Original Article

Errors in Use of Metered Dose Inhalers in Asthma

Metered Dose Inhalers in Asthma

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ABSTRACT

Objective: To determine the Errors in use of metered dose inhalers in Asthma
Study Design: Analytic interventional study
Place and Duration of Study: This study was conducted at the Idris teaching hospital Sialkot during Jan 2019 to Nov 2020.
Materials and Methods: Four Hundred consecutive patients coming to the out patient department with diagnoses of Asthma or COPD who has ever been prescribed meter dose inhalers of any of drugs beta 2 Agonists, Steroids Ipratropiun and Cromolyn in the pass were asked to demonstrate their technique and common errors were observed. The written informed consent every patient was taken before inclusion in the study. The Ethical Committee permission was taken before collecting the data and get publishing in Medical Journal. The findings were analyzed for results by SPSS version twenty.
Results: The incidence of error was maximum 308(77%) in error no 5 and minimum 3(075%) error no 7. Percentage of Patients trainable after 4 weeks was maximum 304(76.19%) at age group 11-20 years and minimum 214(53.6%) at age group 51-60 years. Incidence of 26 Trainable 25 smoker after 4week was in 32 male and it was 28trainabale 8smokers after 4weeks was in 54 female. Incidence of 36Trainable 48 smoker after 4week was in 64 male and it was 43trainabale 14smokers after 4weeks was in 80 female. Incidence of 20Trainable 20 smokers after 4week was in 32 male and it was 46 trainable 3smokers after 4weeks was in 48 female. Incidence of 24 Trainable 32 smokers after 4week was in 50 male and it was 8 trainable 1smokers after 4weeks was in 14 female. Incidence of 11 Trainable 12 smokers after 4week was in 17 male and it was 5 trainable 0smokers after 4weeks was in 9 female. Incidence of Non-trainable patients in 4 male and 9 female at age group 41-50 years was maximum 13 and was minimum 1male and 1female at age group 11-20 years was 2.
Conclusion: Incorrect inhaler use in sick persons with asthma and Chronic Obstructed Pulmonary Disease is unaccepted high outside clinical methods and does not seen to have betterment over the last forty years. This may be a major hindrance for obtaining good asthma control.
Key Words: Errors, Meter dose, Asthma, COPD

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INTRODUCTION

Recent clinical evidence shows that although modern inhaled treatment for asthma has the power to control disease in most sick persons.[1,2] Control is often not gained in practice.[3,4]

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Problems with technique were known shortly after the begin of pressurized metered-dose inhalers in the nineteen hundred sixty[5] and later result showed that the issues present in spite of involved initial to reduce them.[6-11] Initial effort to betterment the position have added regular training programs for sick persons and health-care people written instructional material, videos, and software; and methods and tools to make inhalation easier, such as the development of a breath-actuated Metered Dose Inhaler and an Metered Dose Inhaler with inhalation chamber and the design of various dry powder inhalers that require an easier inhalation methods.

We examined articles published between nineteen hundred seventy five and twenty thousand fourteen in which inhaler methods taught by sick persons with asthma and Chronic Obstructive Pulmonary Disease was measured by trained watcher who classified the errors according to established suggestions and then measured the overall methods as correct, acceptable, or poor. We also recorded the most common errors noted for each inhaler type. Finally, we divided this forty year

period into early and late periods of use and compared the outcome variety to look for time style.

MATERIALS AND METHODS

Four Hundred consecutive patients coming to the out patient department with diagnoses of Asthma or COPD who has ever been prescribed meter dose inhalers of any of drugs beta 2 Agonists, Steroids Ipratropiun and Cromolyn in the pass were asked to demonstrate their technique and common errors were observed. The written informed consent every patient was taken before inclusion in the study. The Ethical Committee permission was taken before collecting the data and get publishing in Medical Journal. The findings were analyzed for results by SPSS version twenty.

RESULTS

Table No. 1: Percentage of errors observed in study Population

Errors	Cases	Percentage %
1	116	29.2%
2	83	20.75%
3	270	67.5%
4	216	54%
5	308	77%
6	219	54.75%
7	3	0.75%

The incidence of error was maximum 308(77%) in error no 5 and minimum 3(075%) error no 7 as shown in table no 1.

Table No. 2: Percentage of Patients trainable after 4 weeks

Sr. No.	Age group (years)	Cases	Percentage
1	51-60	214	53.6%
2	41-50	235	58.9%
3	31-40	262	65.7%
4	21-30	272	68.08%
5	11-20	304	76.19%

Percentage of Patients trainable after 4 weeks was maximum 304(76.19%) at age group 11-20 years and minimum 214(53.6%) at age group 51-60 years as shown in table no 2.

Table No. 3: Trainable smoker's distribution (Age Group 51-60 years) n=86

Sex	No. of patient	Smokers	Commonest error	Last common error	Trainable after 4weeks
Male	32	25	3,4	6,7	26
female	54	8	1,3,5	7	28

Incidence of 26 Trainable 25 smoker after 4week was in 32 male and it was 28trainabale 8smokers after 4weeks was in 54 female as shown in table no 3.

Tale No. 4: Trainable smoker's distribution (Age Group 41-50 years) n=144

Sex	No. of patient	Smokers	Commonest error	Last common error	Trainable after 4weeks
Male	64	48	6	1,7	36
female	80	16	3,6	7	43

Incidence of 36Trainable 48 smoker after 4week was in 64 male and it was 43trainabale 14smokers after 4weeks was in 80 female as shown in table no 4.

Tale No. 5: Trainable smoker's distribution (Age Group 31-40 years) n=80

Sex	No. of patient	Smokers	Commonest error	Last common error	Trainable after 4weeks
Male	32	20	5	2,7	20
female	48	3	5	7	46

Incidence of 20Trainable 20 smokers after 4week was in 32 male and it was 46 trainable 3smokers after 4weeks was in 48 female as shown in table no 5.

Tale No. 6: Trainable smoker's distribution (Age Group 21-30 years) n=64

Sex	No. of patient	Smokers	Commonest error	Last common error	Trainable after 4weeks
Male	50	32	4	7	24
female	14	1	3,4	7	8

Incidence of 24 Trainable 32 smokers after 4week was in 50 male and it was 8 trainable 1smokers after 4weeks was in 14 female as shown in table no 6.

Tale No. 7: Trainable smoker's distribution (Age Group 11-20 years) n=26

Sex	No. of patient	Smokers	Commonest error	Last common error	Trainable after 4weeks
Male	17	12	4	7	11
female	9	0	3	7	5

Incidence of 11 Trainable 12 smokers after 4week was in 17 male and it was 5 trainable 0smokers after 4weeks was in 9 female as shown in table no 7.

Tale No. 8: Patients declared non-trainable

Age Group	Non-trainable patients	Male	Female
51-60 years	9	2	7
41-50 years	13	4	9
31-40 years	8	2	6
21-30 years	4	1	3
11-20 years	2	1	1

Incidence of Non-trainable patients in 4 male and 9 female at age group 41-50 years was maximum 13 and was minimum 1male and 1female at age group 11-20 years was 2 as shown in table no 8.

DISCUSSION

The Inhaler Meter dose had the highest errors (> forty percent for steps two to five). The lower limits of the 95% CIs for errors with this device indicate that even a conservative assessment of the prevalence's would be high. The incidence measure of Dose Per Inhaler errors were somewhat lower, but the preparation, full expired and breath-hold methods still had lower limits of the ninety five percent CIs ≥ twenty five percent. Second, we noted no sign that the issue of incorrect or quality use had decreased over the last forty years, even though reasonable effort has been done in education, training, and procedure development. The marked variety in the people, material and method, types of errors measured, and data reported of the research we found discourage us from undertaking extensive meta-analyses of the data; however, we believe that the findings of persistently high error rates are strong and clinically important.[3,6,9,10]

The noted marked difference in design of study, samples of population, measurements and outcomes calls for a widely accepted agreement on how and what to study of this important characteristic of real-life use of inhaler treatment in a happen in the future life-threating disease. The insufficiency of used information in many articles led to the excluding of more than sixty nine point two percent (three hundred twenty four out of four hundred sixty eight) of the single articles. The combined issues of difference and state of being diverse in character limited our analysis to rough types. If we do not standard our methods for studying procedure, and cannot note sick persons' inhaler use properly, it will continue to be difficult to improve the position in the future.[18,19,20]

CONCLUSION

Incorrect inhaler use in sick persons with asthma and Chronic Obstructed Pulmonary Disease is unaccepted high outside clinical methods and does not seen to have betterment over the last forty years. This may be a major hindrance for obtaining good asthma control.

Author's Contribution:

Concept & Design of Study:	Ghazala Khalid
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Data Analysis:	Rashid Siddique, Tahir Butt, Akmal Khurshid Bhatti
Revisiting Critically:	Ghazala Khalid, Usman Nasir
Final Approval of version:	Ghazala Khalid

Conflict of Interest: The study has no conflict of interest to declare by any author.

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