

Original Article

# EFFECTIVENESS OF MASSAGE THERAPY ON RESPIRATORY STATUS AMONG TODDLERS WITH LOWER RESPIRATORY TRACT INFECTION

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**Abstract :**

Lower respiratory tract infection is one of the major prevailing respiratory illnesses in children. The aim of the study is to assess the effectiveness of massage therapy on respiratory status among toddlers with lower respiratory tract infection. A sample of 60 toddlers were conveniently assigned to study and control group, in study group routine care and massage therapy was performed for three days in morning and evening then posttest was conducted end of each day whereas control group receives routine care. The result shows that massage therapy was significantly effective in improving lung functions.

Keywords : Massage therapy, Lower respiratory tract infection, Respiratory status

**Introduction :**

Globally, Respiratory infection causes morbidity and mortality in young children. Majority of under five children were affected with 3 to 8 respiratory illnesses a year, globally 3.9 million deaths occur every year. Children develop five to eight attacks of respiratory illness such as bronchiolitis, asthma and pneumonia which causes 30 - 40% of hospitalization. Lower respiratory tract infection is more fatal than upper respiratory infection. Moreover in 2013, 6.9% of death due to respiratory illness which is the leading cause when compare to other diseases. Lower respiratory tract infection manifests symptoms like wheezing, fever, tachypnea, chest retraction.

Massage therapy is a complementary and alternative treatment "the manual manipulation of soft tissue

intended to promote health and well-being" for children. Massage therapy consists of five steps such as effleurage, petrissage, stroking, and kneading, which improves lung function, promotes

relaxation, enhance healing process and well-being. It focuses on relaxing the muscles engaged in breathing and prevents stimulating the trigger points.

**Conceptual Framework :**

Ernestine Wiedenbach conceptual model of nursing was adopted "the helping art of clinical nursing". It consists of four phases such as identification, ministration, validation and feedback.

Identification in this phase, the initial assessment of respiratory status such as nasal flaring, chest retraction, respiratory rate, heart rate, lung auscultation of the children who were diagnosed as lower respiratory tract infection. In ministration phase massage therapy is given by effleurage, petrissage, kneading, stroking for 5mins in chest and 5mins in back both in the morning and evening to the study group along routine care. Validation phase of the study where the effect of massage therapy on respiratory status of toddlers with lower respiratory tract infection was assessed. The final phase, feedback of the study to modify the care in the present or future.

**Materials And Methods :**

Research design adopted for the study was Pretest Posttest

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control group design. The information was gathered from the paediatric ward at Sri Ramachandra Hospital, Chennai. Using convenient sampling method 60 toddlers were selected, study group 30 and control group 30 respectively. The pretest was conducted using demographic variables and assessing respiratory status of toddlers with the help of Modified Silverman Score. It consists of five variables such as nasal flaring, chest retraction, heart rate, respiratory rate, lung auscultation. The interpretations of scores were like 0-3 mild, 4-6 moderate and 7-10 severe. The reliability of the tool was 0.85

Massage therapy which consists of four steps such as efflurage, pertrissage, kneading and stroking. Each step was performed 10 times for one minute. Massage therapy was performed 5minutes in chest and 5minutes in back both twice a day with routine care then a post test was conducted every day after the intervention for three days. Whereas, the control group participants received only routine care and posttest was conducted every day evening for three days. After the third posttest, massage therapy was demonstrated to the mothers of toddlers of the control group.

Results :

Table I : Frequency and percentage distribution of demographic variables among toddlers in the study and the control groups (N=60)

Sl No	Demographic variables	Study group (n=30)		Control group (n=30)		X <sup>2</sup> & p value
		No.	%	No.	%	
1.	Gender					
	a. Male	17	56.7	18	60.0	0.069
	b. Female	13	43.3	12	40.0	0.793 (NS)
2.	Type of family					
	a. Nuclear	12	40.0	20	66.7	6.000
	b. Joint	18	60.0	10	33.3	0.500 (NS)
3.	Domicillary					
	a. Urban	12	40.0	14	46.7	4.421
	b. Suburban	10	33.3	14	46.7	0.110
	c. Rural	08	29.7	02	6.6	(NS)
4.	Mother's occupation					
	a. Home maker	18	60.0	19	63.3	5.884
	b. Skilled	06	20.0	08	26.8	0.206
	c. Government employee	00	0.0	01	3.3	(NS)
	d. Private employee	06	20.0	01	3.3	
	e. Self employed	00	0.0	01	3.3	

Gro-up	Day 1			Day 2			Day 3			
	M	E		M	E		M	E		
S	O1	*X	*X	O2	*X	*X	O3	*X	*X	O4
C	O1	*	*	O2	*	*	O3	*	*	O4

Key:

- O1 - Pretest (assessment of respiratory status using modified silverman scale)
- \* - Routine care
- X - Intervention (massage therapy on chest and back for 10mins)
- O2,O3,O4 - Posttest 1,2,3

**Ethical Consideration :**

The permission was obtained from the institutional ethics committee. Before collecting data, mothers were explained and consent was taken. Confidentiality was assured.

**Data Analysis :**

Descriptive statistics- frequency, percentage, means and standard deviation used to assess the respiratory status. Inferential statistics- wilcoxon, mann-whitney, and chi-square used to check the effectiveness and association between the respiratory status and the selected demographic variables.

Sl No	Demographic variables	Study group (n=30)		Control group (n=30)		X <sup>2</sup> & p value
		No.	%	No.	%	
5.	Father's education					
	a. No formal education	01	3.3	04	13.3	5.681
	b. Primary	05	16.7	06	20.0	0.224
	c. Secondary	13	43.3	08	26.7	(NS)
	d. High school	02	6.7	06	20.0	
	e. Graduate	09	30.0	06	20.0	
6.	Father's occupation					
	a. Skilled	02	6.7	05	16.7	5.818
	b. Self employed	13	43.3	05	16.7	0.121
	c. Private employee	13	43.3	16	53.3	(NS)
	d. Government employee	02	6.7	04	13.3	
	e. Unemployed	00	0.0	00	0.0	
7.	Income of parents					
	a. Below 5000	00	0.0	06	20.0	8.182
	b. 5001-10000	20	66.7	12	40.0	0.017 *
	c. >10001	10	33.3	12	40.0	
8.	Care taker of the child					
	a. Father	02	6.7	05	16.7	2.454
	b. Mother	19	63.3	20	66.6	0.293
	c. Grand mother	09	30.0	05	16.7	(NS)
	d. Day care center	00	0.0	00	0.0	
9.	Immunization status					
	a. Upto date	28	93.3	27	90.0	0.218
	b. Irregular	02	6.7	03	10.0	0.640 (NS)
10.	History of previous hospitalization with RTI					
	a. Yes	14	46.7	19	63.3	3.142
	b. No	16	53.3	11	36.7	0.208 (NS)
	if yes frequency of hospitalization					
	a. Once	03	10.0	06	20.0	2.238
	b. Twice	05	16.7	07	23.3	0.692
	c. Thrice	04	13.3	04	13.3	(NS)
	d. >Thrice	02	6.7	02	6.7	
11.	Frequency of RTI					
	a. Once in 3months	05	16.7	02	6.7	2.906
	b. Once in 6months	14	46.7	19	63.3	0.406
	c. Once in 12months	01	3.3	02	6.7	(NS)
	d. Rarely	10	33.3	07	23.3	
12.	When you consult doctor					
	a. Immediately	24	80.0	12	40.0	10.095
	b. Second day	05	16.7	16	53.3	0.006 **
	c. After a week	01	3.3	02	6.7	

Figure 1: Percentage distribution of gender among toddlers in the study and control group (N=60)

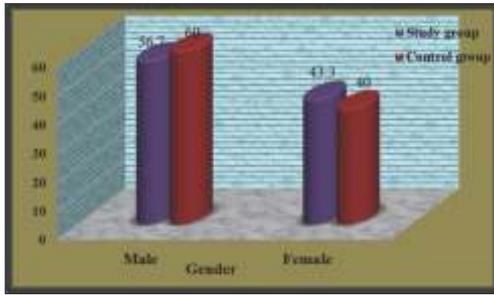


Figure 2: Percentage distribution of mother education among toddlers in the study and control group (N=60)

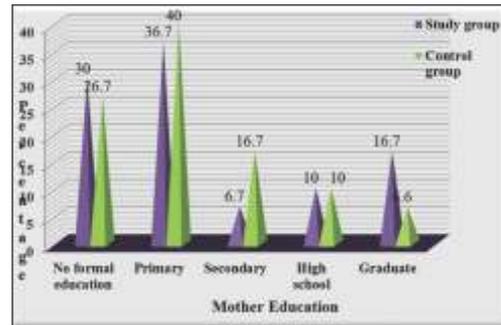


Figure 3: Mean value of nasal flaring among toddlers with lower respiratory tract infection in the study group and control group (N=60)

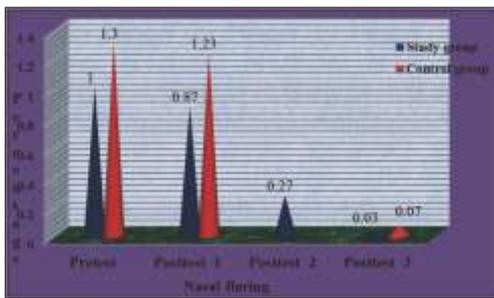


Figure 4: Mean value of chest retraction among toddlers with lower respiratory tract infection in the study group and control group (N=60)

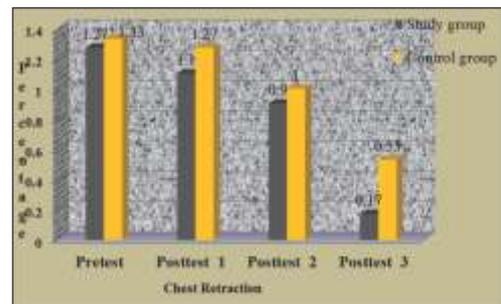


Figure 5: Mean value of heart rate among toddlers with lower respiratory tract infection in the study group and control group (N=60)

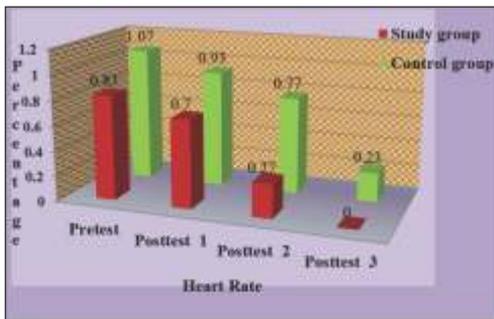


Figure 6: Mean value of respiratory rate among toddlers with lower respiratory tract infection in the study group and control group (N=60)

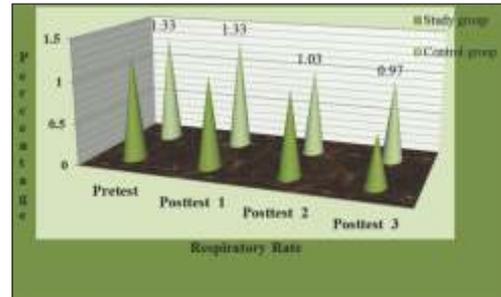


Figure 7: Mean value of lung auscultation among toddlers with lower respiratory tract infection in the study group and control group (N=60)

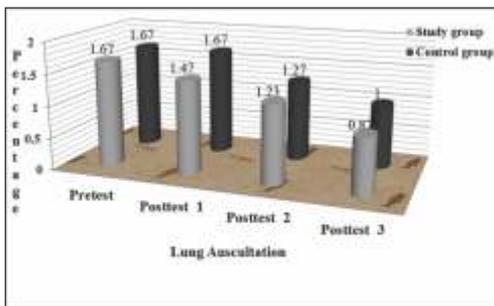


Table II: frequency and percentage distribution of respiratory status among toddlers with lower respiratory tract infection in the study group and control group (N=60)

Duration of study	Group	Respiratory status					
		Mild		Moderate		Severe	
		No.	%	No.	%	No.	%
Pretest	Study group	00	0.0	21	70.0	09	30.0
	Control group	00	0.0	17	57.0	13	43.0
Posttest 1	Study group	00	0.0	26	87.0	04	13.0
	Control group	00	0.0	16	53.0	14	47.0
Posttest 2	Study group	14	47.0	16	53.0	00	0.0
	Control group	00	0.0	29	97.0	01	3.0
Posttest 3	Study group	29	97.0	01	3.0	00	0.0
	Control group	25	83.0	05	17.0	00	0.0

Table II depicts the score of respiratory status among study group. In pretest 21(70%) had moderate and nine (30%) had severe respiratory status whereas in control group 17(57%) had moderate and 13(43%) had severe respiratory status. During the posttest 3 in the study group 29(97%) had mild and one (3%) had moderate respiratory status whereas in control group 25(83%) had mild and five(17%) had moderate respiratory status.

Table III : Mean, Standard deviation and Mann-Whitney U value of Modified Silverman Score of lung auscultation among toddlers with lower respiratory tract infection in the study and the control groups (N=60).

Respiratory status	Study group (n=30)		Control group (n=30)		Mann-Whitney U and p value
	Mean	SD	Mean	SD	
Pretest	6.03	1.542	6.70	1.784	1.529 0.126 (NS)
Posttest 1	5.20	1.297	6.43	1.591	3.434 0.001**
Posttest 2	3.63	1.066	4.57	0.935	3.558 0.000***
Posttest 3	1.67	0.844	2.80	0.610	5.017 0.000***

Table III explicit, in the study group pretest mean  $6.03 \pm 1.542$ , posttest 1 mean was  $5.20 \pm 1.297$ , posttest 2 mean was  $3.63 \pm 1.066$  and posttest 3 mean was  $1.67 \pm 0.844$ , in the control group the pretest mean was  $6.70 \pm 1.784$ , posttest 1 mean was  $6.43 \pm 1.591$ , posttest 2 mean was  $4.57 \pm 0.935$  and posttest 3 mean was  $2.80 \pm 0.610$  which were significant at  $p < 0.001$  in respiratory status.

#### Discussion :

The mean value and standard deviation of respiratory status in the study group among the toddlers with lower respiratory tract infection during the pretest shows that nasal flaring were 1.00 and 0.183, chest retraction were 1.27 and 0.450, heart rate were 0.83 and 0.648, respiratory rate were 1.27 and 0.450 and lung auscultation were 1.67 and 0.479. whereas in the control group pretest shows that nasal flaring were 1.30 and 0.254, chest retraction were 1.33 and 0.479, heart rate were 1.07 and 0.521, respiratory rate were 1.33 and 0.479 and lung auscultation were 1.67 and 0.479.

The respiratory status within the study group shows that, the mean value for nasal flaring on the first day during pretest was 1.00 and in the posttest 3 it was 0.03, the chest retraction mean value was 1.27 in pretest and 0.17 in the posttest day 3, the mean value for heart rate was 0.83 in the pretest and 0.00 in the posttest 3, the respiratory rate

mean value was 1.27 in the pretest and 0.60 in the posttest 3 and lung auscultation pretest was 1.67 and in the posttest 3 it was 0.87. The level of significance was  $p < 0.001$ .

The respiratory status within the control group shows that, the mean value for nasal flaring on the first day during pretest was 1.30 and in the posttest 3 it was 0.07, the chest retraction mean value was 1.33 in the pretest and 0.53 in the posttest day 3, the mean value for heart rate was 1.07 in the pretest and 0.23 in the posttest 3, the respiratory rate mean value was 1.33 in the pretest and 0.97 in the posttest3 and lung auscultation pretest was 1.67 and posttest 3 was 1.00, which was significant at  $p < 0.05$  and  $p < 0.01$ . The study reveals that massage therapy was effective on respiratory status among toddlers with lower respiratory tract infection.

The study revealed there was an association found between respiratory status and mother's education, care taker of child among toddlers with lower respiratory tract infection in pretest. In the posttest of the study group, there was no association as found between respiratory status and demographic variables.

#### Nursing Implication :

Evidenced based practice helps the nurses to enrich them in knowledge and practice. Nurse can utilize massage therapy which improves lung function. Nurses can even teach parents so that when children experience breathing difficulty at home it can help them. Preparation of procedure manual as well as a voice recorded audiotape to the parents which is to be practiced in home can be made. Various seminars, conferences and continuing nursing education can be conducted. Nursing researcher should be aware of the needs and problems of the existing health care system. More research studies can be conducted similar to this study to determine the effectiveness of massage therapy in reducing lower respiratory tract infection.

#### Recommendations :

Recommendations for the future study include:

1. A study could be conducted with larger size.

2. A similar study could be performed for a longer duration.
3. This study could also be conducted as a comparative study using intensive spirometry, deep breathing exercises etc.

#### Conclusion :

Massage therapy is a very effective method in reducing the respiratory distress in children. It works in loosening of adhesive respiratory secretions, mobilizing it from peripheral airway to central airway and then removing by upper respiratory tract. This enhances the lung function. This study proves that massage therapy is effective in

improving respiratory status in toddlers with lower respiratory tract infection.

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