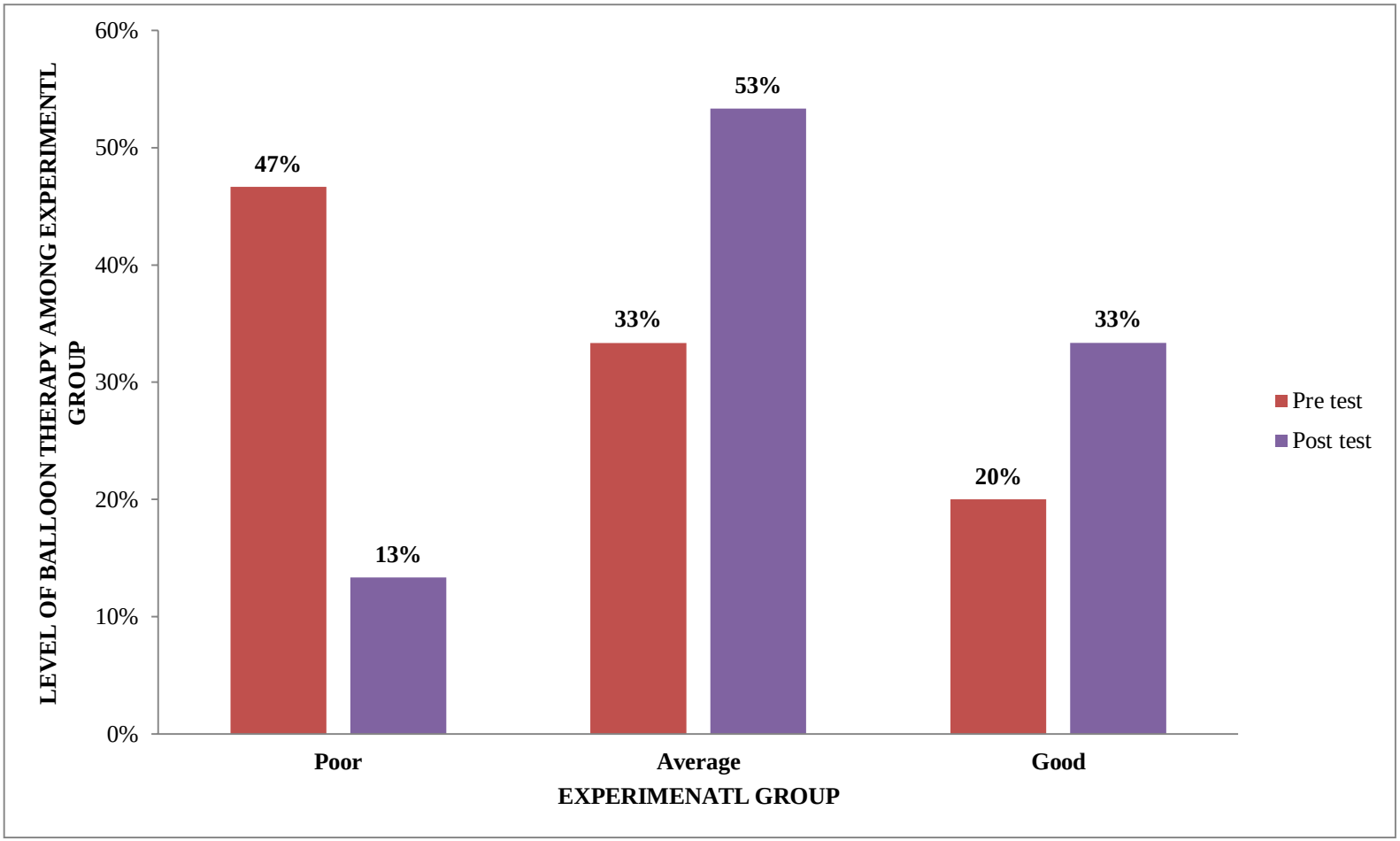

Figure 4.7 Bar diagram shows level of Balloon therapy among school age children's with Acute Respiratory Tract Infection inExperimental group

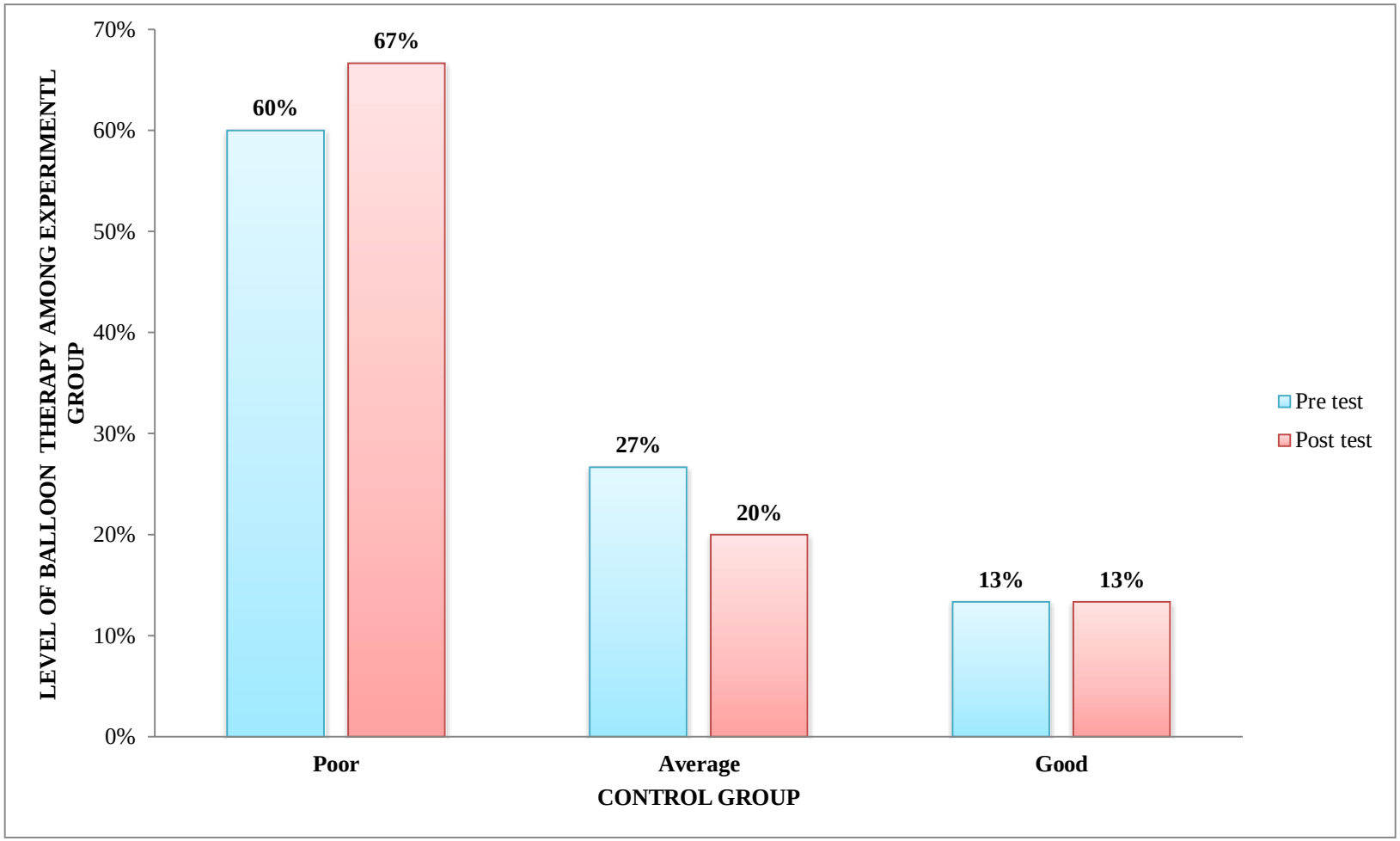

Figure 4.8 Bar diagram shows level of Balloon therapy among school age children's with Acute Respiratory Tract Infection inControl group

SECTION C: EVALUATE THE EFFECTIVENESS OF SCHOOL AGECHILDREN WITH ACUTE RESPIRATORY TRACT INFECTION, IN EXPERIMENTAL GROUP.

Table 4.3 Paired 't' test value of Balloon therapy among school age children withAcute Respiratory Tract Infection in Experimental and Control group.

Level of Balloontherapy	Paired 't' test value	Table Value	Level of Significant (p)
Experimental & Control Group	4.128	24.23	p<0.05

Table 4.3 show that, paired 't' test was calculated to analyse the show to effectiveness between pre and post test scores of Balloon therapy intervention among school age children with Acute Respiratory Tract Infection. The paired 't' test value was 4.2423 for experimental group. When compare to table value (24.23) it was high. This shows that there was a significant relationship between pre and post test scores of Balloon therapy intervention among school age children with Acute Respiratory Tract Infection. It seems that Balloon therapy among school age children with Acute Respiratory Tract Infection was effective.Table 4.4 Unpaired 't' test value of Balloon therapyamong school age children withAcute Respiratory Tract Infection in Experimental and Control group.

Level of Balloontherapy	Unpaired 't' test value	Table Value	Level of Significant (p)
Experimental & Control Group	3.281	18.95	p<0.05

Table 4.4 shows that unpaired 't' test was calculated to analyse the effectiveness between school age children with Acute Respiratory Tract Infection pre and post test scores on level Balloon therapy among both groups. It seems that there was a significant effectiveness of Balloon therapy among school age children with Acute Respiratory Tract Infection.

Table 4.5 Comparison of mean, SD and mean percentage of Balloon therapy amongschool age childrens with Acute Respiratory Tract Infection

Sl.No	Level of Balloon therapy	EXPERIMENTAL GROUP			CONTROL GROUP		
		Mean	SD	Mean Difference	Mean	SD	Mean Difference
1	**Pre Test**	5.24	1.624	4	4.92	1.131	2
2	**Post Test**	9.36	5.92		5.92	1.26	

Table 4.5 shows the comparison of mean, SD and mean percentage of school age children with Acute Respiratory Tract Infection pre-test and post-test Scores of Balloon therapy that, in experimental group, pre-test mean score was (5.24 ± 1.624), which is 4%, whereas in post-test the mean scores (9.36 ± 5.92), which is 2%,showing a difference of 1.75%. In control group, pre-test the mean scores was (4.92 ± 1.131), which is 5%, whereas in post-test the mean scores was (5.92 + 1.26), which is 2%, showing a difference of 3%. It seems that the Balloon therapy among school age children's with Acute Respiratory Tract Infection was effective.

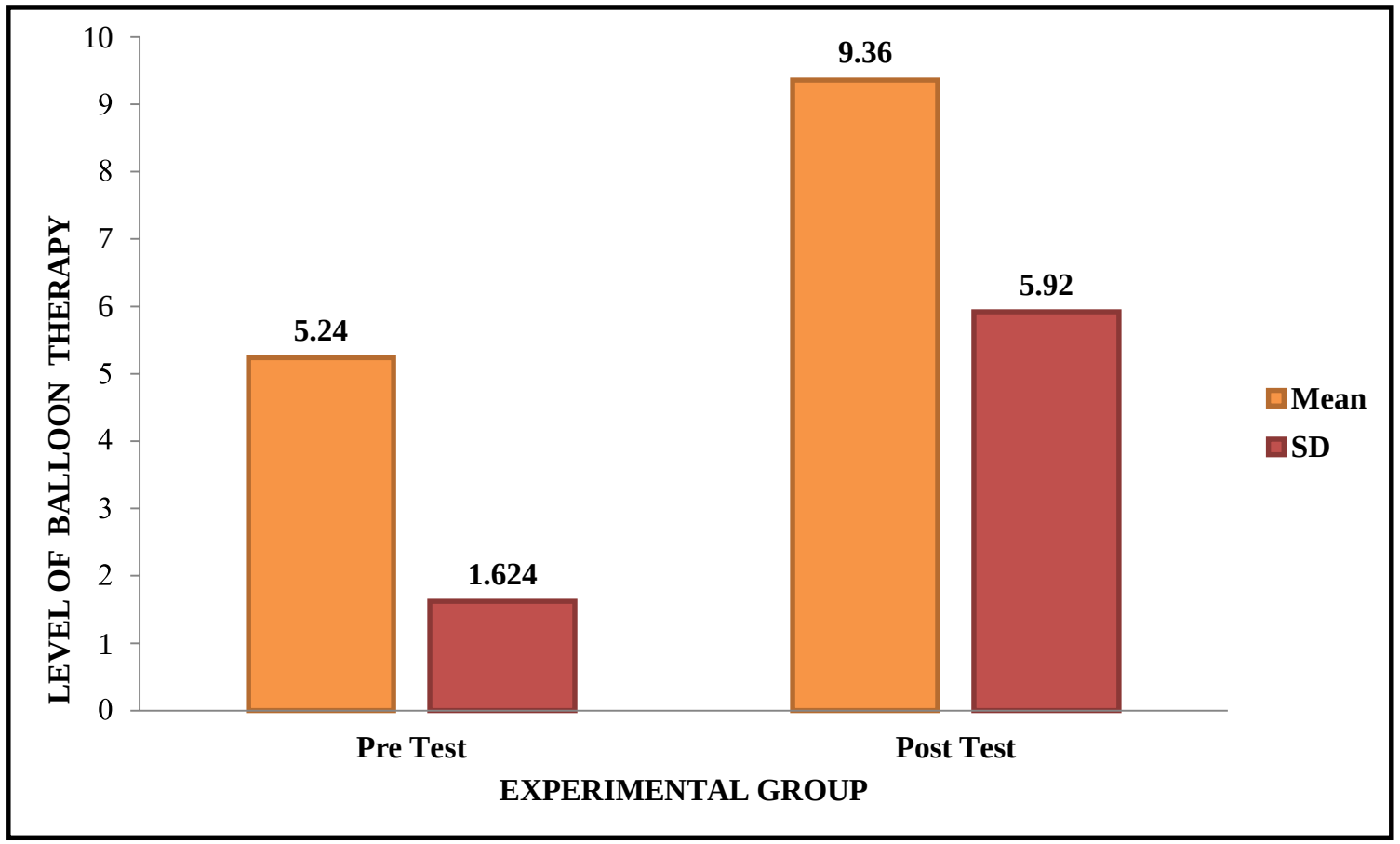

Figure 4.9: Comparison of mean, SD and mean percentage of Balloon therapy among school age childrens with Acute RespiratoryTract Infection in Experuimental Group

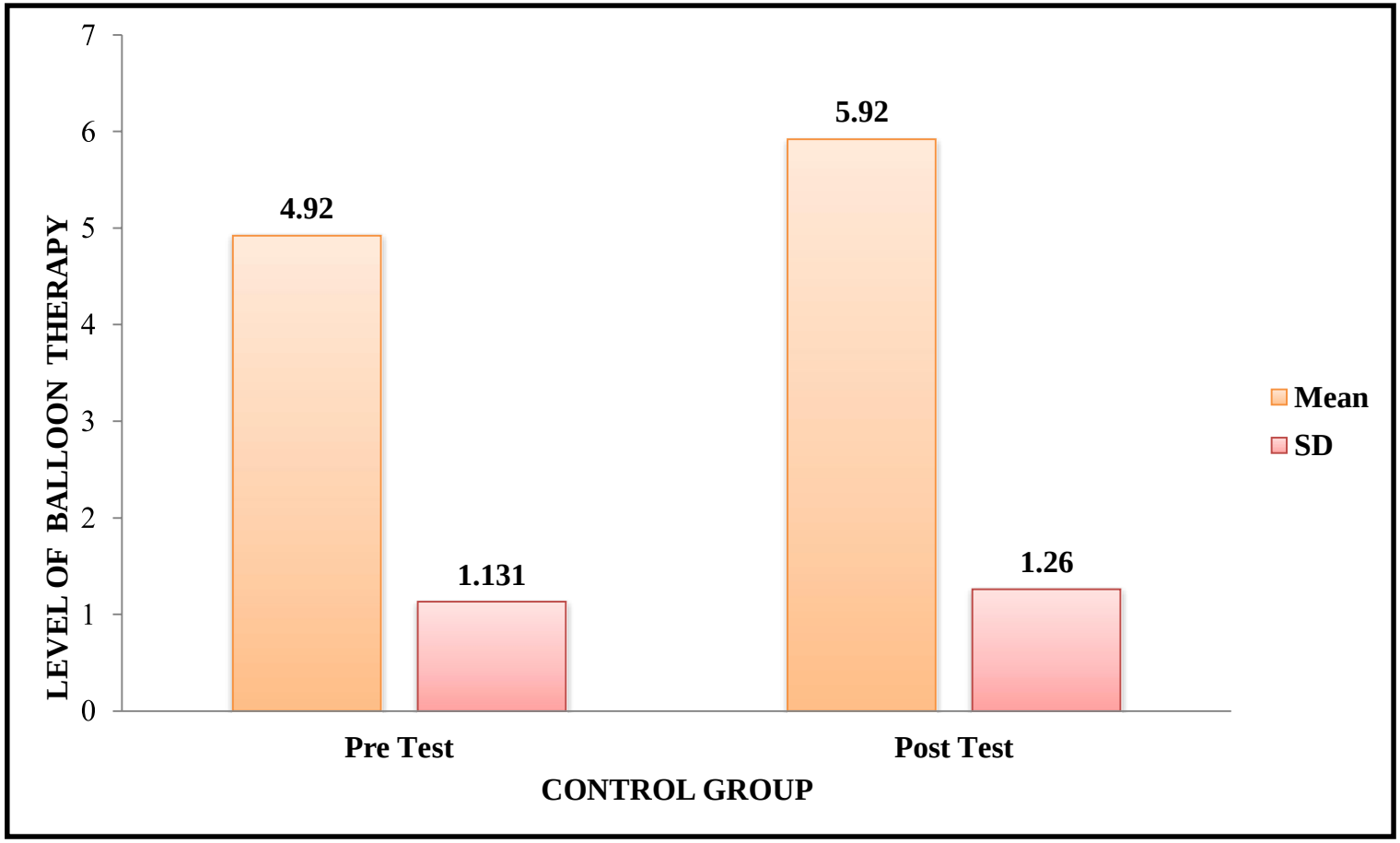

Figure 4.10: Comparison of mean, SD and mean percentage of Balloon therapy among school age childrens with Acute RespiratoryTract Infection in Control Group

SECTION D: Find out the association between the post tests levels of children with Acute Respiratory Tract Infection with their demographic variables inexperimental group.

Table 4.7 Chi square between Experimental group post test scores of children withAcute Respiratory Tract Infection demographic variables in experimental group.

Sl. No	Demographic Details	D.F	x^2	Table Value	Inference
1	**Age**				
	a) 6 to 8yrs	6	$x^2 = 0.3$	12.59	**NS**
	b) 8.1 to 10yrs				
	c) 10.1 to 12yrs				
2	**Gender**				
	a) Male	3	$x^2 = 4.23$	7.82	**NS**
	b) Female				
3	**Order of Birth**				
	a) First Child	23	$x^2 = 3.09$	21.03	**NS**
	b) Second Child				
	c) Third Child				
4	**Type of family**				
	a) Nuclear	12	$x^2 = 6.21$	21.03	**NS**
	b) Joint				
	c) Extended				
	d) Single parent family				
5	**Residence**				
	a) Rural	3	$x^2 = 2.08$	7.82	**NS**
	b) Urban				
	c) Semi urban				
6	**Frequency of Respiratory infection in last years**				
	a) No Infection	9	$x^2 = 5.06$	16.92	**NS**
	b) 1 – 2 times				
	c) 3 – 4 times				
	d) Above 4 times				

Table 4.7 show the Chi- square was calculated to find out the association between post-test Balloon therapy scores of experimental group and their demographic variables. It reveals that there was a significant association between post test scores of Balloon therapy among school age children's with Acute Respiratory Tract Infection when associated with the demographic variables of age, gender, Order of Birth, type of family, Residence and frequency of Respiratory infection in past years ($p<0.05$).

Whereas there was no Significant association was found between post test scores of Balloon therapy among school age children with Acute Respiratory Tract Infection with their demographic among variables such as age, gender, Order of Birth,type of family, Residence and frequency of Respiratory infection in past years, ($n>0.05$). However, it seems that Balloon therapy among school age children with Acute Respiratory Tract Infection was effective to the experimental group of their demographic variables.

Table 4.8 Chi square between Experimental group post test scores of children with Acute Respiratory Tract Infection demographic variables in control group.

Sl.No	Demographic Details	D.F	x^2	TableValue	Inference
1	**Age**				
	a) 6 to 8yrs	15	$x^2 = 0.52$	10.68	**NS**
	b) 8.1 to 10yrs				
	c) 10.1 to 12yrs				
2	**Gender**				
	a) Male	8	$x^2 = 2.6$	17.2	**NS**
	b) Female				
3	**Order of Birth**				
	a) First Child	15	$x^2 = 3.25$	26.485	**NS**
	b) Second Child				
	c) Third Child				
4	**Type of family**				
	a) Nuclear	15	$x^2 = 0.81$	28.714	**NS**
	b) Joint				
	c) Extended				
	d) Single parent family				
5	**Residence**				
	a) Good	6	$x^2 = 2.21$	31.88	**NS**
	b) Average				
	c) Poor				
6	**Frequency of Respiratory infection in past years**				
	e) No Infection	14	$x^2 = 0.88$	29.2	**NS**
	f) 1 – 2 times				
	g) 3 – 4 times				
	h) Above 4 times				

Table 4.8 show the Chi- square was calculated to find out the association between post-test Balloon therapy scores of control group and their demographic variables. It reveals that there was a significant association between post test scores of Balloon therapy among school age children's with Acute Respiratory Tract Infection when associated with the demographic variables of age, gender, Order of Birth, type of family, Residence and frequency of Respiratory infection in past years ($p<0.05$).

Whereas there was no Significant association was found between post test scores of Balloon therapy among school age children with Acute Respiratory Tract Infection with their demographic among variables such as age, gender, Order of Birth,type of family, Residence and frequency of Respiratory infection in past years, ($n>0.05$). However, it seems that Balloon therapy among school age children with Acute Respiratory Tract Infection was effective to the control group of their demographic variables.

CHAPTER V DISCUSSION

This chapter deals with discussion which was based on the findings obtained from the statistical analysis and its relation to the objective of the study, theoretical framework and the literature review.

A Study to assess the effectiveness of Balloon therapy on Acute Respiratory Tract Infection among school age children at Dhanalakshmi Srinivasan MedicalCollege and Hospital at Perambalur.

The following were the objective of this study;

OBJECTIVE

✓ To assess the level of acute respiratory tract infection before and after intervention in experimental and control group.

✓ To evaluate the effectiveness of balloon therapy on respiratory parameters among children with acute respiratory tract infection in experimental and control group.

 To find out the association between the post test level of respiratory parametersamong children with acute respiratory tract infection with their selected demographic variables in experimental and control group.

Objective 1: To assess the level of acute respiratory tract infection before and after intervention in experimental and control group.

Frequency and percentage distribution of pre test & post test scores of school age children with Acute Respiratory Tract Infection in experimental group

Pre Test,

✓ 46% of them Poor level of school age children due to Acute Respiratory TractInfection.

✓ 33% of them Average level of school age children with Acute RespiratoryTract Infection.

✓ 20% of them Good level of school age children with Acute Respiratory TractInfection.

Post Test,

✓ 53% of them have average level of Acute Respiratory Tract Infection.

✓ 33% of them Good improved level on Acute Respiratory Tract Infection afterthe intervention.

✓ 13% of them have poor improvement after intervention.

Frequency and percentage distribution of pretest & posttest scores of schoolage children with Acute Respiratory Tract Infection in control group

Pre Test,

✓ 60% of them Poor level of school age children with Acute Respiratory TractInfection.

✓ 27% of them Average level of school age children with Acute RespiratoryTract Infection.

✓ 13% of them Good level of school age children with Acute Respiratory TractInfection.

Post Test,

✓ 67% of them have Poor level of Acute Respiratory Tract Infection.

✓ 20% of them have average level of Acute Respiratory Tract Infection.

✓ 13% of them have good level better than others Acute Respiratory TractInfection.

Hypothesis 1: There will be a significant difference in the level of Acute Respiratory Tract Infection before and after intervention in experimental. So Hypothesis $\mathbf{H_1}$, is accepted.

Objective 2: To evaluate the effectiveness of balloon therapy on respiratoryparameters among school age children with acute respiratory tract infection in experimental and control group.

Frequency and percentage distribution of pretest & posttest scores of schoolage children with Acute Respiratory Tract Infection in experimental group.

✓ The Pretest mean children with Acute Respiratory Tract Infection inexperimental group was 5.24 with Standard Deviation 1.62.

✓ The Posttest mean children with Acute Respiratory Tract Infection inexperimental group was 9.36 with Standard Deviation 5.92.

✓ The paired ‘t’ test value was 3.658.

Frequency and percentage distribution of pretest & posttest score of school agechildren with Acute Respiratory Tract Infection in control group.

✓ The Pretest mean school age children with Acute Respiratory Tract Infection inexperimental group was 4.92 with Standard Deviation 1.131.

✓ The Posttest mean school age children with Acute Respiratory Tract Infectionin experimental group was 5.92 with Standard Deviation 1.26.

✓ The unpaired ‘t’ test value was 4.2423.

Hypothesis 2: There will be a significant effectiveness of the Balloon therapy level of Acute Respiratory Tract Infection among school age children in experimental group. So Hypothesis **H_2** is accepted.

Objective 3: To find out the association between the post test level of respiratory parameters among school age children with acute respiratory tract infection withtheir selected demographic variables in experimental and control group.

Chi square between post test score of school age children with Acute Respiratory Tract Infection demographic variables.

✓ Chi square was calculated to find out the association between the post test scores school age children with Acute Respiratory Tract Infection and selected demographic of them.

✓ The other variables like age, gender, type of family, order of birth, residence and frequency of infection last year had no association withschool age children with Acute Respiratory Tract Infection.

✓ There is a significant association between the post test level of Balloon therapy among school age children with Acute Respiratory Tract Infection with their demographic variables. **So hypothesis H_3 is accepted**.

CHAPTER – VI

SUMMARY, COCLUSION, IMPLICATION ANDRECOMENDATION

This chapter deals with summary of the study, its findings, conclusion and the implications for nursing administration, nursing practice, nursing education and nursing research. This study has been started with a few limitations and ends with suggestions and recommendation for research in future.

SUMMARY

The primary aim of the Study to assess the effectiveness of Balloon therapy on Acute Respiratory Tract Infection among school age children at selected hospitals, Perambalur.

Objective of the study are

✓ To assess the level of Acute Respiratory Tract Infection before and after intervention in experimental & control group.

✓ To evaluate the effectiveness of Balloon therapy on level of Acute Respiratory Tract Infection among school age children in experimental group.

✓ To find out the association between the post test level of Acute Respiratory Tract Infection among School age children with their selected demographic variable in experimental & control group.

Hypothesis of the study are

✓ There will be a significant difference in the level of Acute Respiratory Tract Infection before and after intervention in experimental.

✓ There will be a significant effectiveness of the Balloon therapy level of Acute Respiratory Tract Infection among School age children in experimental group.

 There is a significant association between the post test level of activities of School age Children's with Acute Respiratory Tract Infection with their demographic variables. The review of literature on related studies helped the investigator to design the methodology, conceptual frame work and find out the tool. The literature review for the present study were presented under the following heading.

✓ Studies related to Acute Respiratory Tract Infection among school age children.

✓ Studies related to respiratory parameters.

✓ Studies related to Balloon Therapy.

✓ Studies related to Balloon therapy among school age children with AcuteRespiratory Tract Infection.

The investigator adopted Health Promotion Model is a good model for addressing problem behaviors that evoke health concerns, **(Penders RT, 2002).** The reliability of the modified pediatric respiratory severity score scale was established by test-retest method and reality. Hence the tool was reliable and it was used for thestudy. To ensure the reliability of the tool, it has been administered to their children with Acute Respiratory Tract Infection. The reliability of the modified pediatric respiratory severity score scale was established by inter ratter reliability method.Hence the tool was reliable and it was used for the study, ($r^1 = 0.91$).

Major findings of the study

The major findings of the study were presented under the following headings,

✓ Findings related to distribution of demographic variables among School age children's with Acute Respiratory Tract Infection in experimental group.

✓ Findings related to pretest and post test scores on School age children's with Acute Respiratory Tract Infection in experimental group.

✓ Findings related to comparison of pre test and post test of School age children's with Acute Respiratory Tract Infection in experimental group.

 Findings related to association between the post tests School age children's with Acute Respiratory Tract Infection with their selected demographic variables.Findings related to distribution of demographic variables among School age children's with Acute Respiratory Tract Infection in experimental group

✓ 53% of them have age group with 6 to 8 years.

✓ 73% of the respondents from the female group.

✓ 40% of them type of family group are from joint family and Nuclear family.

✓ 40% of them third child.

✓ 53% of them from rural locality.

✓ 47% of them were no prior infection.

Findings related to distribution of demographic variables among School agechildren's with Acute Respiratory Tract Infection in Control group

✓ 67% of them have age group with 6 to 8 years.

✓ 60% of the respondents from the female group.

✓ 53% of them type of family group are from joint family.

✓ 40% of them first child.

✓ 73% of them from rural locality.

✓ 60% of them were no prior infection.

Finding related to pretest and posttest scores on School age children's withAcute Respiratory Tract Infection in experimental group

Pre Test,

✓ 46% of them Poor level of school age children due to Acute Respiratory TractInfection.

✓ 33% of them Average level of school age children with Acute RespiratoryTract Infection.

✓ 20% of them Good level of school age children with Acute Respiratory TractInfection.

Post Test,

✓ 53% of them have average level of Acute Respiratory Tract Infection. 33% of them Good improved level on Acute Respiratory Tract Infection afterthe intervention.

✓ 13% of them have poor improvement after intervention.

Frequency and percentage distribution of pretest & posttest scores of school age children with Acute Respiratory Tract Infection in control group

Pre Test,

✓ 60% of them Poor level of school age children with Acute Respiratory TractInfection.

✓ 27% of them Average level of school age children with Acute RespiratoryTract Infection.

✓ 13% of them Good level of school age children with Acute Respiratory TractInfection.

Post Test,

✓ 67% of them have Poor level of Acute Respiratory Tract Infection.

✓ 20% of them have average level of Acute Respiratory Tract Infection.

✓ 13% of them have good level better than others Acute Respiratory Tract Infection.

Finding related to Frequency and percentage distribution of pretest & posttest scores of school age children with Acute Respiratory Tract Infection in experimental group.

✓ The Pretest mean school age children with Acute Respiratory Tract Infection inexperimental group was 5.24 with Standard Deviation 1.62.

✓ The Posttest mean school age children with Acute Respiratory Tract Infectionin experimental group was 9.36 with Standard Deviation 5.92.

✓ The paired 't' test value was 3.658.

Findings related to Frequency and percentage distribution of pretest & posttest scores of school age children with Acute Respiratory Tract Infection in control group.

✓ The Pretest mean school age children with Acute Respiratory Tract Infection inexperimental group was 4.92 with Standard Deviation 1.131.

✓ The Posttest mean school age children with Acute Respiratory Tract Infectionin experimental group was 5.92 with Standard Deviation 1.26.

✓ The unpaired 't' test value was 4.2423.

Findings related to find out the association between the post test level of Acute Respiratory Tract Infection among School age children with their selected demographic variable in experimental and control group.

Chi square was calculated to find out the association between the post-test scores of Balloon therapy among school age children's with Acute Respiratory Tract Infection in experimental group.

✓ Chi square value for age was 0.3 ($p>0.05$)

✓ Chi square value for gender was 4.23 ($p>0.05$)

✓ Chi square value for order of birth was 3.09 ($p>0.05$)

✓ Chi square value for type of family was 6.21 ($p>0.05$)

✓ Chi square value for residence was 2.08 ($p>0.05$)

✓ Chi square value for prior infection was 5.06 ($p>0.05$)

Chi square was calculated to find out the association between the post-test scores of Balloon therapy among school age children with Acute Respiratory Tract Infection in control group.

✓ Chi square value for age was 2.52 (p>0.05)

✓ Chi square value for gender was 4.6 (p>0.05)

✓ Chi square value for order of birth was 1.25 (p>0.05)

✓ Chi square value for type of family was 0.94 (p>0.05)

✓ Chi square value for residence was 1.25 (p>0.05)

✓ Chi square value for prior infection was 0.88 (p>0.05)

CONCLUSION

✓ School age children's with Acute Respiratory Tract Infection have only average and good level of socio activities.

✓ Balloon therapy was effective in improving level of activity like Respiratory parameters.

NURSING IMPLICATIONS

✓ Balloon therapy can be used by the nursing professionals who are working in the hospitals, clinical settings, schools and colleges for further reinforcing their practice.

✓ Balloon therapy can be used for improving the Respiratory parameters.

NURSING EDUCATION

✓ Nurse educator should educate the children's regarding uses & techniques of activities of daily living.

✓ Nurse educator should educate the nursing personnel about the method ofBalloon therapy and its effectiveness on improving Respiratory parameters.

NURSING ADMINISTRATION

✓ Nurse administer can organize a Balloon therapy activities of knowledge improving knowledge level in various health sectors and agencies.

✓ Nurse administer can support the nurses for conducting research on activities of improving knowledge.

NURSING RESEARCH

✓ The study may be issued for further references.

✓ Evidenced based practice must take higher profile in order to increase the awareness among the nurses on uses of activities of improving daily knowledge.

✓ Various research projects regarding uses of Balloon therapy on activities of improving knowledge which can be improved effectively in future should by nursing institutions and hospital managements

RECOMMENDATION

This study can be conducted with large samples.

✓ A similar study can be carried out with a longer duration.

✓ A Similar study can be conducted in different settings like schools, colleges.

✓ A different study can be done to assess the effectiveness of Respiratoryparameters of Respiratory Tract Infected children's.

✓ A similar study can be conducted in retrospective approach

✓ A different study can be conducted in different settings (Child health Nursing)

✓ A follow up study can be conducted to evaluate the knowledge after administeringteaching program.

✓ A different study can be conducted to assess the level of respiratory parameterwith balloon therapy to the school age child, etc.

✓ A similar study can be conducted to test the effectiveness of balloon therapy to allage groups.

SUMMARY

This chapter dealt with the summary of the study, major findings, conclusions.implication of the study in nursing field and recommendations for future.

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