# ANALYSIS OF CLINICAL PROFILE,PRESCRIBING PATTERNS AND MEDICATION ADHERENCE IN ASTHMA PATIENTS AT SOUTH INDIAN GOVERNMENT GENERAL HOSPITAL

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**ABSTRACT:** Asthma is one of the most significant health issues, affecting roughly 300 million people worldwide. It affects children and adults of all ages and its prevalence is increasing, particularly among children. The objective of the study was evaluating drug prescription patterns for the treatment of asthma by using WHO prescribing indicators and level of medication adherence among patients. The prospective observational study was conducted at tertiary care government general hospital (SVRRGH) located at Tirupati, Balaji district, Andhra Pradesh state, India. The study was conducted for period of two months (October to November). A total 86 patients were included in the study were the mean ((SD) age of study population was 14.3333 ±5.34. The majority of study population were founded female 56(65.11%) and male were 30(34.88%). The severity of asthma was recorded where majority of patients were noted as moderate asthma in 60(69.77%) patients followed by mild 22 (25.58%) patients and severe 4(4.651) patients. The present study concludes explains as following prescribing guidelines is essential for positive treatment outcomes. Based on medication adherence rating scale the medication adherence is founded as 67%. The healthcare team involment in improving drug taking behaviours is very much needed to improve medication adherence among patients.

**KEY WORDS**: Medication adherence, Asthma, Prevalence, Treatment, Healthcare.

## INTRODUCTION

Asthma is one of the most significant health issues, affecting roughly 300 million people worldwide. It primarily affects children and adults. Because of inflammation and muscular tension surrounding the airways, the airways in the lungs become constricted. This condition's morbidity and mortality are of major concern, and there is substantial agreement on how it should be handled[1,2]. The national incidence of asthma symptoms in children ranges from 1.6% in Indonesia to 36.8% in the United Kingdom. Cough, wheeze, shortness of breath, and chest tightness are the most typical asthma symptoms. These sensations come and go and are usually worst at night or during activity[1].

According to the GINA (Global Initiative for Asthma), medications used to treat Asthma are primarily condition-specific. Inhaled short acting beta-2-agonists (SABA) or long-acting beta-2-agonists (LABA) and leukotriene receptor antagonists (LTRA) are common treatments. Numerous large randomised controlled studies have indicated that combining LABAs with ICSs can minimise acute exacerbations and enhance asthma control better than ICS alone or even increasing the ICS dosage[2,3,4].

Most asthmatic patients without prior ICS medication utilised fixed dosage combinations of LABA and ICS as single inhalers[6,7]. Inhaled treatment can transport medications directly into the airways, resulting in larger concentrations and a lower risk of systemic side effects. Furthermore, the Salmeterol Multicentre Asthma Research Trail (SMART), a large randomised trial, found that patients receiving inhaled long-acting beta -2-agonists (LABAs) alone experienced more serious adverse events and asthma-related deaths. The GINA guidelines recommend that LABAs be used in combination with inhaled corticosteroid (ICSs Furthermore, the Salmeterol Multicentre Asthma Research Trail (SMART), a large randomised trial, reported that patients receiving inhaled long-acting beta -2-agonists (LABAs) alone experienced more serious adverse events and asthma-related deaths. The GINA guidelines recommend that LABAs be used in combination with inhaled corticosteroid (ICSs)[2,6,7].

Based on international consensus on asthma care, it is fair to expect that community prescription will be in accordance with recognised criteria to optimise asthma therapy. Adherence to evidence-based treatment guidelines is crucial for improving asthma patients' clinical outcomes[8]. However, many patients rely on short-acting 2-agonists (SABAs) for fast symptom relief, despite the fact that they have no intrinsic anti-inflammatory action and that SABA use without ICS may be pro-inflammatory. The objective of the study was evaluating drug prescription patterns for the treatment of asthma by using WHO prescribing indicators and level of medication adherence among patients[9,10].

## METHODS:

The prospective observational study was conducted at tertiary care government general hospital (SVRRGH) located at Tirupati, Balaji district, Andhra Pradesh state, India. The study was conducted for period of two months (October to November). The patients who visited pulmonology out patient department and diagnosed with asthma were included in the study. the clear objective of our study was explained to the patients and who are willing to provide informed consent sign were included in the study. a specially designed proforma was used to avail data from study participants. The proforma consists of patient's demographic details, medical history, clinical signs and symptoms, co-morbidities, severity of asthma, grades of breathlessness, drugs prescribed, non-asthmatic symptoms

Measures:

The study was employed to evaluate the prescribing practices for all medicines used in asthmatic patients. The optimal values for the prescribing indicators were adopted from previous studies (Desalegn[4], Atif et.al[5]). The prescribing indicators include; the average number of drugs prescribed per encounter (optimal value 1.6–1.8), the percentage of drugs prescribed by generic name (optimal value 100%), the percentage of encounters where an antibiotic was prescribed (optimal value 20.0–26.8%), the percentage of encounters where an injection was the route of administration (optimal value 13.4–24.1%), and the percentage of drugs prescribed from the Essential Drugs List (EDL) or some other recognized formulary (for which the optimal value is 100%).

The medication adherence in asthma patients were measured with medication adherence rating scale (MARS-5). The MARS-5 is composed of five questions about "forgetting", "changing of dosages, stopping, skipping and using medication less than what is prescribed. The, study subjects

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indicated the frequency as "always", "often", "sometimes", "rarely" or "never" for each question, with ascending scores from "always" (1 point) to "never" (5 points). The scores for each of the five questions were aggregated to give the final score, which ranged from 5 to 25 points [2,5].

The levels of breathlessness grades were indicated by modified medical research council(mMRC). The mMRC Dyspnoea Scale (Modified Medical Research Council) is used to determine the degree of baseline functional handicap caused by dyspnoea. It is beneficial in determining the cause of baseline dyspnoea in individuals with respiratory diseases such as asthma. The mMRC scale is a self-rating instrument that assesses the degree of disability caused by breathlessness in daily activities on a range of 0 to 4: 0, no breathlessness except during severe activity; Shortness of breath when hurrying on the level or walking up a slight hill; 2, walks slower than people of same age on the level due to

breathlessness; 3, stops for breath after walking 100 m or after a few minutes on the level; and 4, too breathless to leave the house. Following their physician appointment, individual patients were questioned using the established proforma for this study. The Compilation of data was done and Data were classified in different independent variable. The data was tabulated using Excel in the computer and Percentage, mean, standard deviation was calculated.

**RESULTS:**
A total 86 patients were included in the study were the mean ((SD) age of study population was 14.3333 ±5.34. The majority of study population were founded female 56(65.11%) and male were 30(34.88%). The severity of asthma was recorded where majority of patients were noted as moderate asthma in 60(69.77%) patients followed by mild 22 (25.58%) patients and severe 4(4.651) patients.

**Table 1**

| SAMPLE CHARECTERISTICS | N (%) OR MEAN | MEAN ( SD) |
|---|---|---|
| Age | | 14.3333 ±5.341 |
| **GENDER** | | |
| Male | 30 (34.9%) | |
| Female | 56 (65.1%) | |
| **SEVEARITY OF ASTHMA** | | |
| Moderate | 60(69.767) | 30 ±18.017 |
| Mild | 22(25.581) | 11 ±1.386 |
| Severe | 4(4.651) | 2 ±1.386 |
| **COMORBIDITIES** | | |
| With Out Comorbidities | 58(67.441) | 29 ±12.473 |
| With Comorbidities | 28(32.558) | 14 ±5.544 |
| **DRUGS PRESCRIBED** | | |
| Bronchodilators | 74(86.046) | 37 ±18.017 |
| Proton Pump Inhibitors | 66(76.744) | 33 ±11.087 |
| Analgesic And Anti Pyretic | 41(47.674) | 20.5 ±0.693 |
| Multi Vitamins | 48(55.813) | 24 ±18.017 |
| Mucolytics | 74(86.046) | 37 ±18.017 |
| LTRA's (Leukotriene receptor antagonists) | 35(40.697) | 17.5 ±3.465 |
| Anti Biotics | 47(54.651) | 23.5 ±18.71 |
| Inhaled Corticosteroids | 79(91.860) | 39.5 ±17.324 |
| **CLINICAL SYMPTOMS** | | |
| Fever | 16(18.604) | 8 ±4.158 |
| SOB | 51(59.302) | 25.5 ±13.166 |
| Chills | 1(1.162) | 0.5 ±0.693 |
| Wheezing | 51(59.302) | 25.5 ±7.623 |
| Difficulty in breathing | 32(37.209) | 16 ±1.386 |
| **SPUTUM** | | |
| Yellow | 15(17.441) | 7.5 ±7.623 |
| White | 25(29.069) | 12.5 ±10.394 |
| Cough | 71(82.558) | 35.5 ±14.552 |
| Chest tightness | 22(25.581) | 11 ±8.316 |
| Cold | 23(26.744) | 11.5 ±0.693 |
| **OTHER SYMPTOMS** | | |

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| | | |
|---|---|---|
| Epigastric burning sensation | 5(5.813) | 2.5 ±2.079 |
| Sore throat | 5(5.813) | 2.5 ±0.693 |
| Headache | 5(5.813) | 2.5 ±2.079 |
| Myalgia | 9(10.465) | 4.5 ±3.465 |
| **NO OF ANTIBIOTICS** | | |
| 0 | 38(44.186) | 19 ±11.087 |
| 1 | 14(16.279) | 7 ±6.93 |
| 2 | 32(37.209) | 16 ±15.245 |
| 3 | 2(2.325) | 1 ±1.386 |
| **NO OF DRUGS PRESCRIBED** | | |
| 1 | 6(6.976) | 3 ±1.386 |
| 2 | 12(13.953) | 6 ±1.386 |
| 3 | 31(36.046) | 15.5 ±0.693 |
| 4 | 29(33.720) | 14.5 ±14.552 |
| 5 | 8(9.302) | 4 ±4.158 |
| **GRADES OF BREATHLESSNESS** | | |
| Grade 1 mMRC | 15(17.441) | 7.5 ±2.079 |
| Grade 2 mMRC | 25(29.069) | 12.5 ±3.465 |
| Grade 3 mMRC | 42(48.837) | 21 ±13.859 |
| Grade 4 mMRC | 4(4.651) | 2 ±1.386 |

All the patients received medications for asthma with or without co-morbidities were documented. Most of the patients are noted with not having any co-morbidities i.e., 58(67.44%) patients and 28(32.56%) patients were reported with comorbidities. The comorbid conditions recorded were diabetes mellitus, hypertension, bronchiolitis and emphysema.

The clinical symptoms observed in study population were documented. Among study population most of the patients were reported with cough 71 (82.56%) followed by shortness of breath 51(59.3%) and wheezing 51(59.3%), difficulty in breathing 32(37.2%), presence of sputum white 25(29.069) and yellow coloured 15(17.441), chest tightness 22(25.581), cold 23(26.744), fever 16(18.604) and chills1(1.162). The mean and standard deviation was calculated

at 95% CI and all the values are represented in table 1.

Among the drugs prescribed inhaled corticosteroids are prescribed in majority of 79 (91.8%) patients followed by mucolytics in 74(86.04%) patients. The other symptoms presented among the study population were also recorded. The epigastric pain was seen in 5(5.81%) patients, sore throat in 5(5.81%) patients, headache in 5(5.81%) and myalgia (muscle pain) was seen in 9(10.465%) patients. All the symptoms are corelated and were founded statistically significant p<0.05. in current study most of the patients were prescribed with three medication 31(36.04%) followed by 29(33.72%) patients with four medications. The 44.18% of patients were not prescribed with any antibiotics and remaining 65.82% were prescribed with antibiotics.

**Table 2**

| WHO PRESCRIBING INDICATORS | | | |
|---|---|---|---|
| **INDICATOR** | **Total** | **Value** | **OPTIMAL VALUE** |
| The average number of drugs per encounter | 279 | 3.2 | 1.6-1.8 |
| % Drugs prescribed by generic name | 76 | 88% | 100% |
| % Encounters with an antibiotic | 48 | 55.81% | 20.0-26.8% |
| % Encounters with an injection | 15 | 17.44% | 13.4-24.1% |
| % Drugs from essential drugs list | 59 | 68.60% | 100% |

Among the study population, the average number of drugs per encounter was 3.2. The percentage of drugs prescribed by generic name was 88.37%. The percentage of encounters with an antibiotic prescribed was 55.81% and 17.44% of drugs were given by the injectable route. Over three quarters

66.60 % of drugs were prescribed from the EDL (Table 2).

The grades of breathlessness were measured, in present study grade 3 breathlessness was noted in majority of patients i.e., 42(48.837%). The mean (SD) was calculated grade 3 was 21 ±13.859,

grade 2 was 12.5 ±3.465 grade was 7.5 ±2.079 and grade 4 was 4(4.651).

**Table 3**

| Medication adherence reporting scale | | Frequency (%) | Mean (SD) at 95% CI |
|---|---|---|---|
| I forgot to take them | always | 9 (10.46%) | |
| | often | 21 (24.41%) | |
| | sometimes | 26 (30.23%) | 17.2 ±5.358 |
| | rarely | 18 (20.93%) | |
| | never | 12 (13.95%) | |
| I change the dose | always | 11 (12.79%) | |
| | often | 24 (27.90%) | 17.4 ±3.865 |
| | sometimes | 20 (23.25%) | |
| | rarely | 17 (19.76%) | |
| | never | 15 (17.44%) | |
| I stop taking them for a while | always | 16 (18.60%) | |
| | often | 23 (26.74%) | |
| | sometimes | 21 (24.41%) | 17.2 ±3.652 |
| | rarely | 14 (16.27%) | |
| | never | 12 (13.95%) | |
| I decided to skip a dose | always | 14 (16.27%) | |
| | often | 26 (30.23%) | 17.2 ±5.032 |
| | sometimes | 22 (25.58%) | |
| | rarely | 12 (13.95%) | |
| | never | 12 (13.95%) | |
| I take medication less than instructed | always | 9 (10.46%) | |
| | often | 18 (20.93%) | 17.2 ±5.093 |
| | sometimes | 27 (31.39%) | |
| | rarely | 15 (17.44%) | |
| | never | 17 (19.76%) | |

The medication adherence reporting scale was employed to assess medication adherence in the research population. Table 3 displays the reported MARS-5 responses. Some (30.23%) of the participants said they occasionally forgot to take their meds, while 31.39% said they usually or frequently take less medication than advised. The statement with the greatest mean was "I change the dose," whereas the statement had the lowest mean.

**DISCUSSION**
The goal of this study was to examine drug usage trends by analysing the main indicators of the WHO prescription indicators. Though irrational prescribing practices exist all over the world[9], the gravity of the problem is high developing and under developed countries.

Our study found a larger number of medications prescribed per prescription, antibiotic overuse, a sufficient rate of prescribing by generic name, and a high incidence of antibiotic prescribing. These findings were similar to assessment of WHO/INRUD core drug use indicators in two tertiary care hospitals of Bahawalpur study conducted by Atif M et.al[1].

As shortness of breath, wheezing and dyspnoea are primary symptoms of asthma in our study we founded majority of patients are reported with these symptoms these findings are found to be similar with the studies conducted by Atif M et.al[1] & Rand CS et.al[3]. based on report of WHO prescribing indicators the average number of drugs per encounter is founded two times higher than optimal value. The drugs prescribed with generic name was recorded as 88% which is less than optimal values and the other results like antibiotics per encounters and drugs prescribed from EDL were also founded higher than the optimal values. The injections prescribed per encounter is founded as per the optimal values. These findings were similar with Desalegn AA[5] study were the mention high no of antibiotics and drugs per encounter were reported.

The non adherence level was report high in sometimes and often levels. Lack of knowledge on medication adherence is reason behind this report. These findings are similar to Horne et.al[6] study.

Throughout the study certain limitations were identified. This study's data was gathered by self-reporting, which may have resulted in social desirability and recall biases. Furthermore, despite

the fact that the interviewer was well-trained to deliver the surveys in the same manner for all respondents without any extra explanations, an interviewer bias may be present in the obtained data.

## CONCLUSION:

The present study concludes explains as following prescribing guidelines is essential for positive treatment outcomes. Based on medication adherence rating scale the medication adherence is founded as 67%. The healthcare team involment in improving drug taking behaviours is very much needed to improve medication adherence among patients.

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