

Impact of a Five Minute Counseling Session of Proper Inhaler Technique on Control of Asthma in Patients Presenting to Tertiary Care Hospital

RASHID IQBAL¹, KHAWAR SHOAB², HASSAN FAROOQ³

^{1,2}Associate Professor of Medicine, PGR Medicine, PGR Medicine

³Department of Medicine Fatima Jinnah Medical University/Sir Ganga Ram Hospital, Lahore

Corresponding author: Rashid Iqbal, Email: rashid192@yahoo.com

ABSTRACT

Objectives: To determine the effectiveness of counseling session of inhaler technique in improving control of symptoms in asthma patients, the factors affecting the improper inhaler technique and association of inhaler use with control of asthma. It has been observed that patients coming to tertiary care hospitals have poor asthma control and patients does not know exactly how to use inhaler in asthma symptoms.

Study design: A facility based Observational, Prospective, Cross-sectional study conducted on patient with asthma symptoms and signs.

Settings: This study was done in Department of Medicine, Sir Ganga Ram hospital Lahore.

Timings: From 24-1-2023 to 23-5-2023.

Methods: A facility based Observational, Prospective, Cross-sectional study was conducted on patient with asthma symptoms and signs. This study described the improvement in asthma symptoms by counseling sessions of using inhaler techniques in asthma patients. This study was done in Department of Medicine, Sir Ganga Ram hospital, Lahore. Patients who come to Out patient department of the hospital were selected who had asthma symptoms and signs. Sample size: A total of eighty Patients were selected with asthma symptoms and signs. Patients history were recorded and they were asked to use inhaler and there inhaler use technique were scored.

Sample Selection: Inclusion Criteria: Patients age 16 years above, Both male and female patients, new onset asthma symptoms and signs, previously uncontrolled asthma on corticosteroid inhalers and meter dose inhaler devices. Exclusion criteria: Patients with history of chronic bronchitis and Patient with history of emphysema, Patients age less than 16 years.

Data Collection procedure: A questionnaire was given to doctors who filled the data and record of patients with asthma symptoms and signs. A proper five minutes counseling of inhaler technique was done in asthma patients who came to Out Patient department of hospital. A questionnaire was filled and used for interpretation of results. We separated patients in two groups. One group of patients did not know how to use inhaler and other group knew how to use inhalers. Improper technique for use of inhaler defined as less than 75 percent of corrected steps done for use of inhaler device. Then we scored patient about the level of effective use of inhaler in asthma patients. We did a five minute counseling session to teach them how to use inhalers properly. We followed these patients in out patients department of tertiary care of hospital and see the improvement in control of asthma symptoms. We observed that patients asthma were controlled, if symptoms and signs improved, reduce nocturnal awakening of patients with cough and shortness of breath, improved quality of life and daily activities. We did the comparison of both group of patients coming to tertiary care hospital and see the impact of five minute counseling of proper inhaler techniques in improving asthma control in these patients.

Results: A total of eighty patients were enrolled in the study. Mean age of Patients were 38.12 years and among them 40 percent were male 60 percent were female. 85.12 percent patients asthma symptoms were not controlled, 14.17 percent patients asthma symptoms were controlled. 11 percent patients were diabetics, 26 percent patients had hypertension, 11 percents were smokers, 3.7 percent patients had ischemic heart disease. Among total 80 patients, 48.12 percent patients were using inhalers. 70 percent patients did not know how to use inhaler devices correctly, 30 percent knew how to use inhalers. All patients who were well controlled with asthma were those who knew how to use asthma inhaler correctly. After counseling of proper inhaler techniques, patients were followed and questionnaire were interpreted and inhaler technique was scored, 78 percent patients have better control of asthma symptoms who scored well on use of inhaler technique of asthma devices.

Practical Implication: Patients asthma are well controlled, if patients know there technique to use inhaler properly and if patients are well compliant to their inhaler medications for asthma.

Conclusion: Patients who were counseled about proper use of inhaler techniques in asthma patients have better asthma symptoms control as compare to patients who did not know how to use asthma inhaler devices. These findings emphasis the need for patient education about asthma inhaler use for good control of asthma symptoms.

Keywords: Asthma, Inhaler Technique, Allergens, Control of symptoms.

INTRODUCTION

Asthma is one of most common chronic, inflammatory airway disease characterized by bronchial hyperactivity with variable degree of airway obstruction^{1,8}. Asthma affects 300 million people world wide causing 250,000 deaths per year. Asthma is a disease which is characterized by recurrent episodes of shortness of breath, coughing, chest tightness and wheeze in response to allergens like dust, pollens, smoke, irritants in work places and pets dander, molds and strong smells. Asthma can also be provoked in response to non allergens like stress full situations, cold weather and exercise². Asthma is a reversible disease if patients are treated properly. During asthma attack three things can happen: A) Bronchospasm: muscles around the airways constrict and make the airways narrow, B) Inflammation: Lining of airways becomes swollen, C) Mucus Production: Increase mucus production which clogs airways⁴.

Asthma has two types: A) Intermittent asthma: In Intermittent asthma, Attack of asthma comes and go in patients. Patients are normal in between attacks. B) Persistent Asthma: Patient have symptoms much of times. Symptoms can be mild, moderate and severe¹². Patients with asthma comes with cough, shortness of breath and chest tightness. Cough is worse at night when asthma is progressing. The goal of asthma treatment is to achieve good asthma control to minimize symptoms burden and risk of exacerbation. If treatment is given on time to patient, then a good control of asthma can be achieved¹³. Anti-inflammatory and bronchodilator treatment are the mainstay of asthma therapy and are used in step wise approach⁴. The main aim to treat asthma is reduce uncontrolled symptoms, reduce exacerbations of asthma and improve quality of life of asthma patient. Inhaler devices are part of mainstay of management is asthma. The effectiveness of these largely depends upon inhalation technique. Poor handling and

wrong inhalational technique are associated with decrease medication delivery and poor disease control ^{4,5}. Improper use of asthma inhalers is one of potential factors of poor asthma control among patients and increase number of hospital visits and admissions in Hospital ^{1,7}.

It is important to properly counsel patient about use of inhaler technique and educate the patients about use of inhaler devices for asthma control. It has been observed, many patients coming to tertiary care hospital does not know how to use asthma medication ¹¹. Patients who does not know how to use asthma inhaler devices has poor asthma control. There are different validated tools for assessing control of asthma including the global initiative for asthma (GINA) guidelines which has six criteria including day time and night time symptoms, limitation in activities, the need for rescue medications, lung function and clinical exacerbations ³. Asthma can be control by using inhalers via spacers or meter dose dry powder devices. If a proper technique to use inhaler is counseled in the hospital, patient condition can be improved ¹.

MATERIAL AND METHODS

A facility based Observational, Prospective, Cross-sectional study was conducted on patient with asthma symptoms and signs. This study described the improvement in asthma symptoms by counseling sessions of using inhaler techniques in asthma patients. This study was done in Department of Medicine, Sir Ganga Ram hospital, Lahore. Patients who come to Out patient department of the hospital were selected who had asthma symptoms and signs. Sample Size: A total of eighty Patients were selected with asthma symptoms and signs. Patients history were recorded and they were asked to use inhaler and their inhaler use technique were scored. Sample Selection:

Inclusion criteria: Patients age 16 years above, Both male and female patients, new onset asthma symptoms and signs, previously uncontrolled asthma on corticosteroid inhalers and meter dose inhaler devices.

Exclusion criteria: Patients with history of chronic bronchitis and Patient with history of emphysema, Patients age less than 16 years.

Data Collection procedure: A questionnaire was given to doctors who fill the data and record of patients with asthma symptoms and signs. A proper five minutes counseling of inhaler technique was done in asthma patients who came to Out Patient department of hospital. A questionnaire was filled and used for interpretation of results. We separated patients in two groups. One group of patients did not know how to use inhaler and other group knew how to use inhalers. We filled questionnaires and saw how effective these patients use inhaler devices. Improper technique for use of inhaler defined as less than 75 percent of corrected steps done for use of inhaler device. Then we scored patient about the level of effective use of inhaler in asthma patients. We did a five minute counseling session to teach them how to use inhalers properly. We followed these patients in Out patients department of tertiary care of hospital and see the improvement in control of asthma symptoms. We observe that patients asthma were controlled, if symptoms and signs improved, reduce nocturnal awakening of patients with cough and shortness of breath, improved quality of life and daily activities. We did the comparison of both group of patients coming to tertiary care hospital and see the impact of five minute counseling of proper inhaler techniques in improving asthma control in these patients.

RESULTS

Table-1: Mean Age of patients with asthma (use inhaler correctly) and patients with asthma (use inhaler incorrectly).

	Asthma patients (use inhaler correctly)	Asthma patients (use inhaler incorrectly)
n	40	40
Mean	38.12	38.44
Minimum	18	16
Maximum	80	93

Table-2: Gender of patients with asthma (use inhaler correctly) and patients with asthma (use inhaler incorrectly). Number of patients (n).

	Asthma patients	Asthma patients	Total

	(use inhaler correctly)	(use inhaler incorrectly)	
Male	9 n (12%)	22 n (28 %)	31
Female	15 n (18%)	34 n (42%)	49
Total	24	56	80

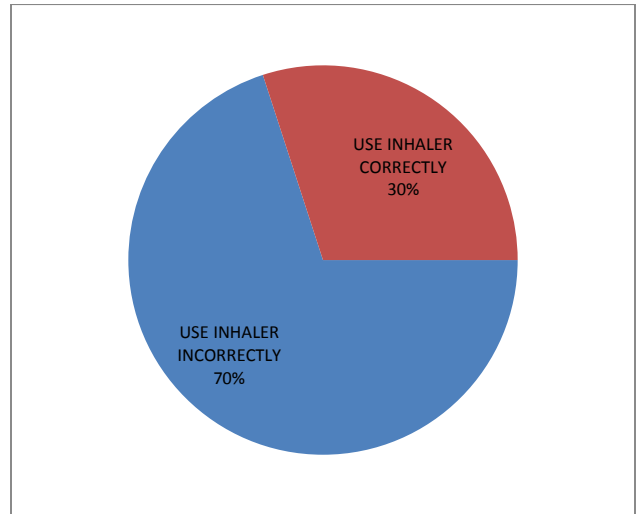


Figure-3: Percentage of Patients with Asthma who use inhalers correctly and incorrectly.

Table- 4: Asthma symptoms controlled in patients who use inhaler correctly and asthma symptoms uncontrolled in patients who use inhaler incorrectly. Number of patients (n).

	Asthma patients who use inhaler correctly	Asthma patients who use inhaler incorrectly	Total
Asthma Symptoms Well Contolled	49 n (62 %)	3 n (4%)	52
Asthma symptoms Partially Controlled	13 n (16 %)	15 n (18%)	28
Total	62 n (78 %)	18 n (22%)	80

A total of Eighty patients were enrolled in the study. Mean age of Patients were 38.12 years and among them 40 percents were male 60 percents were female. 85.12 percent patients, asthma symptoms were not controlled, 14.17 percent patients asthma symptoms were controlled. 11 percent patients had diabetes mellitus, 26 percent patients had hypertension, 11 percents were smokers, 3.7 percent patients had ischemic heart disease. Among total 80 patients 48.12 percent patients were using inhalers. 70 percent patients did not know how to use inhaler devices correctly. All patients who were well controlled with asthma were those who knew how to use asthma inhaler correctly. After counseling of proper inhaler techniques, patients were followed and questionnaires were interpreted and inhaler technique was scored, 78 percent patients have better control of asthma symptoms who scored well on use of inhaler technique of asthma devices.

DISCUSSION

Asthma is a chronic disease in which patients good behavior and practices have very significant role in control of disease. Patient knowledge about asthma and use of inhaler devices is very important in good control of asthma symptoms ². Patients who come to hospital with asthma symptoms need proper inhaler medicines for good control of asthma. It is very important that asthma medicines reach lungs effectively for control of asthma symptoms. The patients need proper counseling session for use of inhaler devices, so patient get medicines for asthma control properly ⁷. Many factors affect the control of asthma symptoms such as types of inhaler devices, inhaler techniques and compliance of patient to use inhaler medicines. Patients who do not have any instructions to use asthma inhaler are more likely to do mistakes in using inhalers medications

²⁰. Patients who had uncontrolled symptoms of asthma do not use their inhaler devices properly and they are not compliant to their inhaler medicines ¹⁵. If inhaler devices are not used properly by patients, this leads to poor clinical control of asthma and increased hospital visits of patients with asthma ^{15,19}.

In our study 70% percent patients had poor knowledge of correct technique to use inhaler and 30 % have good knowledge of how to use inhaler correctly. After counseling of patients about proper techniques of use of inhaler devices, these patients were followed and it was found these patient asthma symptoms were improved. Previously a study was done that showed 90 percent patient did not had good knowledge of use of inhaler and patients needs good knowledge for proper use of inhaler for good control of asthma¹⁶. It was observed in our study female patients were more affected with uncontrolled asthma symptoms and also did not know how to use inhaler devices properly. Patients had many comorbid symptoms with asthma like Hypertension, Diabetes mellitus and Allergic rhinitis. It was also observed in previous study that patients with poorly controlled asthma were not using their inhaler devices correctly. Patients were not performing correct steps to use inhaler properly. Patients did not hold their breath for 10 seconds and patients did not wait for sixty seconds between two actuations ^{7,13}. It was also observed in our study that patients were not holding their breath for 9 to 10 seconds when take asthma inhaler dose. It was also observed in our study that patients age was greater than 38.44 years in patients who use inhaler incorrectly. There are limited resources available: lack of access to medical and health resources to the patients about disease; limited knowledge and trainings, and awareness about disease. The trainings should be conducted to improve the health literacy and how to access the medical resources for patients in Pakistan:

The proper inhaler technique in asthma is very important in good control of asthma. If patients asthma symptoms are controlled, then there will be less hospital visits and less burden on health care system. Patients training about inhaler use is very important in follow up visits ¹⁸. If patients are instructed regularly about technique to use inhaler in follow up visits, they also retain their skills to use inhaler properly. In a previous study it was found if patients were given labels to use inhaler with devices. Patients retained their skills to use inhaler and their asthma symptoms control were improved ¹⁷. Doctors should regularly check patients inhaler techniques in follow up visits and see patients are using their inhalers correctly ¹¹. Patients quality of life is also improved, if patients use inhalers correctly and asthma symptoms are well controlled ^{7,8}. The Patients asthma is well controlled, if patients have good knowledge of technique to use inhaler properly and if patients are well compliant to their inhaler medications for asthma.

CONCLUSION

Patients who were counseled about proper use of inhaler techniques in asthma patients have better asthma symptoms control as compare to patients who did not know how to use asthma inhaler devices. These findings emphasize the need for patient education about asthma inhaler use for good control of asthma symptoms.

REFERENCES

1. M.K Sodhi, Incorrect inhaler techniques in Western india, still a common problem, International journal of Research in Medical Sciences, Vol.5, no.8, pp. 3461-3465, 2017.
2. R.P. Rakhee Sodhi, R.A.S. Kushwada, S. Kant et al, A study to know the knowledge, attitude and practices of patients of Bronchial asthma, " International journal of Medicine and public health, Vol.3,2019".
3. Benkheder A, Bouacha H, Nafti S, Taright S, M Yassine et al. Control of asthma in Maghreb: results of AIRMAG study, *respiro Med.* 2009,103(2):S12-20.
4. GINA. Pocket guide for asthma management. Global initiative asthma. 2012;32:102-12.
5. Press VG, Arora VM, Shah LM, Lewis SL, Charbenau J, Naureckas ET, et al. Teaching the use of respiratory inhalers to Hospitalized patients with asthma or copd. A randomized trial. *J Gen Intern Med.* 2012; 27:1317-25.
6. H.E.Mustafa, M.S.A. Rokza, B.A elfak, Knowledge and practice of asthmatic patients regarding using meter dose inhaler, " IJLSSR by Society of scientific research under a CC-BY NC 40 International Liscence, Vol. 4, no. 6, 2018".
7. S.P. S Harjinder Singh, J.abraham and A.kaur, A study on Knowledge, attitude and practice of asthmatic patients towards inhaler use," *IJSR Journal of Dental and Medical sciences.* Vol 8, no.4, pp, 6-10, 2019.
8. Robroeks CM, Van berkel JJ, Jobsis Q, Van schooten FJ, Dallinga JW, Wouter EF, Dompling E. Exhaled volatile organic compounds predict exacerbation of childhood asthma in a year prospective study. *Eur RE Spir J.* 2012, 1: erJ00107-2012.
9. Dehre markis, Comprehensive specialized hospital, lia zen office report, Dec 2020.
10. H. Chrystyn, J. Vander Palen, R. sharma, N. Barnes, B.Delafont, A. Mahajan, et al. Device errors in Asthma and COPD. Systemic Literature review and Meta-analysis. *NPJ Prime care, Respir Med,* 27 (2017), pp.22.
11. Normansell, R. Kew, K.M & Mathioudakis, R.S. Intervention to improve inhaler technique for people with asthma. *Cochrane Database, Syst-Rev.*3, CD012286(2017).
12. Jentz soha, N.S. Siva, G.C.G, Mendes, G.M.S, Brand b, P.L.P & Camargas, P. Treatment Adherence and Level of Control in Moderate Persistent asthma in Children and adolescents treated with Fluticasone and Salmeterol. *J. pediatr.* (5, 69-75 (2019).
13. Barja-Martinez, E.Casas-Gonzales S, Simon-Lopez, A.F, Mancheno-rejero, C. & Pedial-de La cruz, M. I.G. Adherence to inhaler therapy in the Out Patient settings. *Enferm. Clin.*29, 34-38(2019).
14. *J Gen Intern Med.* 2012;27:1317-25.Giraud V, Roche N. Misuse of Corticosteroid meter dose inhaler in association with decreased asthma stability. *Eur Respir J.* 2002;19(2): 246-51,
15. Melani AS, Bhonavia M, Cilenti V, Cinti C, Lodi M, Martucci P et al. Inhaler Mishandling remains common in real life and is associated with reduce disease control. *Respir Med.* 2011;105:930-8.
16. Ganguly A, Das AK, Roy A, Adhikari A, Banerjee A, Sen S. Study of proper use of Inhalation devices by bronchial asthma or COPD patients attending a tertiary care hospital. *J clin Diagn Res* 2014, 8:HCO4-7.
17. Basheti I.A, Obeidat N.M, et al. Effect of novel Inhaler technique reminder labels on retention of inhaler skills in asthma: a single blind randomized control trial. *NPJ prim . Care resp. Med* 2017, 27:9.
18. Capstick TG and Clifton IJ: Inhaler technique and training in people with chronic obstructive pulmonary disease and asthma expert Rev *Respir Med.*2012;6:91-101,quiz 102-103.
19. Usmani OS, Lavorini F, Marshall J, et al. Critical inhaler errors in Asthma and COPD: a systemic review of impact on health outcomes. *Respir Res.*2018;19(1):10.
20. Rootmensen GN, Van Keimpema AR, Jansen HM, and de Haan RJ; Predictors of incorrect inhalation technique in patients with asthma or copd: A study using a validated videotaped scoring method. *J Aerosol Med Pulm Drug Deliv.* 2010;23:323-328.