Research Article
AMERICAN JOURNAL OF PHARMACY AND HEALTH RESEARCH
www.ajphr.com
2014, Volume 2, Issue 12
ISSN: 2321–3647(online)

Assessment of Quality of Life in Asthma Patients of A Private Tertiary Care Corporate Hospital

B. Rajalingam*[1], Nannapaneni Divya Bharathi[1], Emmie Rose Ignatius[1], Juliemol Juby[1]
1. Department of Pharmacy practice, College of Pharmacy, SRIPMS, Coimbatore

ABSTRACT

To assess the quality of life of patients with asthma using AQLQ(S) and the prescription pattern of asthma drugs for the patients getting admitted to hospital. Data were collected from the patients who are eligible and analyzed thoroughly. The study population consisting of 51 excluding 10 dropouts were predominantly male (60.7%), with major trigger was found to be dust (33.33 %), other predisposing factors like BMI, occupational status, social status were also studied. 51. 56% of study population belongs to Adult (35-51 years) who were suffering and the average age was 51.56 ±15.95 years. Outcomes measured include PEF, FEV_1% the clinical outcome and the humanistic outcome QoL were also measured at two different intervals using AQLQ(S) questionnaire. The questionnaire scores revealed that patients had a positive result on all the four domains which were statistically significant (p value of ≤ 0.05). The overall score had shown an increase from 3.79 ± 0.731 to 4.96 ± 1.07, which indicates the effectiveness of treatment. There was also an improvement in activity, emotion and environmental domains. The commonly prescribed anti asthmatic drug for subjects were Salmetrol in combination with Fluticasone propionate as inhalers. Reliever medications like Salbutamol and Levosalbutamol were also prescribed widely. There were 106 drug interactions including azithromycin along with moxifloxacin and levofloxacin along with the methyl prednisolone. The above results revealed that along with the pharmacotherapy it is always better to assess the treatment provided through assessing the QoL which may confirm the effectiveness of the treatment provided

Keywords: Asthma, QoL, AQLQ(S), $ß_2$ agonists.

*Corresponding Author Email brajalingam@gmail.com
Received 26 November 2014, Accepted 11 December 2014

Please cite this article as: Rajalingam B *et al.*, Assessment of Quality of Life in Asthma Patients of A Private Tertiary Care Corporate Hospital. American Journal of Pharmacy & Health Research 2014.

INTRODUCTION

Asthma is a chronic inflammatory disorder of the airways in which many cells and cellular elements play a role. The chronic inflammation is associated with airway hyper responsiveness that leads to recurrent episodes of wheezing, breathlessness, chest tightness, and coughing, particularly at night or in the early morning. These episodes are usually associated with widespread, but variable, airflow obstruction within the lung that is often reversible either spontaneously or with treatment [Definition given by *Global Initiative for Asthma* (***GINA***)][1]. According to the Global Burden of Asthma Report, asthma is one of the most common chronic diseases in the world. It is estimated that around 300 million people in the world currently have asthma[1]. Asthma prevalence increased from 7.3% in 2001 to 8.4% in 2010. For the period 2008–2010, asthma prevalence was higher among children than adults, and among multiple-race, black, and American Indian or Alaska Native persons than white persons. The highest recorded prevalence of asthma outside North America are in the United Kingdom (>15%), New Zealand (15.1%), and Australia (14.7%)[2,3]. The increase in the prevalence of asthma has been associated with an increase in atopic sensitization, and is paralleled by similar increases in other allergic disorders such as eczema and rhinitis. It is estimated that there may be an additional 100 million persons with asthma by 2025[1]. Hospitalization is an important outcome in asthma because it is a marker of asthma severity and predicts subsequent fatal attacks. In the United States, asthma is annually responsible for 1.5 million emergency department visits, 500,000 hospital admissions (third leading preventable cause), and 100 million days of restricted activity[1]. Worldwide, approximately 180,000 deaths annually are attributed to asthma; most deaths occur in persons older than age 45 years[3]. While considerable evidence exists demonstrating the worth of pharmaceutical care on a variety of patient outcomes, little has been provided on the impact of pharmaceutical care on QoL of asthma patients as an end point in the health care process. More evidences on the impact of pharmaceutical care on subjective outcomes, specifically QoL are needed. Therefore, the department of Pharmacy Practice, after consultation with the concerned physician, planned to conduct a study on the impact of pharmaceutical care on quality of life of patients with asthma[4]. The objective of the study is to assess the quality of life of patients with asthma using AQLQ(S) and the prescription pattern of asthma drugs for the patients getting admitted to General medicine and Pulmonology wards of a 700 bedded multi-specialty hospital

MATERIALS AND METHOD

The study entitled “Assessment of Quality Of Life in Asthma Patients of a Private Tertiary Care

Corporate Hospital" was carried out in a 700 bedded multi-specialty hospital located at Coimbatore for the period of 6 months (March to October 2013).

Department selected for the study in the hospital

The department selected for the study was all the wards of general medicine and pulmonology. The reason for selection of these departments was because all the wards will have more number of Asthmatic populations

Consent from hospital authority

It was a custom that every project work carried out in the hospital by the Pharm. D [fifth year] students has to be approved by the Dean of the hospital and should be informed to all physicians, surgeons and other healthcare professionals of the hospital.

DESIGN OF PATIENT INFORMATION AND CONSENT FROM

Obtaining AQLQ(S) from Author Dr. Elizebeth P Juniper

Inclusion criteria:

Patients of either sex, age of above 12 years, diagnosed as asthmatic and the patients who were willing to participate were only included in the study

Exclusion criteria:

Patients below the age of 12 years, ICU patients, terminally ill patients, patient diagnosed with COPD and the patients who were not willing to participate in the study were not included.

Data Collection

Daily regular ward rounds were carried out in the study site during the study period along with the senior and junior physicians. The data were collected and recorded in a specially designed data entry format. Prior to data collection, written consent from the patient/bystander was obtained and was also well informed about the study.

Calculation of AQLQ(S)[15]

The AQLQ was used to study the quality of life of asthma patients. This questionnaire had a set of 32 questions which was mainly categorized into four subgroups namely, activity limitation, symptoms, emotional functions and environmental stimuli. The data were collected during the time of admission and at the time of review.

RESULTS AND DISCUSSION

The proposed work entitled **"Assessment of Quality Of Life in Asthma Patients of a Private Tertiary Care Corporate Hospital"** was a prospective study carried out in a 700 bedded private corporate hospital.

Study Population

In the study period, 61 patients were enrolled and included in the study as per inclusion and exclusion criteria. The number of dropouts was 10 after baseline interview. The patients population finally in the study were 84% (51). The same was depicted on Figure 1.

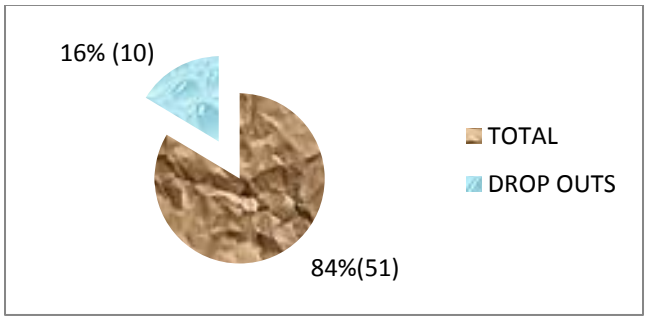

Figure 1: Total Study Population

Gender Categorization

Asthma is a very common chronic disease, occurs at all ages and both genders. Considerable differences were identified between both genders. The females were more prone to the Asthma than males. In prepuberty boys are more prone to asthma than girls. The girls after age of 20 years were more prone to the asthma. The results revealed that the study population was predominantly male with 60.7% (31) and only 39.3% (20) were female. The distribution of gender were not equal and the details were given in the in the Figure 2. The similar results were found in the study of Miedinger D[5] et al. In reality reports of female disease cases are very few, as their hospital visit is restricted to severe conditions, especially in Indian setup.

Age Categorization

The overall population including the study population was categorized based on their age and results obtained were given in Table 1. From the results it was understood that in study population, patients were more in the age group of Adults (35-51 years). The average of the overall population was found to be 51.56 ± 15.95.Similar studies were also found in Earl Fort[6] et al, Regina Maria[7] et al studies.

Table 1:Age Categorization

Age Category	Total study population n=51
Adolescent (12 - 19)	1.96% (1)
Early adult (20 - 34)	9.80% (5)
Adult (35 -51)	39.21% (20)
Late adult (52 – 64)	29.41% (15)
Young old (65 – 74)	11.76% (6)
Old (75 & above)	7.84% (4)

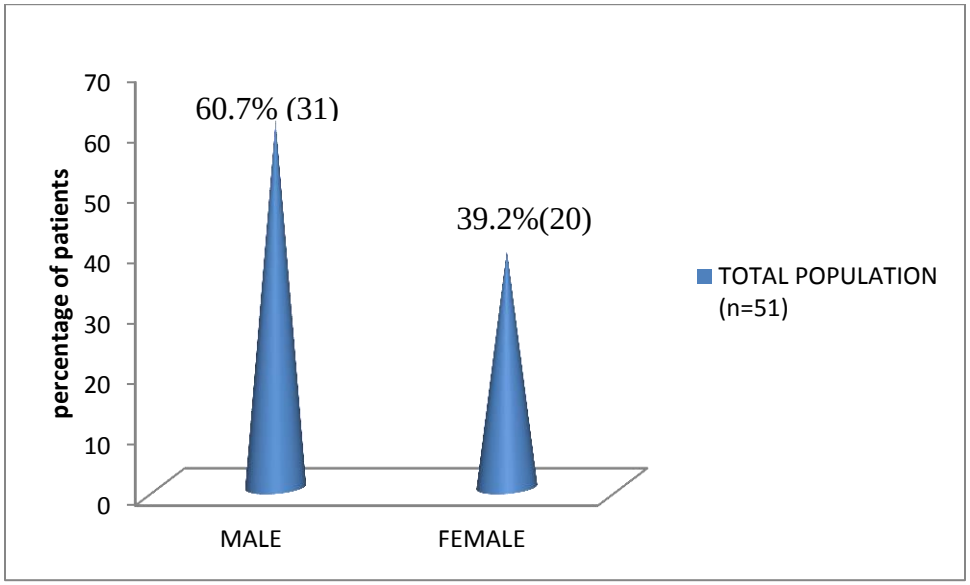

Figure 2: Gender Distribution of Study Population

Occupational Categories

Over 300 substances had been associated with occupational asthma which is defined as asthma caused by exposure to an agent which is there in the work environment. Occupational asthma arises more in adults, and occupational sensitizers are estimated to cause one in three cases of asthma among adults of working age. Asthma is the most common occupational respiratory disorder in industrialized countries, as in our case the city where the study site located was also industrialized. In our study population 5.88 % (3) were students, who were having real difficulty because of air pollution while travelling and during the sports events. Both college and school students were also enrolled in the study. School student enrolled had missed school days due to asthma symptoms, but no quantification was done. 19.6% (10) housewives were present in the study who complained mainly about their allergy to food smell, cow dung smell, smoke, dust, mites, pets etc. 11.76% (6) of agricultural population were present in the study who are mainly allergic to pollens, cotton, weather, etc. Employees mentioned in this study include Teachers, Software engineers, Sales persons in textile show room, e.t.c. Business personals 11.76% (6) enrolled were from different sectors like rubber lattices, textiles, cotton industrialists, flour mills, rice mills, etc. Pensioners enrolled in the study were 17.64% (9) age, stress, etc. In study of Strine T.W.[8] et al, Adams R.J.[9] et al shows that the employees are having asthmatic condition. The details were given in the Figure 3

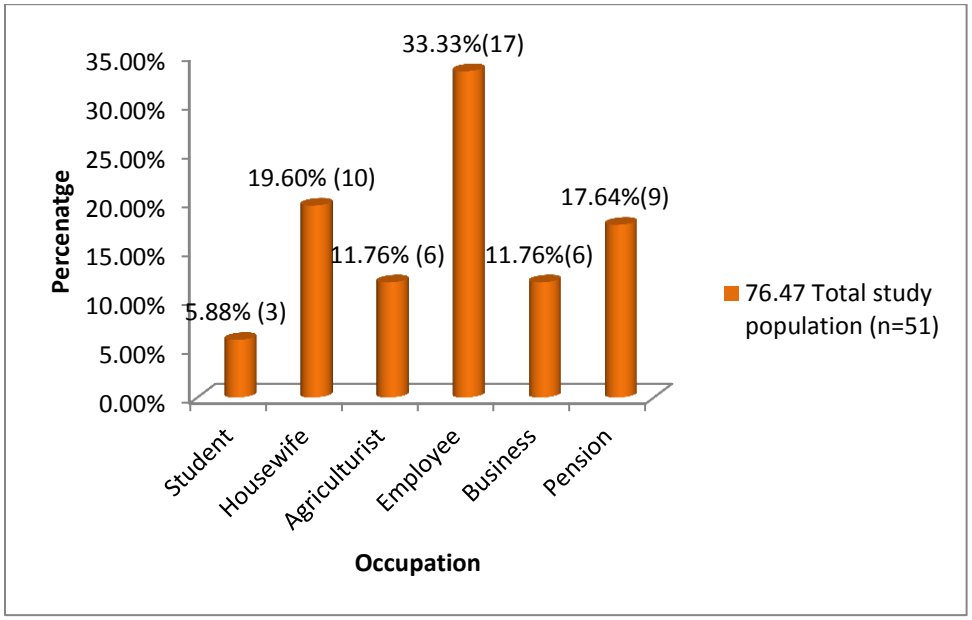

Figure 3: Demographic Data of Asthmatic Patients Based on Occupation

Social History Status

Tobacco use and its status is associated with accelerated decline of lung function in people with asthma, increases asthma severity, may render patient less responsive to treatment with inhaled and systemic glucocorticoids, and reduces the likelihood of asthma being controlled. The total study population consisted more of non-smokers 76.47% (39), compared to the number of smokers 19.06% (10). Smokers who had a habit of consuming alcohol contributed 3.92% (2) to the total study population. The result revealed that in the study population smoking may not be a significant factor in patients with asthma. The details were given in the following Figure.4. The results obtained in this study were as par to the study conducted by Jorge Ferreria[10] et al.

Body Mass Index

Obesity has also been shown to be a risk factor for asthma. Certain mediators such as 'leptin' may affect airway function and increase the likelihood of asthma development. The study population found to be having ideal Body Mass Index with 60.78%. It may also be suggested that BMI as risk factor for asthma in our study population, but no correlation analysis were done to understand the influence. In the study of Strine W.T.[8] et al, the similar results were found as par our study. The details were depicted graphically in Figure 5

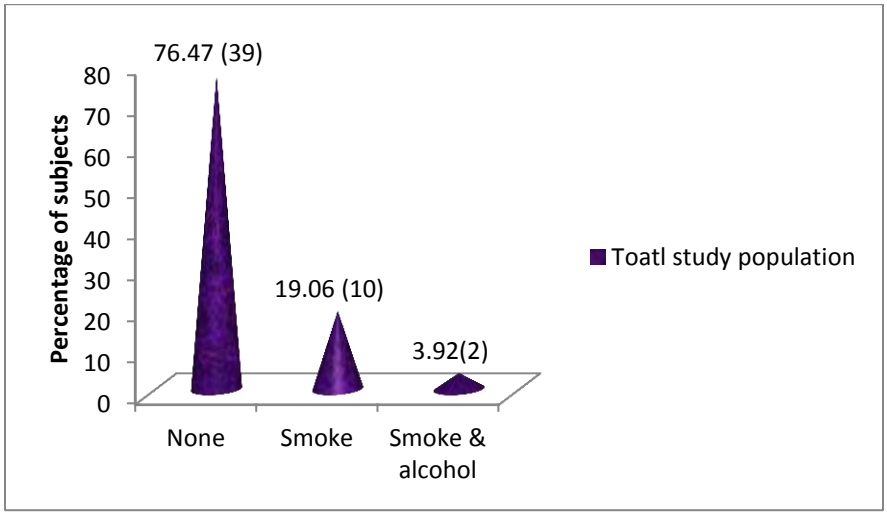

Figure 4: Demographic Data of Asthmatic Patients Based on Social History

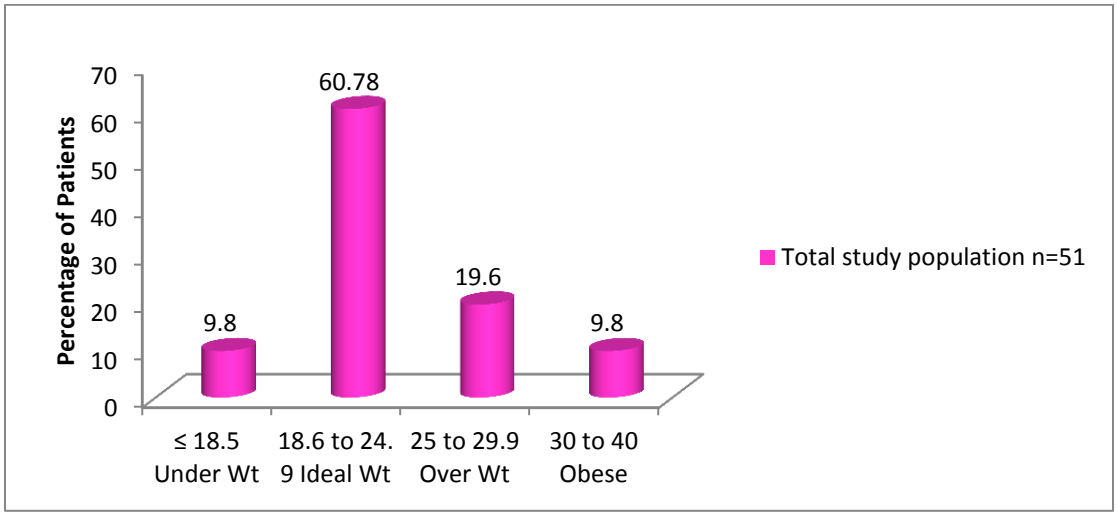

Figure 5: Categorization Based on BMI

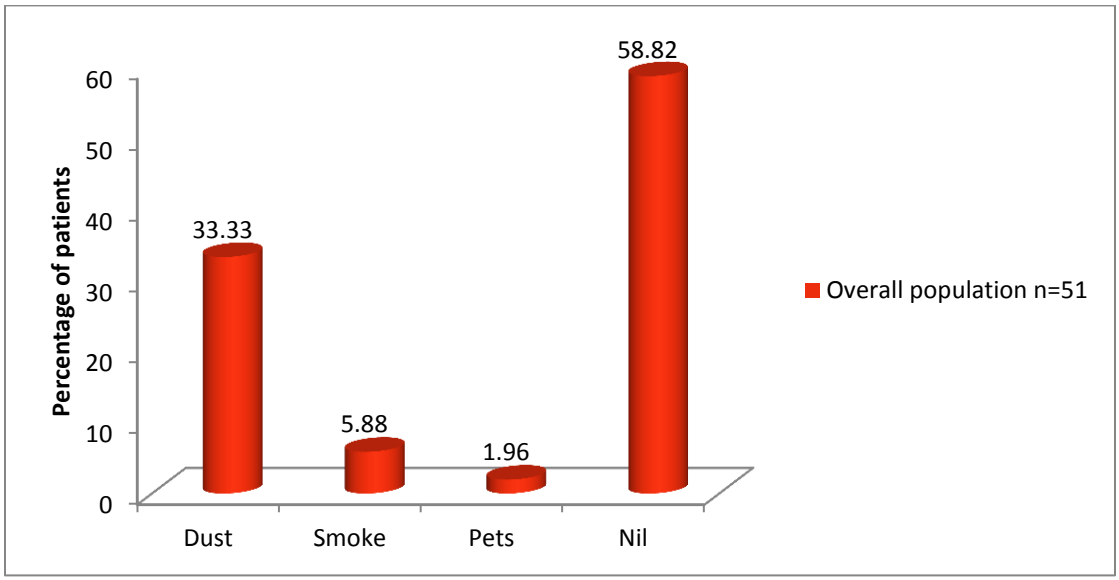

Figure 6: Categorization Based on Allergens

Triggers

Analysis of data to identify the commonly involved triggers revealed that 33.33% of the population had dust as an important trigger. Other triggers involved were smoke, pets, food, weather and drugs. The similar results were found in the study which was conducted by Elizabeth F juniper[11]et al and found that smoke and dust are the major triggers for asthma. The details were represented graphically in Figure 6

Outcomes Measured

Mainly the clinical outcomes [PEF, FEV1%] and humanistic outcomes [quality of life] were measured at regular time interval for both control and intervention group. The results were compared between both control and intervention groups.

Clinical Outcome

Peak Expiratory Flow Rate (PEF)

In our study population PFT was done either during the base line study or during the follow up. In the study population 28 subjects had undergone PEFR determination during the base line study and 12 subjects had undergone during the follow up. The mean value of PEFR determination during the baseline and follow up study were respectively 74.71±6.55 and 81.53±3.82

Forced Expiratory Volume Ratio (FEV1%)

This number is the ratio of FEV1 to FVC. It indicates that the percentage of total FVC which was expelled from the lungs during the first second of forced exhalation and this number is called FEV1%. In the study population 28 subjects were undergone FEV1% during the base line study and 12 subjects were during the follow up. The mean value of FEV1% during the baseline and follow up study were respectively 70.87±8.21 and 79.83±3.09. The results were given in Table 2**.** The difference in the values of PEFR values and FEV1% obtained at baseline and follow up interviews revealed that the improvement. The reasons may be that the patients had undergone PEFR and FEV1% determination only once i.e. either at baseline or follow up. It was also necessary to highlight that none of the patients had PEFR and FEV1% determination at both time, so correlation cannot be made. The reasons for why patients were not undergone this test may be the cost involved was high. The approximate cost for a single time determination may approximately vary between INR Rs.600 to 800. In the study site the PEFR and FEV1% will be generally carried out for patients with COPD and for the severe cases of Asthma.

Humanistic Outcomes

The quality of life of the study population was measured by using a questionnaire AQLQ(S) as described in the methodology. The questions concentrated on four domains, i.e. Symptom, Activity, Emotional and Environmental factors. The responses were analyzed and results obtained were given in table 3 & Figure 7

Table: 2 Clinical Outcomes

PFT	Base (n= 28)	Follow Up (n= 12)
FEV1%	70.87±8.21	79.83±3.09
PEFR	74.71±6.55	81.53±3.8

Table 3: AQLQ(S) Scores

Group	Total Study Population (n= 51)	
AQLQ(S)	Baseline	Follow up
Symptom	3.31 ±1.00	5.38±0.92
Activity	3.31±0.97	5.09±1.12
Emotion	3.62±1.06	5.36±1.12
Environment	4.81±1.54	6.22±0.92
Total	3.77±0.92	5.55±0.77

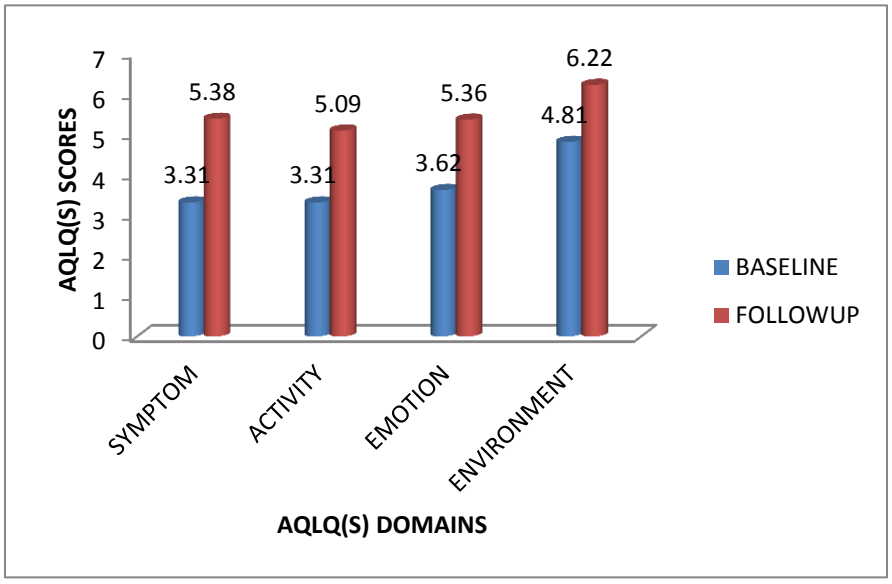

Figure 7: AQLQ(S) Domain Score

Role of Pharmacotherapy

Long acting inhaled β_2 agonist, including Formetrol and Salmetrol was not being used as monotherapy in asthma, as these medications do not appear to influence the airway inflammation in asthma. They were most effective when combined with inhaled corticosteroids, and this combination therapy was the preferred treatment when a medium dose of inhaled glucocorticosteroids alone fails to achieve control of asthma. Addition of long acting inhaled β2 agonist to a daily regimen of inhaled corticosteroids improves symptom scores, decreases

nocturnal asthma, and improves lung function[12]. In the study population 35.29%(18) of combination therapy of SABA and Antichlinergics, 15 (29.41%) of combination therapy of SABA+ AC+C and 9 (17.64%) of LABA + C . Other drugs include Leukotriene antagonists 3.92% and antibiotics 96.07% were used commonly by the overall study population. The details were given in the table 4. An attempt to categorize the study population based on the number of drugs prescribed were done. The results revealed that 43.32% of the study population had maximum of 3 drugs per prescription. The average number of drugs prescribed in overall population was found to be 8.5 ± 7.94. In the study of Franks T J[13] et al the use of both relievers and preventers was more like our study. Mainly it includes combination of Short/ Long acting β_2 agonists with corticosteroids and in the preventers methylxanthiens.

Table 4: Classification of Drugs Prescribed for the Study Population

Medication	Overall
Short acting β2 agonist (Salbutamol, Levobutamol, Terbutaline)	1 (1.9%)
Long acting β2 agonist (Salmeterol, Formeterol)	0
Anticholinergic (Ipratropium Bromide)	0
SB + AC	18 (35.29%)
SB + AC + C	15 (29.41%)
LB + AC	0
LB+ C	9 (17.64%)
Leukotriene antagonist (Monteleukast, Zoferleukast)	2(3.92%)
Methylxanthines (Doxofylline, Theophylline, Etofylline)	45(88.23%)
Antihistamine (Cetrizine, Levocetrizine)	7(13.72%)
Antibiotics (Amikacin, Ceftriaxone, Cefipime, Amoxicillin, Clavulanic acid, Moxifloxacin, Levofloxacin)	49 (96.07%)

Drug Interactions

As discussed earlier in scope of the study, when the number of drug increases, the possibility of drug-drug interactions will also increase as 66.03% of the study population had one or more drug interactions. As reported by Mousavi Set al[14] the number of drug prescribed reaches 8, the risk of DI are 100%. An attempt was also made to categories the drug interactions into major, moderate and minor. Results had shown that the moderate interactions were high with a percentage of 70.29% followed by major (16.83%) and minor (12.87%).

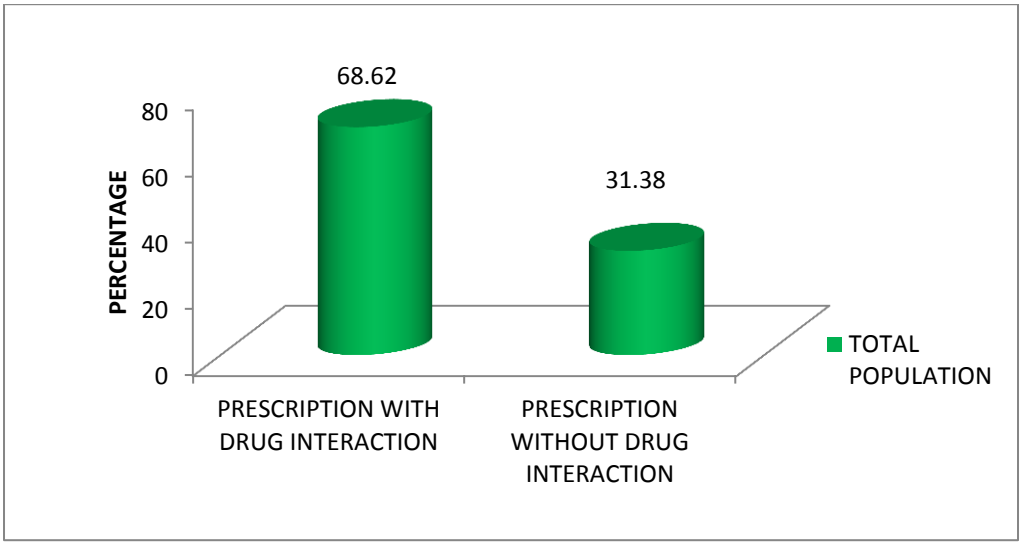

Figure: 8 Drug Interactions in the Study Population

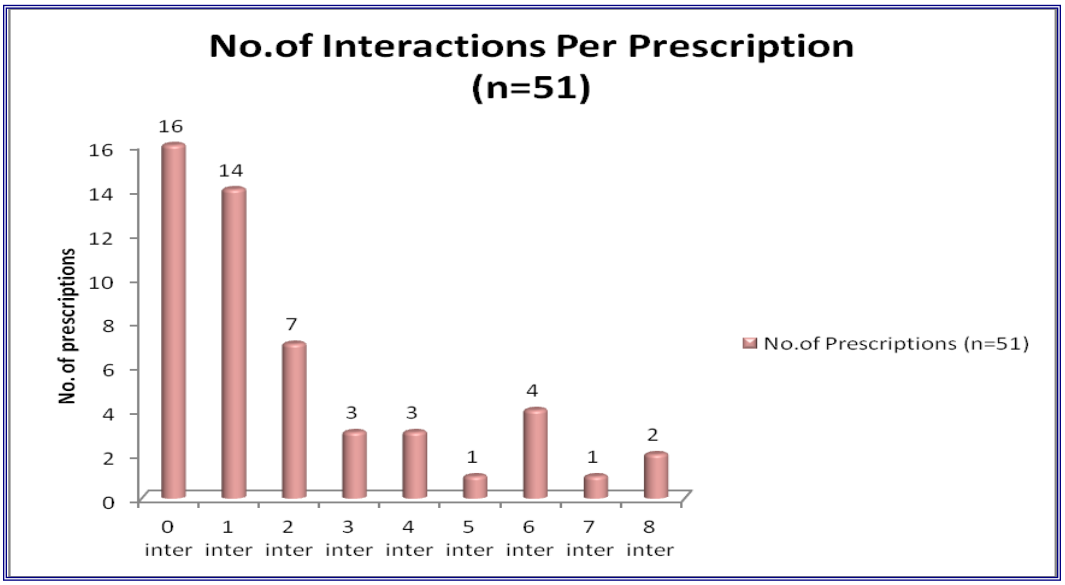

Figure: 9 No. of interactions per prescription

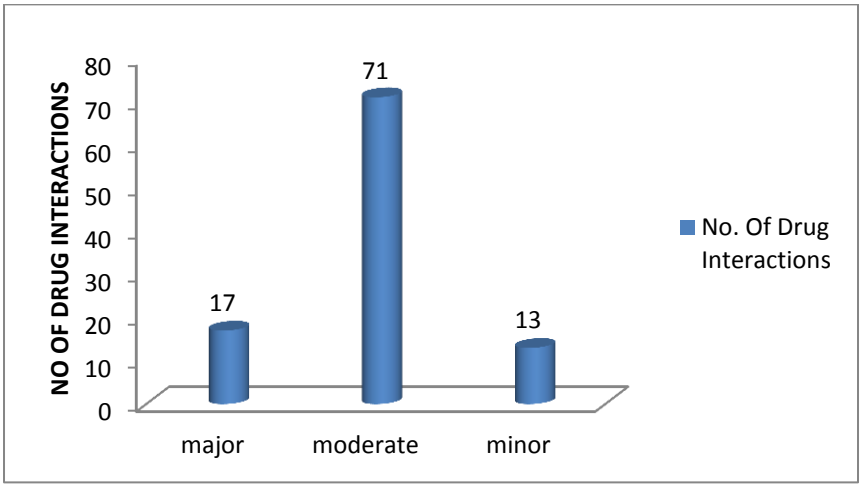

Figure: 10 Categorization of Drug Interactions

In major the most commonly observed interactions were azithromycin along with moxifloxacin (13.5%) and levofloxacin along with the methyl prednisolone (13.5%). In moderate theophylline along with the pantoprazole (12.2) and budesonide along with theophylline was commonly prescribed.

CONCLUSION

The above results revealed that along with the pharmacotherapy it is always better to assess the treatment provided through assessing the QoL which may confirm the effectiveness of the treatment provided. The findings of our study had shown that an intense co-operation between patients, physicians and pharmacists were within the concept of pharmaceutical care, as clear positive impact on the humanistic and clinical outcomes were shown. Effective use of pharmaceutical techniques, automation and robotics may allow this to occur.

REFERENCES

1. Byrne P.O, Bateman E.D, Bousquet J, Clark T. Global strategy for asthma management and prevention 2006 by global initiative for asthma *(*GINA*).*
2. Akinbami OJ, Moorman JE, Bailey C, ZahranHS. The book of trends in Asthma Prevalence, Health Care Use, and Mortality in the United States, 2001–2010.
3. Kelly W.F, Oppenheimer J.J. Allergic, Environmental Asthma Overview of Asthma, available online: emedicine.medscape.com/article/137501-overview, Updated: Mar 12, 2012
4. Huss K, Naumann P.L., Mason P.J, Nanda J.P. Asthma severity, atopic status, allergen exposure, and quality of life in elderly persons. The journal of Annals of Allergy, Asthma & Immunology. 2011;86(5): 524-530.
5. Miedinger.D, Neukomm.E, Chhajed P.N. The use of asthma control test in general practice and it's correlation with asthma control according to the GINA guidelines. Current medical research and opinion. 2011;27:2301-2308.
6. Kilgler B, Homel P, Blank AE, kenney J, Levenson H, Merrell W. Randomized Trial of the Effect of an Integrative medicine Approach to management of Asthma in Adults Disease-related Quality of Life and pulmonary function. Alternate Therapies. 2011; 17(1): 10-15.
7. Santos DO, Martins MC, Cipriano SL, Pinto RMC, Cukier A, Stelmach R. Pharmaceutical care for patients with persistent asthma: assessment of treatment compliance and use of inhaled medications. J Bras pneumol. 2010;36(1): 14-22.
8. Strine TW, Ford ES, Balluz L, Chpman DP, Mokdad AH. Risk behaviours and Health-Related Quality of Life Among Adults with asthma. CHEST. 2004; 126(6).

9. Mancuso CA, Peterson MGE, Aeto TJ, Fernandez JL. A Randomized controlled trial of self manangent education for asthma patients in the emergency department. Annals of emergency medicine, 2011; 57:603-612.
10. Ferreira J, Silveira P, marques JA. National study of asthma quality of life- Application of the asthma quality of life questionnaire (AQLQ-M) by Marks in the Portuguese population. Revista Portuguesa De Pneumologia. 2008; 14: 459-486.
11. Benavides, Rodriguez JC, Maniscalco M. Pharmacist Involvement in improving Asthma Outcomes in Various Healthcare Settings: 1997 to present. The Annals of Pharmacotherapy. 2009; 43: 85-97.
12. Dipiro JT, Dipiro CV, Schwinghammer TL, Martze GR, Wells BG. editors. Pharmacotherapy handbook. 7th edition. New York: McGrew-Hill, Medical Publishing Division; 2009: 906-20
13. Tabitha J Franks, Deborah L Burton, Maree D Simpson. Patient medication knowledge and adherence to astha pharmacotherapy: A pilot study in rural Australia. Therclin risk manag. Mar.2005;1(1):338.
14. Mousavi S, Norouzi M, Ashouri A, Javadi MR, Gholami K, Hadjibabaie M. Study of Potential Drug-Drug Interactions in Prescriptions of University-Based Pharmacies. J Pharm Care 2014; 2(2): 60-65.
15. Juniper E.F, Buist A.S, Cox F.M, Ferrie PJ, king DR, Math B. Validation of a Standardized Version of the Asthma Quality of Life Questionnaire. CHEST. 1999; 115: 1265-1270.