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Research Article

A STUDY OF MEDICATION ADHERENCE AND EFFICACY IN ASTHMA AND COPD PATIENTS

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ABSTRACT

The study was conducted on medication adherence and efficacy in Asthma and COPD patients. All patients diagnosed with Asthma and COPD were identified and enrolled in this study as per inclusion and exclusion criteria. Baseline data was collected using peak flow meter, baseline questionnaire and data collection from counselling and PIL's was provided to the enrolled patients. At the second visit follow-up was conducted using follow up questionnaire and PEFV values were obtained. Each questionnaire took approximately ten minutes to complete. Measures of symptom distress, general health and well-being, and personal and situational factors including demographic characteristics, social support, self-efficacy, depression, stress, and current adherence to medications were recorded. The results were calculated by using SPSS software version 20 and graph pad prism version 6. Responses to the questionnaires were favourable. Associations among variables were explored paired t test analyses. Beliefs about the importance of adherence and ability to take medications as directed (adherence self-efficacy) were generally positive. The most common reasons for nonadherence to the medications were "simply forgot", "away from home" and "busy". The Results from this study provide evidence that structured, co-operative patient education has positive impact in creating awareness about the disease and in improving the medication adherence and efficacy in Asthma/COPD patients.

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INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a lung disease characterized by chronic obstruction of lung airflow that interferes with normal breathing and is not fully reversible. The more familiar terms 'chronic bronchitis' and 'emphysema' are no longer used, but are now included within the COPD diagnosis. COPD is not simply a "smoker's cough" but an under-diagnosed, life-threatening lung disease.¹

According to WHO: Asthma/COPD currently affects 210 million people worldwide. Roughly, 4-6% of the adult populations worldwide have clinically relevant COPD. 3 million deaths are recorded every year, caused by COPD (5% of all deaths). It is estimated that by 2020, it shall become the third cause of mortality in the world and the fifth cause of disability by 2020.²

Asthma/COPD affects individuals' daily lives, the psychological aspect would also have an influence on their clinical wellness measures and outcomes. Asthma/COPD common co morbidities are: cardiovascular diseases, lung

cancer, osteoporosis, depression and anxiety, dysfunctions of the skeletal muscles, metabolic syndrome.³ "The comorbidities are risk factors for the frequent exacerbations, which could influence the mortality and hospitalisations. So patient needs Patient education for good understanding of disease and medications which would aim at improving the clinical condition and global physical condition.

Indian study on Epidemiology of Asthma, Respiratory symptoms and Chronic bronchitis (INSEARCH) was undertaken in 2011 in two phases – 4 centres in phase I and 12 centres in phase II. Chronic respiratory diseases (CRD) which primarily include bronchial asthma (BA) and chronic obstructive pulmonary disease (COPD) are estimated to account for 7% of deaths and 3% of loss of disability adjusted life years (DALYs). The overall prevalence of asthma and CB were 2.05% (adults aged ≥ 15 years age) and 3.49% (adults of ≥ 35 years age) respectively.⁴ In India, a study in the state of Andhra Pradesh estimated that the average expenditure for asthma treatment was about 9% of per capita income.⁵

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METHODOLOGY

Study Site

The study was conducted in the Krishna Institute of Medical Sciences, which is a 700 bedded multispeciality hospital.

Study Period

This study was conducted for six months, from Dec 2012 to April 2013.

Study Design

A non-invasive interventional & prospective study.

Sample Size

70 Patients

Tools

PIL'S, Patient counseling, questionnaire and patient records

Selection of Patients

Study Population

Inclusion Criteria

1. All asthma and COPD patients .
2. Patients from age group of 18 to 65 years of either sex.
3. Patient ready to give informed consent for study.

Exclusion Criteria

Pregnant/ lactating women.

Procedure

The study was conducted on medication adherence and efficacy in Asthma and COPD patients. All patients diagnosed with Asthma and COPD were identified and enrolled in this study as per inclusion and exclusion criteria. Patient counseling and PIL's was provided to the enrolled patients. Followup was conducted and medication adherence was assessed using PEFR and questionnaire adherence tools. The results were calculated by using SPSS software version 20 and graph pad prism version 6.

RESULTS AND DISCUSSION

Table 1 Statistical representation of gender frequency and percentage distribution in Asthma/COPD

Gender	ASTHMA		COPD	
	Frequency	Percent	Frequency	Percent
MALE	6	25	38	83
FEMALE	18	75	8	17

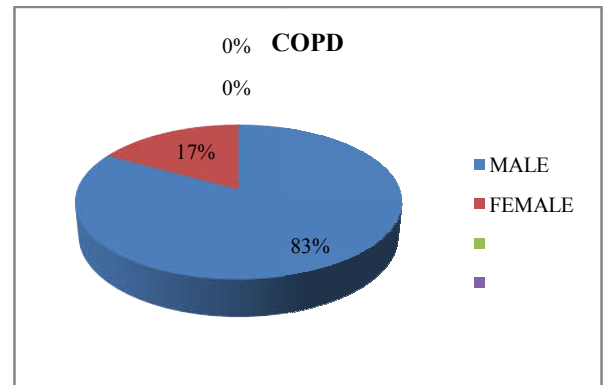
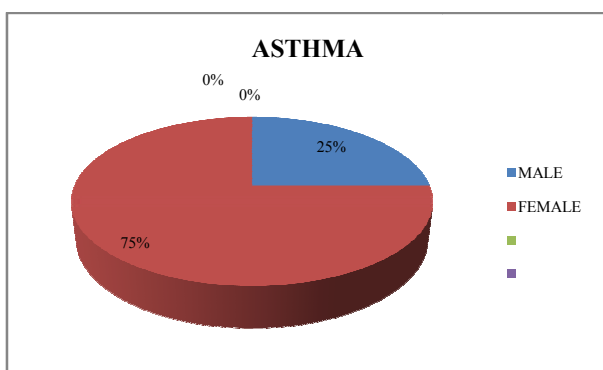


Figure 1 Representing Gender Frequency in Asthma/COPD

70 patients participated in the study, with ages ranging from 18 to 65 years. Out of which 24 were asthma, 46 were COPD patients respectively. The above Table shows the basic demographic details of 24 Asthma patients in which 6 (25%) were males and 18 (75%) were females. Out of 46 COPD patients 38 (83%) were males, and 8 (17%) were female. This study showed that males are more in COPD diseases when compare to females. Another interesting of our study showed that female patients are more asthmatic than male patients. This may be because of life style modification, working environment and social habits etc.

Table 2 Statistical Representation Of Age Distribution in Asthma/COPD Patients

Age group	Frequency	Percentage
18-25	4	4.2%
26-35	8	11.3 %
36-45	17	23.1%
46-55	19	27.1%
56-65	26	38.5%

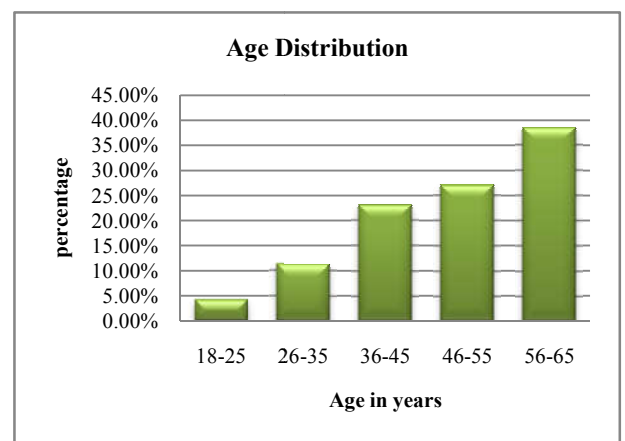


Figure 2 Representing Age Distribution in Asthma/COPD Patients

The above table shows majority of Asthma/COPD patients are in the age group of 56-65 years (38.5%), followed by (27.1%) in 46-55 years, (23.1%) in 36-45 years, (11.3 %) in 26-35 years and (4.2%) 18-25 years. This shows that Asthma/COPD mainly affects people over the age of 40 and becomes more common with increasing age.

Table 3 Highest level of education

Education	Frequency	Percent
11 th grade or less	13	18.6
High school graduate or GED	19	27.1
2 years of college / AA degree / Technical school training	15	21.4
College graduate (BA or BS)	8	11.4
MASTERS	2	2.9
Total	70	100.0

Asthma and COPD are respiratory diseases in which a better knowledge and understanding of the pathology allows the patients to be more involved, which is crucial in their treatment. About 13 (18.6%) were 11th grade or less, 19 (27.1%) were found to be High school graduate or GED, 15 (21.4%) had 2 years of college / AA degree / Technical school training, 8 (11.4%) College graduate (BA or BS), 2 (2.9%) have done their masters. People with poor literacy may have worse health and less knowledge about how to manage their disease than patients at high reading levels. This educational details suggested that there are less highly educated people. This point clearly suggests that there is a need of education to maintain / manage their disease. This can be achieved by involving of the pharmacist in providing the pharmaceutical care services.

Table 4 You will be able to take all or most of the medication as directed?

	Frequency	Percent	Valid Percent	Cumulative Percent
Not sure	3	4.3	4.3	4.3
some what sure	19	27.1	27.1	31.4
very sure	36	51.4	51.4	82.9
Extremely sure	12	17.1	17.1	100.0
Total	70	100.0	100.0	100.0

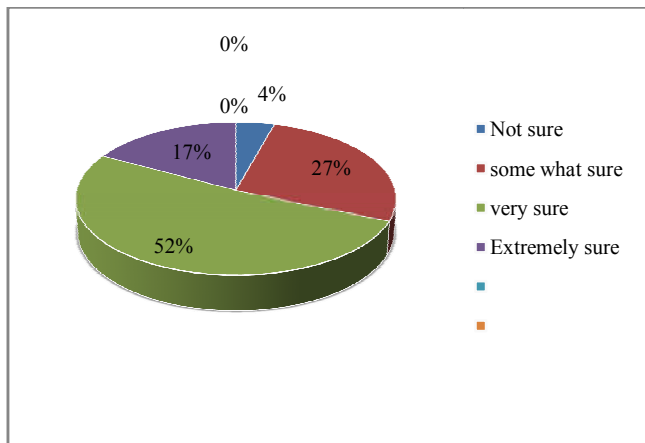


Figure 3 You will be able to take all or most of the medication as directed?

Out of 70 patients 3 patients (4.3%) were not sure about taking most the medications as directed, 19 patients (27.1%) reported that they were some what sure, 36 (51.4%) patients were very sure about taking medications as directed and 12 (17.1%) patients were extremely sure about taking medications as directed. Not taking medication as directed can also lead to other health problems and increases the number of hospitalizations. Even the best medicines in the world can be rendered ineffective if they are not taken as prescribed.

Table 5 Satisfied with family and friends support

	Frequency	Percent	Valid Percent	Cumulative Percent
Very Dissatisfied	5	7.1	7.1	7.1
some what dissatisfied	32	45.7	45.7	52.9
some what satisfied	24	34.3	34.3	87.1
very satisfied	9	12.9	12.9	100.0
Total	70	100.0	100.0	100.0

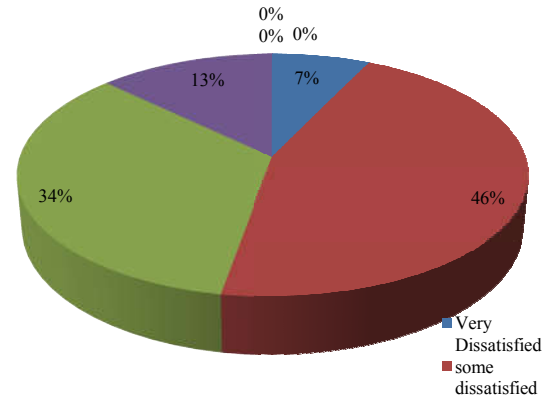


Figure 4 Satisfied with family and friends support

7.1% of the patients were very dissatisfied, 45.7% were some what dissatisfied, 34.3% were some what satisfied and 12.9% were very satisfied with family and friends support. The study continues to support the idea that good family and social encouragement can help break down a financial barrier to help increase medication adherence for their certain chronic disease (Mishra, 2011). Barriers to adherence included perceived stigma, feeling unloved or uncared for. Family counseling may be needed for improving family support. The greater the social support, the greater the adherence.

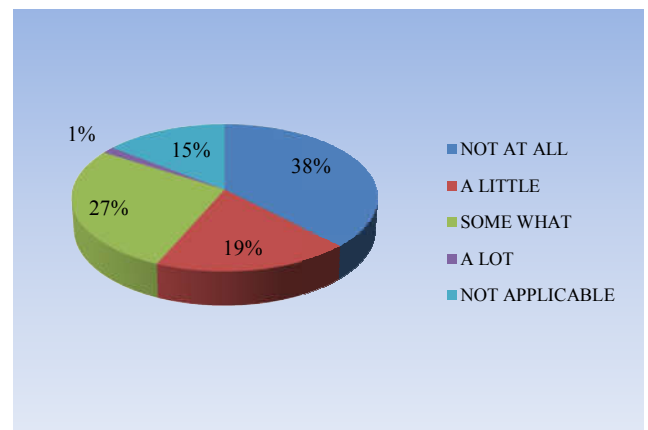


Figure 5 Family members help take meds

About 1.4% patients perceived that family members help a lot to take medications, 27% reported that they receive somewhat help from family members to take medications and about 37.1% reported that don't receive any help from family members. Overall, our findings suggest that it may be beneficial in clinical practice to support patients in 'remembering' their medication. Family members need to help patients to take the medications at right time and make patient adhere to prescription medications.

Table 6 When was the last time you missed taking any of your medications? Before After

	Frequency	Percent	Frequency	Percent
Never skip medications or not applicable	3	4.2	3	4.2
More than 3 months ago	9	12.7	13	18.3
1-3 months ago	20	28.2	23	32.4
2-4 weeks ago	10	14.1	22	31
1-2 weeks ago	8	11.3	7	9.9
Within the past week	21	29.5	3	4.2

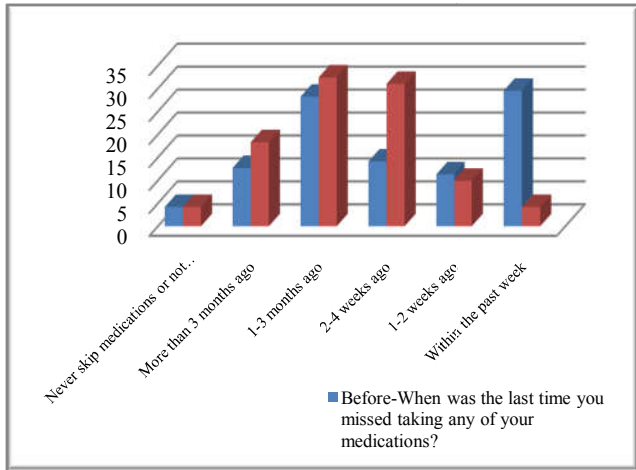


Figure 6 When was the last time you missed taking any of your medications?

Before counseling About 4.2% of patients reported that they never skip medications, 12.7% reported they skipped more than 3 months ago, 28.2% reported they skipped 1-3 months ago, 14.1% reported they skipped 2-4 weeks ago, 11.3% reported they skipped 1-2 weeks ago and 29.5% reported skipping within the past week. After counseling About 4.2% of patients reported that they never skip medications, 18.3% reported they skipped more than 3 months ago, 32.4% reported they skipped 1-3 months ago, 31% reported they skipped 2-4 weeks ago, 9.9% reported they skipped 1-2 weeks ago and 4.2% reported skipping within the past week.

Table 7 Pefr Results

Variable	t value	P value	Significance
PEFR	t=13.66	< 0.0001	Significant

Peak expiratory flow rate (PEFR) was measured in 70 subjects. Baseline PEFR value were obtained before counseling the patient and follow up PEFR values were obtained at the second visit using a Wright Peak Flow Meter. The subject was asked to inhale to total lung capacity and then insert the mouthpiece of the flow meter in their mouth. The mouthpiece was inserted between the teeth and an airtight seal achieved with the lips. They then produced a strong sharp burst of exhalation using maximum available force. Three forced peak expiratory flow measurements were taken in every instance and the best of the three used, as with standard clinical procedure. Significant ($p < 0.0001$) improvement in the Peak expiratory flow rates were observed in the Asthma/COPD patients the follow up. These results suggest that the adherence to medications, produces a significant improvement in breathing

efficiency, using peak expiratory flow rate and indicate that patient education plays an important role in medication adherence which ultimately improves the health of patient.

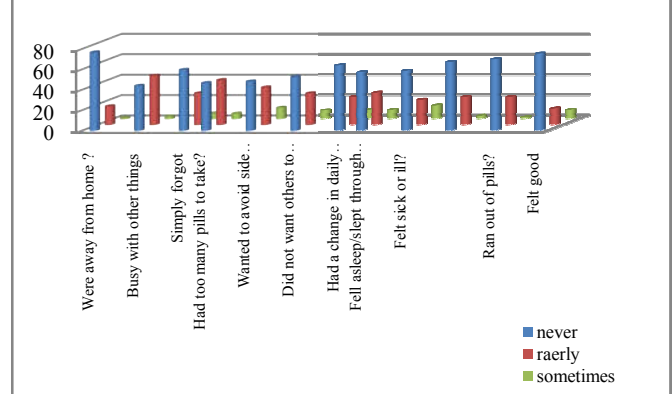
* Significance was found out by comparing the calculating t value with tabulated t value at 95% confidence interval.

Table 8 Paired T-Test Results

Variable	t value	P value	Significance
Were away from home ?	t=4.388	< 0.0001	Significant
Busy with other things	t=5.390	< 0.0001	Significant
Simply forgot	t=5.573	< 0.0001	Significant
Had too many pills to take?	t=3.305	0.0015	Significant
Wanted to avoid side effects?	t=3.368	0.0005	Significant
Did not want others to notice	t=5.227	< 0.0001	Significant
Had a change in daily routine ?	t=4.450	< 0.0001	Significant
Fell asleep/slept through dose time?	t=3.606	0.0006	Significant
Felt sick or ill?	t=5.799	< 0.0001	Significant
Had problems taking pills at specified times	t=8.999	< 0.0001	Significant
Ran out of pills?	t=3.061	0.0032	Significant
Felt good	t=6.125	< 0.0001	Significant

A total score on 12 survey questions were computed using SPSS software. Paired t- test was used to analyze the significant difference between the baseline and follow up questions. The above results shows that there is a significant improvement in the adherence to prescribed Asthma/COPD medications. Significance was found out by comparing the calculating t value with tabulated t value at 95% confidence interval.

Figure 7: Reasons for not taking meds during the last month at baseline



The above figure gives a detailed explanation about the reasons for not taking the medication during the last month at baseline. The most common reasons for missing medications included 'simply forgot and a number of factors often associated with improved health, including being busy, away from home and changes in routine. Although 'forgetting' was the most commonly reported reason for missing doses, many other reasons were also frequently mentioned. The following variables were significantly associated with a low adherence in analyses at the baseline.

The above figure gives a detailed explanation about the reasons for not taking the medication during the last month at follow up. Responses to the questionnaires were favourable. The following variables showed higher adherence index in the follow up.

CONCLUSION

A study of medication adherence and efficacy in Asthma and COPD Patients was conducted for six months, from Dec 2012 to April 2013. The Results from this study provide evidence that structured, co-operative patient education has positive impact in creating awareness about the disease and in improving the medication adherence and efficacy in Asthma/COPD patients. Non adherence in patients lead to substantial worsening of disease, increased and increased healthcare costs. This study concluded that continuous education programs and counseling should be conducted for Asthma/COPD patients to emphasize and re-emphasize the importance of medication adherence and efficacy of Asthma/COPD patients medications, to prevent recurrences, reduce progression of disease and ultimately minimize hospitalization and there is a need of continuous pharmaceutical care services/monitoring to minimise the cost and to improve quality of life.

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