

# The Comparison between the Effectiveness of Reciting Al-Qur'an and Singing toward the Value of the Peak of Expiratory Flow Rate

Ita Yuanita

Nursing Department of UIN Syarif Hidayatullah, Kertamukti Street. South Tangerang, Indonesia

**Key Words:** The peak of expiratory flow rate or (PEFR), Singing, *Reciting Qur'an*.

**Abstract:** Several research revealed that there was an influence on asthma gymnastics toward the control of asthma. The peak of expiratory flow rate or (PEFR) has been regarded as one of the investigations to assess patients' asthma condition. The activity of both singing and reciting Qur'an possesses the same principle to control expiratory. The objective of the study was to know the comparison of the effectiveness between singing and reciting Qur'an toward the value of the peak of expiratory flow rate (PEFR). This study used a quasi-experimental design involving both pre-test and post-test on two groups. Data collection was gathered from two places which firstly from the choir in the university and secondly at Islamic boarding school in South Tangerang. The sample of the study consists of 20 people from each group. The statistical experiment used Mann-Whitney statistical experiment. The result of the study revealed that there was a significant influence on reciting Qur'an ( $p < 0,05$ ) and singing ( $p = 0,186$ ) toward the value of PEFR. There was a significant difference with the average on the value of PEFR between reciting Qur'an's intervention and singing's intervention as amounted to ( $p = 0,001$ ). **Conclusion:** Reciting Qur'an is better to enhance PEFR's value instead of singing. **Recommendation:** reciting Qur'an can be a nursing's intervention to ream airway.

## 1 INTRODUCTION

Asthma is the one of non infectious disease which still concerned by all nations in the world. According to WHO estimates, 235 million people suffer from asthma. Asthma is the most common chronic disease among children. The prevalence of asthma ranks the highest (4.5%) of non-communicable diseases in Indonesia. The prevalence of asthma in adolescents aged 15-24 years (5.7<sup>000</sup>) ranks second in all age groups. Asthma patients living in urban and rural areas are as many (Kementrian Kesehatan, 2013).

Asthma can interfere the quality of life. The recurrence of asthma or uncontrolled asthma causes the quality of life disruption (Nalina, 2015; Global Initiative for Asthma, 2015; Australian Asthma for Monitoring, 2004). As the symptoms revealed either shortness of breath, coughing, or wheezing, the patients are insufficient of sleep or possess the disrupted daily activities (Global Initiative for Asthma, 2015).

Non Pharmacology handling includes education and physical training and breathing. Gymnastics asthma is one of the means to train respiratory

muscles. Adult patients with asthma who did gymnastics asthma over the past month could improve the quality of life and control the emergence of the symptoms of asthma (Thomas, 2009). The core exercises of the A core movements on asthma gymnastic is to enable longer expiratory instead of inspiratory. Exercises on asthma gymnastic had affected on PEFR (Antoro, 2014)

The peak of expiratory flow rate or PEFR is the highest point that can be achieved at the maximum expiratory, in which it reflects the onset of changes in the size of the airway to be large (Potter & Perry, 2005). The measurement of the PEFR can be done by using a peak flow meter. PEFR Examination aims to describe the condition of the airway caliber especially he larger caliber. If the value of the PEFR decreased, meaning that there is airflow hindrance in the expiratory air flow in respiratory tract.

There were a few previous research shows the effect of Reciting Qur'an on PEFR. Reciting the Qur'an for 20 minutes can increase PEFR (Yuanita et.al., 2017; Mubarok Z. & Yuanita, 2010). The sample of that study were asthma patient and member of exercise breathing.

The activities that require breath include singing and reciting Qur'an. Processing breath on either singing or reciting Qur'an will be different instead of doing the regular activities. The rapid movement of breath in a great number and remove it slowly are in accordance with the rhythm in which it can train efficiency, enable better breathing control as well as enable the airway to be more flexible (Saud, 2010). According to those issues, this research, therefore, needs to be conducted to respond to which the activities more effective, either reading Quran or singing that increases PEFR.

## 2 METHODS

This study employed a quantitative approach with quasi-experimental design involving pre & post on 2 groups. The two groups carried out different treatment involving one group on preferential treatment of reciting Qur'an and another group on preferential treatment of singing choir. The frequency and length treatment for each group were 60 minutes.

The study was conducted at 2 locations, one was at University and another one was at boarding schools of *Qur'an* (Pesantren) in Tangerang Selatan. The research conducted in March 2017 with involving research sample of 20 people in the choir members at University and the other 20 people were the members of training at *Pesantren Qur'an*. The sample was selected based on age (18-22 years old), length of training as well as the history of smoking intake.

The respondents would be measured PEFR before and after were receiving intervention. Each group would be given preferential treatment by as much as one meeting for 60 minutes. PEFR will be measured again after the participants got the treatment and take a rest for  $\pm 10$  menit.

The study used the instruments including questionnaire sheet contained demographic data, peak flow meters, alcohol 70%, stature meters as well as digital scales. Demographic questionnaires were filled out before the respondents doing exercises, then researchers perform measurements of height and weight of the respondents. The measurement of PEFR is done when the respondent finished performing the exercise. The measurement was done by as much as 3 times continuously and the highest value of the PEFR would be taken (Adeniyi, & Erhabor, 2011).

## 3 FINDINGS

### 3.1 The Respondents' Characteristics

The characteristics of the participants in research (table 1) include: the average age of the respondent group was 19, 80 years and the average age of respondents of *qoriah* group was 18.45 years; the average height of the respondents on a group of singers was 155.90 cm with a standard deviation of 6.57, whereas in the Group *qoriah* is 153.88 cm with a standard deviation of 4.21. Moreover, the average weight of respondents on a group of singers was 55.30 kg while in the Group *qoriah* was 49.94 kg. The group of singer had an average IMT 23.04 while *qoriah* 21.34.

The average of the length practice on a group of singers in one week was 558 minutes with a standard deviation of 164.144, while the average of the length exercise on the *qoriah* group was 273 seconds with standard deviation 84.237.

The frequency of exercises conducted by the singer was less than *qoriah*, whereas the length of the of the exercise intensity performed by a singer was larger than *qoriah* (table 1).

### 3.2 The Effectiveness of Singing on PEFR Values

According to the data normality test result, it was found that the distribution of data of the mean of PEFR values pre and post singing's intervention was normal (Shapiro Wilk test  $p > 0.05$ ), therefore, the hypothesis test used Paired T test.

Mean score of PEFR in choir group are pre 313,5 L/minutes and post 330L/minutes. This study has found that singing was not significant effect on PEFR values ( $p$  values $>0,05$ ). the results can be seen at table 1.

### 3.3 The Effectiveness of Reciting Qur'an on PEFR Values

According to the data normality test result, it was found that the distribution of data of the mean of PEFR's values pre and post reciting Qur'an intervention was normal (Shapiro Wilk test  $p > 0.05$ ), therefore, the hypothesis test used Paired t test. Mean score of PEFR in Qori group are pre 313,5 L/minutes and post 330L/minutes. This study has found that reciting Qur'an was significant effect on PEFR values ( $p$  values $<0,05$ ). the results can be seen at table 2.

Table 1: The Distribution Of Respondents According To The Age, Height, Weight and exercise time.

Characteristics	Group	Mean	Min-Max	SD
Age	Singer	19,80	18-22	1,005
	Qoriah	18,45	15-22	2,935
Height	Singer	155,90	143-166	6,58
	Qoriah	153,88	146-162	4,22
Weight	Singer	55,30	43-81	11,45
	Qoriah	49,94	35-69	8,54
The Duration of Exercise	Singer	558	360-720	164,15
	Qoriah	273	120-450	84,24

Table 2: Analysis of the effectiveness of singing and reciting Qur'an on PEFR values.

Intervention		Mean	SD	P value
Singing	Pre	313,5 L/minutes (200 – 410 L/ minutes)	56,5 L/menit	P = 0,186
	Post	330 L/menit (200-410L/menit)	57,7 L/menit	
Reciting Qur'an	Pre	332,5 L/minutes (250 – 450 L/ minutes)	58,74 L/menit	P = 0,0001
	Post	371 L/menit (290-510L/menit)	60,4 L/menit	

Table 3: The analysis of the comparison of the differences of PEFR's mean values between Singing and Reciting Qur'an.

Intervention Group	Mean Differences (Min-Max)	Standard deviation (SD)	P Value
Reciting Qur'an	38,5 L/minutes (10-70 L/minutes)	16,5 L/minutes	P = 0,001
Singing	27,5 L/minutes (-50-200 L/minutes)	40,9 L/minutes	

### 3.4 The Comparison of the Differences of PEFR's Mean Values between Singing and Reciting Qur'an (pre & post intervention)

According to the data normality test result, it was found that the distribution of data of the mean of values of the difference between choir and Qori was not normal (Shapiro Wilk test  $p < 0.001$ ), therefore, the hypothesis test used Mann Whitney. The results can be seen at table 3.

The teenagers who get the treatment of reciting Qur'an (35 L/min) showed the average of PEFR values higher than the treatment of singing group (Mean of 5 L/min). Hence, it was also found that there was a significant difference on the average value of PEFR on the group who recite Qur'an with singing groups ( $p = 0.001$ ). Therefore, it can be inferred that reciting Qur'an with *tartil* is able to increase the value of the PEFR instead of singing.

## 4 DISCUSSION

There were limited research and references which investigated PEFR and breathing exercise or singing. However We can explain by some study may relevance to our research Some factor can affect on PEFR. According to Mishra J, Mishra S., Satphaty S, Manjareeka S.; (2013) and studied that Height and weight can interfere PEFR, as this study showed most of respondent had almost same mean height and weight.

When performing the exercise, the amount of oxygen in the blood that enters the lungs will increase due to the increased amount of oxygen in each unit of blood per minute and blood flow that enters the lungs increases. PO<sub>2</sub> of oxygen in the blood to the lung capillaries decreases from 40 to 25 mmHg, PO<sub>2</sub> so that the gradient in the alveolar capillary-rise and the oxygen gets into the blood in great amount. Blood flow per minute increases from 5.5 L/min into 20-35 L/min. The amount of O<sub>2</sub>

which enters the blood increased from 250 ml/min into 4000 ml/minute. The amount of CO<sub>2</sub> that was moved from every unit of blood increases, the excretion of CO<sub>2</sub> increased from 200 ml/min into 8000 ml/minute. The increase of O<sub>2</sub> is in proportion to the workload so that it can be maximum (Barrett et. al 2012).

This theory is in accordance with the research conducted by Sahat (2011) which explained that gymnastics asthma continually applied during 8 weeks where a week involving three times gymnastics can improve the lung function up to 11.9%.

Singer in the Gita Sasmita Choir in singing exercises has been divided into several part of activities. Firstly, it consists of warming up or stretching the muscles involving the head, hands and feet. This warming is done more or less in 15-20 seconds. Next, it consists of the process of taking a tone on each type of sound. The breathing techniques used is diaphragmatic breathing. The position of the body at the exercise is standing. After the tone of each kind of sound obtained, then singing exercise is started. The number of songs sung in each exercise range between 4-6 songs with different genres.

Another thing that must be mastered by the *qori/qoriah* is articulation. Articulation or pronunciation in reciting Qur'an is also important to produce the perfect sound. In addition, *qori/qoriah* should also understand the *makhrijul alphabet*. they are places discharge letters at the time the letter is emitted. Reciting Qur'an is required to sound the letters in accordance with *makhraj*, because if there are errors in pronouncing the letter, then it will give a different meaning (Suwarno, 2016).

The singer's body position at exercise time is the standing body position, while *qoriah* is seated, however, the average value of the PEF<sub>R</sub> of *qoriah* group was higher than the singer group. However, the research was not in line with the previous theory. The increase of pressure due to gravity affects the volume of effective blood circulation in several ways. First of all, the increased hydrostatic pressure that occurs in the foot when someone stands will push out vein walls thus it causes distention, in consequence, his/her blood clotted in the vein vessels. Some of the blood that comes from the capillaries will go into the venous vessels is wider rather than it comes back to the heart. At the same time, the increased capillary pressure caused by the force of gravity causes the increased filtration of fluids from the capillaries into the interstitial space. Since the blood clotted in a vein and capillary

filtration enhancement, they will reduce the volume of effective blood circulation. Whereas, in the sitting position, the center of gravity is at the anterior part of ischia and around 25% of the body weight is transmitted down through the lower extremity so that the parts of body are in a relax condition (Manembu, Rumampuk, Danes & 2015).

This study showed singing had no impact to PEF<sub>R</sub>, it was opposite to other research. As a research conducted by Price K, Scharzt P., Watson A.H (2014) explained that the value of the Force Expiration Volume (FEV) is lower in sitting position rather than in Standing positions. In another research found sitting and standing position had no impact to PEF (McCoy et.al, 2010). This happens because physical activity is more frequently performed on standing position. The diaphragm will go down when the body is at a standing position so that the capacity of the thoracic cavity increases. Whereas, when the body thoroughly lies, the abdomen presses the diaphragm so that it is resulted a decrease of thoracic capacity. When standing abdominal wall needs to resolve the tension in order to push the diaphragm to raise as that is why the activity of the abdominal muscles bigger (although the abdominal circumference is lower) than sitting (k. Price, Scharzt, & Watson, 2014)

The hypothesis that can be inferred by the researcher was the existence of significant difference between the average value of PEF<sub>R</sub> of both singer and *qoriah* where the *qoriah*'s PEF<sub>R</sub> is higher than singer is because there are several conditions that must be obeyed by a *qoriah* in reciting Qur'an which is different from a singer. *Qoriah* has to master the science of recitation as if only beautifying the sounds of reciting Qur'an but ignoring *tajwid* then reciting it will be *haram* or illegitimate (Tamrin, 2016). In addition, each letter of Qur'an reading should be in accordance with *makhrijul alphabet* so that the readings will be in accordance with the meaning. Good articulation is needed in order to produce perfect sound. Clear intonation in reciting Qur'an is also required to fit with *wazan* mad and *qoshr* so it will be able to create harmony in reciting Qur'an.

## 5 CONCLUSION

From this study, it can be concluded that singing and reciting Al Qur'an can effect on PEF<sub>R</sub> values. Reciting Al Qur'an has better effect than singing on PEF<sub>R</sub>. It can be applied for asthma's patient to improve their PEF<sub>R</sub>.

The limitation of the study were PEF measurement used a prediction and the subject were not asthma's patient. According researcher's experience the most of muslims could not reciting Al Quran with tartil, and it took time (more than 3 month) to teach it.

## ACKNOWLEDGEMENT

Researcher had two assistant for collecting data and administration. assistant accompanied researcher while researcher had conducted in each group. They had been trained for measuring PEFR. Research's Funding came from lecturer allowances.

## REFERENCES

- Adeniyi, B. O., & Erhabor, G. E. (2011). "The Peak Flow Meter and Its Use in Clinical Practice". *African Journal of Respiratory Medicine*. page 5-8
- Amiry A., Mortazavi Z., Monadi M, Bijani A (2010). Normal Measurement of Peak Expiratory Flow Rate In High Scholl Children In Babol, North of Iran.
- Antoro, B. (2015). "Pengaruh Senam Asma Terstruktur Terhadap Peningkatan Arus Puncak Ekspirasi (APE) Pada Pasien Asma". *Jurnal Kesehatan*. Volume 6. Nomor 1. Hal 69-74
- Australian Asthma for Monitoring (2004). Measuring the impact of asthma on quality of life in the Australian population. Canberra : Australian Institute of Health and Welfare
- Barrett, K., Barman, S., Boitano, S., & Brooks, H. (2012).  *Ganong's Review of Medical Physiology (24th ed.)*. Singapore: McGraww Hill. *Casp J. Intern Med*, 1(3), 98-101
- Global Initiative for Asthma (2015). *Global Strategy for Asthma Management and Prevention*. [https://ginasthma.org/wpcontent/uploads/2016/01/GIN\\_A\\_Report\\_2015\\_Aug11-1.pdf](https://ginasthma.org/wpcontent/uploads/2016/01/GIN_A_Report_2015_Aug11-1.pdf)
- Kemntrian Kesehatan (2013). *Riset Kesehatan Dasar Rikesdas 2013*. Badan Penelitian dan pengembangan kesehatan.
- Manembu, M., Rumampuk, J., & Danes, V. (2015). Pengaruh Posisi Duduk dan Berdiri terhadap Tekanan Darah Sistolik dan Diastolik pada Pegawai Negeri Sipil Kabupaten Minahasa Utara. *E-Biomedik*, 3.
- McCoy et.al (2010). An Evaluation of Peak Expiratory Flow Monitoring: A Comparison of Sitting Versus Standing Measurements. *JABFM* vol 23 No. 2, page 166-170
- Mishra J, Mishra S., Satphaty S, Manjareeka S.(2013). "Variations in PEFr among Males and Females With Respect To Anthropometric Parameters. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*". Volume 5, Issue 1, Pages 47-50.
- Mojiminiyi et al (2006). Peak Expiratory Flow Rate in Normal Hausa-Fulani Children and Adolescents of Northern Nigeria. *Annals of African Medicine*, vol 5, no 1, page 10-15
- Mubarrok Z., Yuanita I. (2010). Pengaruh membaca Al Qur'an terhadap Arus Puncak Ekspirasi. Unpublished article.
- Nalina N. (2015). Assessment of quality of life in bronchial asthma patients. *International Journal of Medicine and Public Health*. vol 5, No 1, 93-97
- Price, K., Schartz, P., & Watson, A. (2014). The Effect Of Standing And Sitting Postures On Breathing In Brass Players. *Spinger Plus*; 3: 210.
- Sahat, C., Irawaty, D., & Hastono, S. (2011). Peningkatan Kekuatan Otot Pernapasan dan Fungsi Paru Melalui Senam Asma pada Pasien Asma. *Jurnal Keperawatan Indonesia*, 14, 101–106.
- Saud, F. M. (2010). "Pengaruh Latihan Vokal Terhadap Nilai Arus Puncak Ekspirasi Pada Usia Dewasa Muda". Skripsi. Fakultas Kedokteran, Program Pendidikan Sarjana Kedokteran, Universitas Diponegoro.
- Sherwood, L. (2012). *Fisiologi Manusia dari Selke Sistem*. Jakarta: EGC.
- Suwarno. (2016). *TuntunanTahsin Al- Quran (1st ed.)*. Yogyakarta: Deepublish.
- Tamrin. (2016). "Pola Pembinaan Tahsin Al-Quran di Kalangan Mahasiswa (Analisis Pola Pembinaan pada Himpunan Qari Qariah Mahasiswa Sulawesi Tengah (HIQMAH))". *RausyanFikr*. Vol 12, No 22, Hal 315-350.
- Thomas et.al. (2009). Breathing exercise for Asthma: a Randomized Control Trial. *Pub Med.*, 64, 1, 55-61.
- Yuanita I. et. al. (2017). The Effectiveness of Reciting Holy Qur'an on Peak Expiratory Flow. *International Proceeding*
- WHO (2007). *Global Surveyance, Prevention And Control Of Chronic Respiratory Disease*.