

The Influence of Upper Arm Exercise on Asthma Attack and Asthma Recurrence in Asthma Patients at RSUD Pirngadi Medan

Meta Rosaulina¹, Amira Permatasari Tarigan², Nunung Febriany Sitepu³

¹Faculty of Nursing, Universitas Sumatera Utara, Indonesia

²Faculty of Medicine, Universitas Sumatera Utara, Indonesia

³Faculty of Nursing, Universitas Sumatera Utara, Indonesia

Corresponding Author: Meta Rosaulina

Abstract: Asthma is one of ten causes of illness in Indonesia. It can be cured by curative method using medicines and rehabilitation. One of the methods of rehabilitative treatment is by doing upper arm exercise. Upper arm exercise is the therapy for asthma. If it is regularly done, it will improve the strength of respiratory muscles, capacity and efficiency in respiratory process to reduce asthma attack and recurrence. The objective of the research was to reduce the frequency of asthma attack and recurrence. The research used quasi experiment design with one group pre-post test without control group. The sample consisted of 44 asthma patients selected by applying consecutive sampling technique. The results of the test examining the influence of upper arm exercise p-value was 0.000 ($p = < 0.05$) and it became p-value 0.001 ($p = < 0.05$) after they did the exercise. Test results of the test examining the influence of upper arm exercise on asthma recurrence between before and after performing upper arm exercise was p-value 0.000 ($p = < 0.05$). Therefore, it was concluded that arm upper exercise had a significant influence on the reduction of asthma attack and recurrence in asthma patients. It is suggested that asthma patients prevent the trigger factors of asthma and do upper arm exercise regularly to reduce the frequency of asthma attacks and recurrence.

Keywords: Upper Arm Exercise, Asthma Attack, Asthma Recurrence

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I. Introduction

In the world today, asthma is a health problem that is estimated to affect 300 million people. The greatest prevalence of asthma occurs in all races and ages. Girls have fewer asthma than boys with a ratio of 2: 3 and women who are older than teenagers, because asthma is a chronic respiratory disorder that is associated with airway obstruction problems (Alan and Kenneth, 2011).

According to data from the Global Initiative For Asthma organization states that "asthma is associated with inflammation in the chronic respiratory tract and hyper-responsive airway to stimuli that occur directly or indirectly, even when there are no symptoms or normal lung function". But it can occur normally with treatment. Management of asthma treatment can be done by exercising although it can cause bronchoconstriction in all asthmatics (Alan and Kenneth, 2011).

Asthma affects 5 million people in the UK who need more than 1 billion from the National Health Service (NHS). Although pharmacotherapy is effective in treating asthma, the results remain suboptimal. Many patients have concerns about taking medication regularly, because according to the survey results the level of complementary and alternative medicine users is very high with respiratory modification techniques and is most used as a non-drug. In a systematic review it was found that 30% of patients reported using breathing techniques to control the symptoms they felt.

Weakness in respiratory muscles will be experienced by people with asthma, due to restrictions on activity and the occurrence of dyspnea. Respiratory muscle training is one way to overcome this so that respiratory muscle function can increase tolerance for activity, reduce the severity of respiratory disorders (Ukhalima et al., 2016).

Exercise in asthma disorders can be done by breathing in, prayanama yoga, asthma exercises, upper body exercises, and buteyko. Patients often use this method to help reduce asthma. But this is not yet known about the effectiveness of exercise in increasing lung expiratory capacity (Hastono, 2010). Upper arm movement exercises are also one of the exercises for asthma disorders. Respiratory muscle strength and lung function can improve diaphragm muscles, improve lung function and reduce tightness in asthma patients if exercise is done. Improved respiratory muscle function can increase exercise strength and exercise readiness in daily activities.

Upper body movement exercises have the potential to reduce dyspnea and increase arm activity capacity with the aim of increasing arm strength, chest wall, and respiratory muscles. During upper body endurance exercises, the chest wall muscles are used to stabilize the chest with every movement that has the potential to strengthen the chest wall and respiratory muscles (Covey et al., 2012).

The exercise program must be adjusted individually by following established guidelines and producing the same benefits by non-asthmatics. Asthma sufferers should try to avoid or minimize triggers whenever possible. The special benefit of a physical exercise program is to exercise with a little bronchoconstriction at the same exercise pressure, although it does not eliminate or reduce airway hyperresponsiveness (AHR) in asthmatics (Alan and Kenneth, 2011).

In the upper arm technique, low impact exercise is a training process that does not trigger bronchoconstriction with a duration of 3-4 minutes per exercise (Elyana, 2012). Arm and shoulder muscle strength can be increased by doing body exercises at the top so that the volume of the chest cavity can support the movement of the ribs and help improve breathing.

II. Method

2.1 Type of Research

This type of research is a quantitative study with a quasi-experimental approach (Polit and Beck, 2010). Quasi-experimental design is a study that tests an intervention in a group of subjects with or without a comparison but no randomization is done to include subjects in the treatment group. This study uses a quasi group experimental design with pre-posttest without control, where researchers only intervene in one group without a control group (Dharma, 2011). This study uses one group, an intervention group that performs upper arm movements in asthmatics.

2.2 Research Location and Time

This research was carried out at home with asthma sufferers by taking samples from the Pulng Poli RSUD Pirngadi Medan for 2 per week in 4 per week for 30 minutes. This research began in March 2018.

2.3 Population and Sample

The population is a group of individuals or elements that are the focus of research. The target population is the entire set of individuals or elements that meet the sampling criteria (Burn and Grove, 2010). The population in this study were asthma sufferers who visited the Pulmonary Poli "Pirngadi Regional Hospital Medan".

The sample is a small portion or representative of the population as a subject to be studied (Burn and Grove, 2010). The sampling technique in this study uses a nonprobability sampling technique with the type of sampling used, namely consecutive sampling or selecting samples made by selecting and determining the subjects that meet the sample criteria that have been determined in the study so that the specified number of samples can be met (Polit and Beck, 2012).

The research samples taken were asthma sufferers who met the inclusion criteria as follows: 1) patients with a history of controlled asthma, 2) patients who were not in an asthma attack condition, 3) patients who received GINA therapy. While the exclusion criteria in this study are as follows: 1) people with asthma with other diseases, 2) people with asthma with disabilities, 3) patients who are being treated and 4) patients who are not compliant.

Calculation of the number of samples in this study uses a power analysis table. Based on previous research determined that the significant level with $(\alpha) = 0.05$, power $(1-\beta) = 0.80$ and estimated effect size (γ) is set at 0.60, then the power analysis table in Polit and Beck (2010) established a sample of 44 respondents. In an effort to anticipate the possibility of selected subjects or samples dropping out, it is necessary to increase the number of samples by 10% so that the sample size remains fulfilled so that the total sample is obtained by 48 respondents.

2.4 Data Analysis Methods

The data analysis method used in the study is a bivariate analysis, used to describe the relationship between two variables (Polit and Beck, 2012). Bivariate analysis was performed to determine the effect of upper arm exercise routines by testing the difference in the 2 mean (pretest and posttest) in the same group. Researchers used a statistical analysis of dependent t-test (paired t test) where the p value before the upper arm movement against asthma attacks obtained p value 0,000 while after the upper arm movement against asthma attacks obtained p value 0.001 which means there is a significant influence. Whereas before the arm movement over asthma recurrence obtained p value 0,000 and after the exercise of the upper arm against asthma recurrence obtained p value 0,000 which means there is a significant influence.

III. Research Results

Effect of Upper Arm Exercise on Asthma Attack and Asthma Recurrence in Asthma Patients

The effect of upper arm exercise on asthma attack and asthma recurrence in this study was analyzed by comparing the mean values before and after the intervention. Upper arm exercise interventions are carried out at home by respondents every 2 times a week within 30 minutes for 4 weeks. Monitoring is carried out once every 2 days by telephone, while home visits are carried out every week. At the time of the home visit the researcher always observed the implementation of upper arm exercise in the respondents. The second evaluation was carried out after undergoing 4 weeks of training giving ACT questionnaires to assess asthma attack and asthma recurrence. During the research series, asthma sufferers are given support, motivation to participate in sports until completion, and education about the disease.

Table 1 Effect of Upper Arm Exercise on Asthma Attack and Asthma Recurrence in Asthma Patients (n = 44)

	n	Mean	SD	pvalue
Before upper arm exercise against asthma attack	44	0.143	0.948	0.000
After upper arm exercise against asthma attack	44	0.132	0.876	0.001
Before upper arm exercise against asthma recurrence	44	0.167	1.110	0.000
After upper arm exercise against asthma recurrence	44	0.179	1.185	0.000

Source: Research Results

To compare between before and after in a paired group tested using statistical analysis dependent t-test (paired t test). This test is done because the data is normally distributed. Table 1 shows the results of statistical tests in the group that there was a significant influence between before and after upper arm exercise. From the results of paired t test before upper arm exercise against asthma attack obtained SD 0.948 with p value 0.000 while after upper arm exercise against asthma attack obtained SD 0.876 with p value 0.001 which means there is a significant influence. Whereas before upper arm exercise against asthma recurrence was SD 1.110 with p value 0.000 and after upper arm exercise against asthma recurrence was obtained SD 1.185 with p value 0.000 which means there was a significant influence.

IV. Conclusion and Suggestion

4.1 Conclusion

Based on the results of research conducted that there is an improvement in attack and recurrence in asthmatics after upper arm exercise. Before doing the upper arm exercise, a severe asthma attack and after it is done, a moderate asthma attack. Before doing the upper arm exercise routine, asthma recurrence often occurs and after it is done, asthma recurrence sometimes occurs. This is because upper arm exercise is performed with a duration of 30 minutes with a frequency of 2 times a week for 4 weeks which helps reduce and decrease the frequency of attacks and recurrence in asthmatics.

4.2 Suggestion

The results of this study can be used as additional knowledge in the field of medical surgical nursing on upper arm sports in asthmatics that can be socialized to other students, so that it can be applied when students practice nursing.

These findings can provide information to nurses at the Pulng Poli RSUD Pirngadi Medan that provides nursing services as an additional alternative intervention in reducing asthma attacks and asthma recurrence in asthmatics or can be combined with other nursing interventions. It is expected to be able to carry out upper arm exercises in asthma patients in order to maintain the patient's condition to remain stable and reduce asthma attacks. The results of this study can add variations in nursing interventions carried out by nurses in an effort to improve the patient's health status.

For sufferers of asthma, upper arm exercise is one of the therapies that can be done to prevent the poor condition of asthma so that it can be controlled if you follow upper arm exercise regularly and regularly so that the asthma suffered can be controlled / controlled.

For further research development if conducting research on asthma patients is expected to increase the number of variables so that the results of research on asthma become more extensive and comprehensive.

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