



ORIGINAL RESEARCH PAPER

Pulmonary Medicine

EFFECT OF PECTORAL STRETCHING EXERCISE ON EXERTIONAL DYSPNOEA AMONG OBESE WOMEN

KEY WORDS: effectiveness; pectoral stretching exercise; exertional dyspnoea; obese women

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ABSTRACT

A pre experimental study was conducted to assess the effectiveness of pectoral stretching exercise on exertional dyspnoea among obese women in a selected community at Alappuzha district. The objectives of the study were to assess the pre test and post test level of exertional dyspnoea, to assess the effectiveness of pectoral stretching exercise on exertional dyspnoea, to find out the correlation between BMI and perceived exertional dyspnoea and to find out the association between BMI and exertional dyspnoea with sociodemographic variables. Thirty overweight / obese women of age 20 - 30 years with exertional dyspnoea were selected using six minute walk test and Modified Borg's Dyspnoea scale following purposive sampling technique. The conceptual framework was based on Ludwig Von Bertalanffy's General system theory (1968). Data was collected using structured interview and biophysiological method, pectoral stretching exercise was administered for a period of 21 days daily for 20 minutes and post test was conducted. Mean pre test score was 4.20, mean post test score was 5.97, median of both pre test and post test was 4 and mode of pre test was 7 and post test was 4. Calculated Wilcoxon matched pairs test 'T' value (0) was less than the table value (75) for $n=26$ and the calculated 'z' value (4.457) was more than the table value (2.58) both at $p<0.01$. Karl Pearson correlation coefficient between BMI and exertional dyspnoea $r = 0.236$ was less than the table value (0.381) for $df 25$ at $p>0.05$ which elicited no significant correlation between the variables. Among the sociodemographic variables perception of breathing difficulty while lying down had significant association with BMI and dietary pattern and waist circumference had significant association with exertional dyspnoea. Study was concluded that pectoral stretching exercise is effective in reducing the exertional dyspnoea among obese women.

Introduction

Obesity is when someone is so overweight and when it is a threat to their health. According to WHO in 2014 more than 1.9 billion adults 18 years and older, were overweight, around 38% of men and 40% of women.¹ Respiratory disorders are one among the comorbidities of obesity mainly because of the structural changes of the thoracic abdominal region. An epidemiological survey conducted at Sweden (2004) concluded that 80% of obese middle aged subjects were having shortness of breath.² Stretching refers to the process of elongating the muscles to improve range of motion.³ An experimental study was conducted at Thailand (2011) to assess the effectiveness of exercise therapy among obese, stretching exercise for pectoral muscle was administered for a period of two months and showed a marked reduction in the dyspnoea on exertion level.⁴

Statement of the problem

A study to assess the effectiveness of pectoral stretching exercise on exertional dyspnoea among obese women in a selected community at Alappuzha district.

Objectives

1. To assess the pre test and post test level of exertional dyspnoea among obese women.
2. To assess the effectiveness of pectoral stretching exercise on exertional dyspnoea among obese women.
3. To find out the correlation between BMI and perceived exertional dyspnoea among obese women.
4. To find out the association between pre test level of BMI and selected sociodemographic variables among obese women.
5. To find out the association between perceived exertional dyspnoea and selected sociodemographic variables among obese women.

Hypotheses/Assumption

Assumptions of the study were

- Obese people will be having a decreased functional lung capacity due to a decrease in chest wall compliance and there will be laboured breathing after activities.
- Regular pectoral stretching exercise will stretch the pectoralis muscle and increase its contractility.

And the following hypotheses were formulated:

H₁: There will be significant difference between the pre test and post test level of exertional dyspnoea among obese women.

H₂: There will be significant correlation between the pre test level

of BMI and exertion dyspnoea among obese women.

H₃: There will be significant association between the pre test level of BMI and selected sociodemographic variables among obese women.

H₄: There will be significant association between the perceived exertional dyspnoea and selected sociodemographic variables among obese women.

Variables

In this study, pectoral stretching exercise was the independent variable and exertional dyspnoea of obese women was the dependent variable.

Research Methodology

Research approach: quantitative research approach.

Research design: pre experimental one group pre test – post test design.

Population: Population of the study was adult women with BMI $\geq 23\text{kg/m}^2$. Target population was women with BMI $\geq 23\text{kg/m}^2$ and who are having exertional dyspnoea. Accessible population was women with BMI $\geq 23\text{kg/m}^2$ and who presents an exertional dyspnoea score of ≥ 3 on modified Borg dyspnoea scale during or after a 6 minute walk test.

Setting: The present study was conducted at ward 6 and 7 of Chingoli gramapanchayat, Alappuzha district.

Sample size: 30

Sampling technique: Purposive sampling

Inclusion criteria: Adult women who are:

- in the age group of 30 to 60 years.
- having a BMI of greater than or equal to 23kg/m^2 .
- having a self reported score of 3 or more on Modified Borg dyspnoea scale while or after a 6 minute walk test as per the American thoracic society guidelines.
- able to participate in regular pectoral stretching exercise for a period of 21 days.

Exclusion criteria: Adult women who are

- not interested to participate.
- doing regularly scheduled exercises or yoga
- not able to tolerate the pectoral stretching exercise.
- undergoing or undergone pharmacologic or surgical management for obesity.
- having a history of any surgeries involving arms or chest.

Tools and technique: Development and validation of tool: Tools used in the study were socio demographic proforma which included demographic variables, lifestyle factors and biophysical variables and modified Borg dyspnoea scale to rate the exertional dyspnoea. In order to infer the content validity, the tool was sent to experts from the field of community health nursing, physical therapy, social and preventive medicine, general medicine and items were modified as per their suggestions.

Reliability of the tool

The instruments used for checking biophysical variables were sent for calibration at the High Tech Surgicals, Thiruvananthapuram. Modified Borgdyspnoea scale is a standardized instrument and its reliability is 0.9⁶⁰

Conceptual framework

Conceptual framework was based Ludwig Von Bertalanffy's general system theory (1968)

Data collection process

First five days, house to house survey was conducted and women with BMI of ≥23 kg/m² were screened and 6 minute walk test was conducted to assess the exertional dyspnoea and those score of ≥3 on Modified Borg dyspnoea scale were selected and informed consent along with sociodemographic data was collected. Pectoral stretching exercise was administered for 20 minutes daily for a period of 21 days. Post test was conducted after 21 days of intervention by 6 minute walk test and rating of exertional dyspnoea.

Data analysis

Frequency and percentage distribution were used to analyze sociodemographic variables and Wilcoxon's matched pairs test was used to compare the pre test and post test score of exertional dyspnoea among the sample and Chi square test was utilized to determine association

Results

Figure 1: Horizontal Bar diagram showing percentage distribution of obese women according to pre test and post test exertional dyspnoea score (n=30)

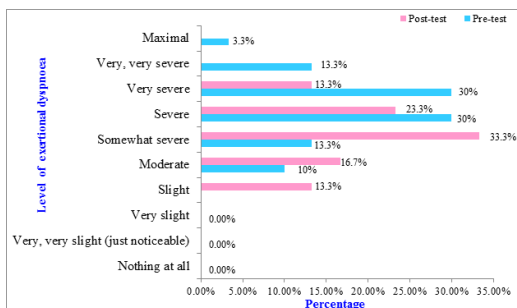


Table 1: Exertional dyspnoea score characteristics of the subjects

Impression	Number of subjects
Positive change (Post test score < Pre test score)	26
Negative change (Post test score >Pre test score)	0
Zero Change (Post test score = Pre test score)	4
Total	30

Table 2: Mean, Median, Mode, S.D, Wilcoxon Matched Pairs T value, E (T) and 'z' value to assess the effectiveness of pectoral stretching exercise on exertional dyspnoea (n=26)

Test	Mea n	Med ian	Mod e	S.D	Mini mum	Maxi mum	T	E(T)	z	p value
Pre test	5.97	4	7	1.974	3	10	0	175.5	4.457	p 0.01 **
Post test	4.20	4	4	1.472	2	7				

** Significant at 0.01 level

The mean pre test score was 5.97 with S.D.1.974, mean post test score was 4.20 with S.D.1.472, median of both pre test and post test scores was 4, mode of pre test was 7 and mode of post test was 4. (T) is 0 which is less than the corresponding table value for Wilcoxon matched pairs test (75) for n = 26 at p<0.01 level. Expected sum of ranks E (T) was 175.5. The calculated 'z' value is 4.457 which is greater than the 'z' distribution table value (2.58) at 99 % confidence interval and at p<0.01. And it was concluded that there will be significant difference between the pre test and post test level of exertional dyspnoea among obese women after 21 days of pectoral stretching exercise

Table 3: Karl Pearson correlation coefficient value to assess the Correlation between BMI and perceived exertional dyspnoea (n=30)

Variables	Karl Pearson correlation coefficient	df	Inference (p value)
BMI and Exertional dyspnoea	0.236	25	p>0.05

Not significant at 0.05 level

Calculated Karl Pearson correlation coefficient was 0.236 and the table value at 95 % confidence interval is 0.381 for df 25 and there is no significant correlation between the pre test level of BMI and exertional dyspnoea among obese women.

Among the sociodemographic variables breathing difficulty while lying down had significant association with level of BMI and this dietary pattern & waist circumference had significant association with level of exertional dyspnoea.

Conclusion

Obesity is generally acknowledged as a global phenomenon that increases morbidity and reduces life expectancy. Obese patients have increased dyspnea on exertion and decreased exercise capacity, which are vital to quality of life. Weight reduction and physical activity are effective means of reversing the respiratory complications of obesity. The present study was concentrated on reducing the perceived symptom of exertional dyspnoea by regular pectoral stretching exercise.

References

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