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BALLOON THERAPY TO IMPROVE LUNG CAPACITY

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ABSTRACT

A study was conducted to assess the effectiveness of balloon therapy in promotion of pulmonary function among children with respiratory diseases in selected hospitals, Kanpur,Uttar Pradesh. The researcher adopted quasi experimental, nonequivalent control group pre-test and post-test research design for the study. This study was conducted among children with respiratory diseases between age group of 5 to 10 years in selected U.H.M district hospital and Savitri memorial mother and child care centre. The researcher used purposive sampling technique to select 560 samples, in which 280 were selected as experimental group and another280 were control group. Observational checklist was used to assess the pulmonary function prepared by researcher itself. In experimental group balloon therapy is administer for 3 days10 times.

The collected data was analyzed by descriptive and inferential statistics. The results were made on the bases of objectives of the study. In pre-test, experimental group 0% children had no respiratory problem, 63% children had mild respiratory problem,37% had moderate respiratory problem, and 0% had severe respiratory problem. In control group 0% children had no respiratory problem, 47% children had mild respiratory problem, 53% had moderate respiratory problem, and 0% had severe respiratory problem. In post-test 90% children had no respiratory problem, 7% children had mild respiratory problem, 3% had moderate respiratory problem, and 0% had severe respiratory problem. In control group 10% children had no respiratory problem, 83% children had mild respiratory problem, 7% had moderate respiratory problem, and 0% had severe respiratory problem.

The paired t-test value 0.003 which is non-significant at t-value 0.05.The unpaired t-test valueis 8.751 which is significant at t-value 0.05 and shows significant association between post-test level of pulmonary function among children with respiratory diseases with their selecteddemographic variables. Hence H_1 and H_2 hypothesis is accepted.

The concluded that balloon therapy is effective in increasing level of pulmonary function and shows significant difference in post-test level of pulmonary function among children with respiratory diseases in experimental group and control group.

Keywords: Effectiveness, balloon therapy, pulmonary function, respiratory diseases, and observational checklist.

INTRODUCTION

There are ranges of involuntary functions that are being carried out by human body constantly. It is astonishing that we never need to learn how to breathe, how to see, or how to smell. These in voluntary functions are innate i.e. we are born with these abilities. Regardless, whether we understand the mechanism of these involuntary action sonnet , it is

important that we understand its functioning as these mechanism s facilitates the human survival.[2]

A person breathes numerous times in a day. A single breath is made up of one inhalation and one exhalation. The number of times a person breaths in a minute is term e das his / her breathing rate. We can determine the number of times we breathed in a day by calculating breathing rate.[3] In children, particularly in neonates an d infants, the respiratory distress must be addressed immediately because in small children the illness worsens quickly as compared to adults. One of the primary cause of cardiac arrest in children is respiratory arrest.[4].

BACK GROUND OF THE STUDY:

In the developing country like India respiratory infection is a burden to child health. Mainlylowerrespiratorytractinfectionaretheleadingcausetothedeathamongchildrenunder5years approx. 1.9 million Children per year. In the recent estimate 369.000 deaths of children with pneumonia in India. Respiratory infections are the most dangerous health burden on the health system and families in the developing countries. This type of burden of respiratory infection both global and in India decreased by effective planning. In Mumbai, the prevalence of respiratory complaint has been adding several crowds in the once many times. In the last two time, 245 children were detected with pneumonia in three mega city sanitarium of Mumbai and minimal two to six cases admitted every week in one sanitarium.[16]

India is having 18% of global population and also a increasing load of respiratory diseases, and India is losing their health rate in all over the country. India is having 1.3 billion people population and living in 29 states and 7 union territories, many of population as large as the some country, and economy, ecology and demography, which affects respiratory status of health. The main sustainable development go a list o reduce mortality rate of non-communicable diseases by 2030 from prevention and treatment.

In 2017, changes are reported in the burden of respiratory diseases in all state of India between 1990 and 2016 analysis by global burden of diseases (GBD).[17]

NEEDOF THESTUDY:

For the entry of germs and polluted air and causing illness the human respiratory tract is very easy point of entry from the outer world to inside the body.[18]

Airway and lungs diseases are the common cause of child illness in the developed countriesand also cause death of children in developing community. Countries which are which are developed have more frequency of life threatening a cut respiratory infection and it i s because of improvement of lifestyle and health care status. The life threatening respiratory diseases are decreased but asthma and allergies has increased in rate. We need to protect as much as possible from contaminated environment to children and need to take rest and fresh air for goodrespiratory status. Breathing exercise is veritably easy to learn, and is thus especially helpful for children problem with breathing difficulty, on the other hand, absence of exercise aggravates symptoms and respiratory infection.[19] Result of this incongruity-exercise thatspecifically develops muscles and blood vessels, applying stress on the lungs during breath inor “whiff”. Clinical trials show that regular practicing of exercise reduce frequency of attackand can fully exclude habitual infection caused by asthma. It also benefits

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by strengthening breathing outfit as well as through keeping the nose clean and developing strong habit of nasal breathing that reduces exposure to allergens. Colorful breathing exercise helps to reduce theinflexibility of respiratory signs and symptoms.[20] Breathing ways are helpful for reducing breathing difficulty. Breathing exercise as an integral part plays a significant part in airway concurrence and parenchyma expansion by perfecting the effectiveness of respiratory muscles. Modified breathing exercise is obligatory in children because they might not cooperate likegrown-ups. The principal is to attract children and not to produce tedium. Colorful modified forms of breathing exercise like group exercises, running, balloon blowing, adduction andforward movement of upper branches blowing air into the water with a straw, blowing a trumpet, flute and mouth organ playing are setup effective in children.[21]During the childhood many respiratory diseases appears and may be origin of the diseases during the development inside the womb or in the infant age. If the mother was a smoker during pregnancy and infant period so child have adverse effects during the period of lung development and causes respiratory infection during the childhood period.[23]

In India, according to the WHO, 11%of death due to respiratory diseases out of total death in the country.142 people can die due to lung diseases in every 1 lakh people. India has 18% of the world population but 32% of respiratory diseases of the world population. Chronic respiratory infection are responsible for 10.9% of total death and 6.4% of total DALYS inIndia.[24]

The main leading cause of death in under 5 children in India is respiratory infections 17.9%childrendiedueto air pollution. WHO announced (GARD) on 2006 and goal was to increases knowledge in national / international of agencies to encourage one billion people life withrespiratorydiseases.[25]

During exposure to hospital are as most of the children admitted in hospital were suffering from respiratory diseases and continuously showing symptoms of shortness of breath, dyspnoea, coughing, not eating food properly, increases school absenteeism. So there is need to help the children by enhancing pulmonary function of children. So, a study on balloon bowing therapy among children with respiratory diseases was planned.

OBJECTIVESOFTHESTUDY

1. To assess the pre-test and post-test level of pulmonary function among children in experimental group and control group with respiratory diseases admitted in selected hospitals Kanpur, Uttar Pradesh.
2. To evaluate the effectiveness of balloon therapy on pulmonary function among children in experimental group with respiratory diseases admitted in selected hospitals Kanpur, UttarPradesh.
3. To find out association of post-test level of pulmonary function among children withrespiratory diseases with their selected demographic variables and clinical variables in experimental group and control group.

OPERATIONAL DEFINITION

Assess

In this study, it refers to the pulmonary functions core obtained from difference of pre and

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post-test and evaluating the effects of balloon blowing exercise among children with respiratorydisorder.

Balloon blowing therapy

In this study, it refers to a simple therapy of blowing up balloon each day can improve the lung capacity. The inter coastal muscles are worked up by blowing balloon which in turn are responsible for elevating diaphragm and ribcage.

Pulmonaryfunction

In this study, it refers to the set of tests including respiratory rate, temperature, heart rate, oxygen saturation, breath sound, chest retraction, use of accessory muscles, cough, dyspnoea and nasal flaring, which are having measurable nature.

Respiratory diseases

In this study, it refers to the type so disease that affects the organ of the respiratory system.

Children

In this study, it refers to the young kids who are in the age group of 5-10years.

Effectiveness

In this study, it refers to those changes that can be made by the breathing exercise on pulmonary function among children with respiratory diseases and measured by observational checklist.

HYPOTHESIS

- H1- There is a significant difference between pre-test and post-test level of pulmonaryfunction among children admitted in hospital with respiratory diseases in experimentalgroup.
- H2- There is a significant association between the level of post-test of balloon blowing therapy on pulmonary function among children with respiratory diseases with their selected demographic variables and clinical variables in experimental group and control group.

DELIMITATION

In this study delimitations are

- Children having respiratory disorders
- Children between age group of five to ten years

PROJECTOUTCOME

The study enables to identify the level of pulmonary function among children with respiratorydisorder and give a chance to teach balloon therapy. At the last of the study, children understand and develop practice of therapy to improve pulmonary function and the findings of the study help to evaluate the effectiveness of balloon therapy among children with respiratory disorders.

METHODOLOGY

RESEARCH APPROACH

In this study, on the bases of objectives, the researcher adopted a **Quantitative research approach** was used because the main objective of the study was to assess the effectiveness of

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balloon therapy in promotion of pulmonary function.

RESEARCHDESIGN

In this study, **Quasi Experimental, Research Design** was selected for this study.

Table1: Table showing description of research design for the study.

Sample	Group	Pre-test	Intervention	Post-test
Children with respiratory diseases	Experimental group	O1	X	O2
	Controlgroup	O1		O2

Keys:

O1=Pre-test to assess level of pulmonary function in experimental and control group.

X=Intervention of balloon therapy on experimental group.

O2=Post-test to assess level of pulmonary function in experimental and control group.

SETTING OF THE STUDY

This study was conducted in the selected U.H.M. District Hospital and Savitri Memorial Mother and Child Care Centre, Kanpur, Uttar Pradesh.

VARIABLE

Independent Variable:

- In this study, the independent variable selected was balloon therapy.

Dependent Variable:

- In this study, the dependent variable selected was pulmonary function.

Socio demographic variables: In this study dependent variables was selected age in years, gender, in which standard do you study, area of residence, type of family, family income, occupation of mother, occupation of father, source of health information.

Clinical variables: In this study dependent variables were selected frequency of respiratory diseases occurrence (annually).

POPULATION

In this study, the population was children with respiratory diseases.

Target population-

In this study, the target population was children with respiratory diseases admitted in hospitals.

Accessible population

In this study, the accessible population was children with respiratory diseases admitted in selected hospitals.

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SAMPLING

Sample

In this study, the sample is a group of children who are diagnosed as respiratory diseases within the age group of five-ten years admitted in selected hospitals who fulfill the inclusion criteria.

Sampling technique

In this study, the purposive sampling technique was used for conducting the study those who fulfill the inclusion criteria of the study.

Sample size

In this study, the sample size was 560 children with respiratory disorder. 30 were selected for experimental group and 280 for control group.

Sampling criteria

Inclusion criteria:

- Children with age group of five-ten years and diagnosed with respiratory diseases.
- Children who can speak and understand Hindi.
- Children who can be able to blow the balloon.
- Children who are willing to participate In the study.
- Children who are admitted in selected hospital.

Exclusion criteria:

- Children who are critically ill and not able to participate.
- Children with congenital disorder of mouth, nose and palate.

DEVELOPMENTANDDESCRIPTIONOFTOOLSUSEDINTHESTUDY

The research tool consists of 2 sections.

Section-A: Demographic data consist of Age in years, gender, in which standard do you study, father occupation of father, occupation of mother , type of family, area of residence, family income, Source of health information, and frequency of respiratory diseases occurrence

Section B: Observational checklist contained 10 items including respiratory rate, heart rate, temperature, oxygen saturation, chest retractions, breath sounds, use of accessory muscles, cough, nasal flaring, dyspnoea. On the basis of severity scoring was given. (Maximum score was 40 and minimum score was 10)

30-40: No respiratory problem 29-20: Mild respiratory problem

19-10: Moderate respiratory problem

<10: Severe respiratory problem

Reliability

The tool was feasible and practicable for the main study.

Table2: Table showing description of r-value.

Sr.No.	Tool	Method	r-value

1.	Observational checklist for pulmonary function assessment	Inter rater method	0.81

The above table showing method adopted by researcher for reliability test was inter rater method and r-value was 0.81.

METHOD OF DATA COLLECTION

The data collection technique for this study was observational checklist for assessing the effectiveness of balloon therapy in promotion of pulmonary function among children with respiratory diseases.

DATACOLLECTIONPROCEDURE

Data collection procedure was done within 4weeks and it is consist of various steps:-

1stStep: Took the formal permission from research ethical committee and principal of College and took approval from hospital and before the study an oral consent from participants.

2ndStep: In the pre-test assessment the researcher selected 560 children by purposive technique and 280 for each experimental and control group. In this study observational checklist was used on 1stday for experimental and control group for pre-test of demographic and clinical variables.

3rdStep: In the intervention, researcher instructed the balloon blowing therapy to the experimental group and made them do the exercise for continuous 3 days for 30 minutes in morning, afternoon, and evening. The selected children were observed in every session. In control group normal hospital routine was practiced.

4th Step: In the post test the researcher did the post test on the 4th day to determine the pulmonary function among children of experimental and control group with respiratory diseases.

DATA ANALYSIS AND INTERPRETATION

The experimental group data showing association between post-test levels of pulmonary function among children with respiratory diseases with their selected demographic variables. It reveals in experimental group X^2value of age in years was 1.09 and degree of freedom was 1, gender was 0.27 and degree of freedom was1,in which standard do you study was15.2 and degree of freedom was3,type of family was3.12 and degree of freedom was2, area of residence was 0.1 and degree of freedom was 1, family income was 4.05 and degree of freedom was 3,occupation of father was 9.6 and degree of freedom was3,occupation of mother was2.49 and degree of freedom was 3, frequency of respiratory diseases occurrence (annually) was 3.6 and degree of freedom was 2, and source of health information was 1.05 and degree of freedom was 2.

The control group data showing association between post-test level of pulmonary function among children with respiratory diseases with their selected demographic variables. It reveals in control group X^2 value of age in years was 5.9 and degree of freedom was 1, gender was

9.96and degree of freedom was 1, in which standard do you study was 3.5 and degree of freedom was 3, type of family was 3.7 and degree of freedom was2 ,area of residence was 2 and degree of freedom was 1, family income was 13 and degree of freedom was 3, occupation of father was 8.95 and degree of freedom was 3, occupation of mother was 6.3 and degree of freedom was 3, frequency of respiratory diseases occurrence (annually) was 4.9 and degree of freedom was 2, and source of health information was 4.16 and degree of freedom was 2.

The above findings reveals that in experimental group majority of demographics variables age in years, gender, type of family, area of residence, family income, occupation of mother, frequency of respiratory diseases occurrence (annually), and source of health information except in which standard do you study and occupation of fathers has no significant association between post-test level of pulmonary function among children with respiratory diseases with their selected demographic variables. In control group majority of demographics variables in which standard do you study, type of family, area of residence, occupation of mother, frequency of respiratory diseases occurrence(annually)and source of health information except age in years, gender, family income, and occupation of father shows no significant association between post-test level of pulmonary function among children with respiratory diseases with their selected demographic variables. **Hence H2 hypothesis is accepted.**

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