



## A STUDY TO EVALUATE THE MEDICATION ADHERENCE OF CHRONIC ILLNESS IN GERIATRIC PATIENTS

Dr. Vishwas A.T.L.\*<sup>1</sup>, Jesny M. Jacob<sup>2</sup>, Jeena Babu<sup>2</sup>, Hridhya Alphonse Jose<sup>2</sup>

\*<sup>1</sup>Assistant Professor, Department of Pharmacy Practice, Bharathi College of Pharmacy, Bharathinagara, Mandya, Karnataka, India – 571422.

<sup>2</sup>Pharm D, Department of Pharmacy Practice, Bharathi College of Pharmacy, Bharathinagara, Mandya, Karnataka, India – 571422.

\*Corresponding Author: Dr. Vishwas A.T.L.

Assistant Professor, Department of Pharmacy Practice, Bharathi College of Pharmacy, Bharathinagara, Mandya, Karnataka, India – 571422.

Article Received on 11/08/2020

Article Revised on 01/09/2020

Article Accepted on 22/09/2020

### ABSTRACT

**Background:** Geriatrics is defined as a person who is aged greater than 65 years. Geriatrics will suffer from chronic and recurrent illnesses that occur more commonly during later life such as diabetes mellitus, hypertension, IHD, arthritic disorders, respiratory disorders etc., which may require chronic medication with multiple drugs. Medication adherence is important for controlling chronic conditions, treating temporary condition, and overall long-term health and well-being of geriatric patients. **Aim:** The aim of our study is to evaluate the medication adherence of chronic illness in geriatric patients. **Objectives:** To assess the medication adherence of chronic illness and factors affecting the non-adherence in geriatric patients. **Methodology:** A cross sectional study was conducted in General Medicine Department at MIMS Teaching Hospital, Mandya, patients who were satisfying the inclusion criteria will be enrolled our study, for the period of six months. Totally 200 in-patient cases were collected by using suitable pre-designed profile form. **Result:** Among 200 patients, Female patients are having risk of chronic illness by 116(58%). Age group between 65-70(60%) years are at high risk and 157(78.5%) patients are illiterate. About 102 (46.36%) patients are suffering from cardiovascular diseases. Patients having history of Diabetes mellitus 75(34.09%) and majority of patients were diagnosed as hypertension 98(31.41%). Among patients, 106(53%) are non-adherent to prescribed medications. According to Morisky medication adherence scale scoring, 106(53%) patients scored zero. It shows that they are non-adherent. Among 106 patients, 64(60.37%) patients are non-adhered due to therapy related problems. **Conclusion:** Our study concludes that maximum patients were illiterate. Hypertension and diabetic mellitus are common chronic illness in geriatric patients. So, they are on prescription. According to Morisky medication adherence scale scoring most of the patient scored zero that is non-adherent is due to therapy related problems. So, the pharmacist intervention is required to improve medication non – adherence and quality of life in geriatric population.

**KEYWORDS:** Geriatrics, Chronic Illness, Adherence, Non-Adherence.

### INTRODUCTION

Medication adherence is well defined as the extent to which patient takes medication as prescribed by the health care provider.<sup>[1]</sup> In general, only 50% of general population has been estimated to adhere to their medications, and this may range from 47 to 100% in elderly.<sup>[2]</sup>

In India the elderly population accounted for 8.2% of the total population in 2011, and the number is expected to increase dramatically over the next four decades (to 19% in 2050).<sup>[3]</sup>

An elderly person is defined as a person who is aged >65 years.<sup>[4]</sup> Elderly people experience a variety of chronic diseases because of biological degeneration, with health

problems being almost inevitable in the last period of human life. The most frequent degenerative diseases leading to reduced quality of life (QOL) are cancer, hypertension, osteoporosis, and diabetes mellitus.<sup>[5]</sup>

Measures to facilitate patient medication adherence should be considered as an integral part of the comprehensive care of older patients with multiple diseases.<sup>[6]</sup> Several barriers to medication adherence have been reported for elders. These include cognitive deficits, diminished physical senses, the increased risk of side effects associated with aging, taking large numbers of medication and complexity of medication regimens, beliefs that may conflict with adherence protocols, practicing alternative medicine that may conflict with

adherence protocols, and perceived need and effectiveness of medications.<sup>[7]</sup>

Pharmacologic therapy is a key component in the treatment of chronic diseases. However, about 50% of patients with chronic diseases do not take medication as prescribed.<sup>[8]</sup> According to surveys, 90% of elderly use one or more prescription medications per week, 41% of older adults take five or more medications and 12% use 10 or more medications per week.<sup>[9]</sup> So, the aim of the study is to evaluate the medication adherence of chronic illness in geriatric patients.

### OBJECTIVES

- To assess the medication adherence of chronic illness in geriatrics patients who are admitted in the Department of General Medicine at Mandya Institute of Medical Sciences.
- To evaluate the factors affecting medication adherence in geriatrics patients.
- To analyze the common chronic illness and its treatment in geriatrics.

### METHODOLOGY

**Study Site:** This study was conducted at MIMS Teaching Hospital, Mandya, Karnataka. It is a 500 bedded Tertiary Care Teaching Hospital, provides specialized health care services to all strata of people in and around Mandya and also the rural population.

**Study Design:** This is hospital-based prospective cross-sectional study in which the data was obtained from in-patients admitted in the department of general medicine to assess the medication adherence of chronic illness in geriatric patients.

**Study Period:** This study was conducted for a period of 6 months.

**Research Period:** 4 Months of data collection, and 2 months for data analysis and write up.

**Study Sample:** Prescription and case sheets of about 200 cases in a 4 months period.

**Study Population:** Patients who are admitted in Department of General Medicine, MIMS, Teaching Hospital, Mandya.

**Study Approval:** Ethical clearance was obtained from the Institutional "Ethics Committee" of Mandya Institute of Medical Science Teaching Hospital, Mandya.

### Study Criteria

#### Inclusion Criteria

- Patients aged >65 years, admitted in medicine department at MIMS and having history of chronic illness.

- Patients who are willing to give informed consent form.

#### Exclusion Criteria

- Patients taking treatment for acute illness.
- Patients who are admitted in intensive or critical care unit

**Source of data and material:** Data will be collected from patient history, diagnosis, and treatment chart of geriatric patients admitted in Department of General Medicine, MIMS.

**Study Procedure:** Geriatric In-patients who met the study criteria were enrolled to the study for assessing medication adherence after obtaining their written informed consent form from patient in general medicine. The data collecting format had framed based on study need. It includes:

1. Socio-demographic details like name, age, sex, education, income, etc.
2. Details regarding chronic illnesses including diagnosis, treatment, knowledge regarding disease, etc.
3. Details on medication adherence was obtained using suitable pre-determined questionnaire which includes Morisky Medication Adherence Scale (MMAS).
4. Details regarding factors affecting their medication adherence.

**Statistical Methods:** The data were subjected to descriptive statistical analysis using Microsoft Excel. Microsoft Word and Excel have been used to generate bar graph, pie charts and tables.

### RESULT AND DISCUSSION

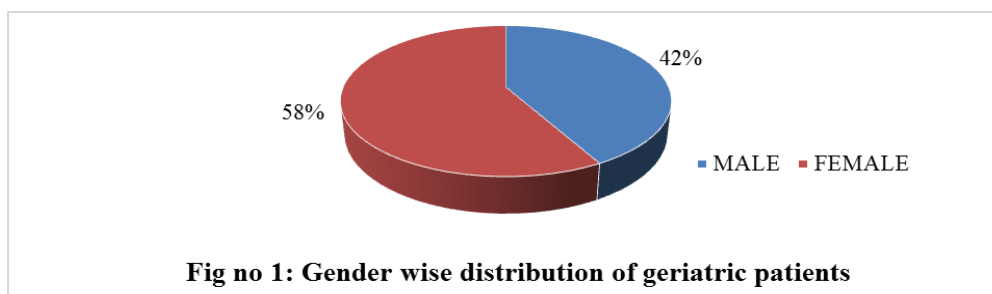
This study was conducted in Department of General Medicine at MIMS, Mandya. A total of 200 patients admitted in MIMS were enrolled in the study based on study criteria. The required details from the patient case sheet were recorded in a suitably designed patient profile form and Medication adherence was studied using a predetermined questionnaire which includes Morisky Medication Adherence Scale (MMAS) and reasons for non-adherence regarding their medication use.

#### Patient distribution based on gender

Out of 200 patients 84(42%) patients were males and 116(58%) patients were female. It shows that females having high risk of chronic illness by 16% more when compared to male patients. (Table 1, Figure 1)

**Table 1: Gender wise distribution of geriatric patients.**

| S. no. | Gender | Number of patients | Percentage (%) |
|--------|--------|--------------------|----------------|
| 1      | Male   | 84                 | 42%            |
| 2      | Female | 116                | 58%            |

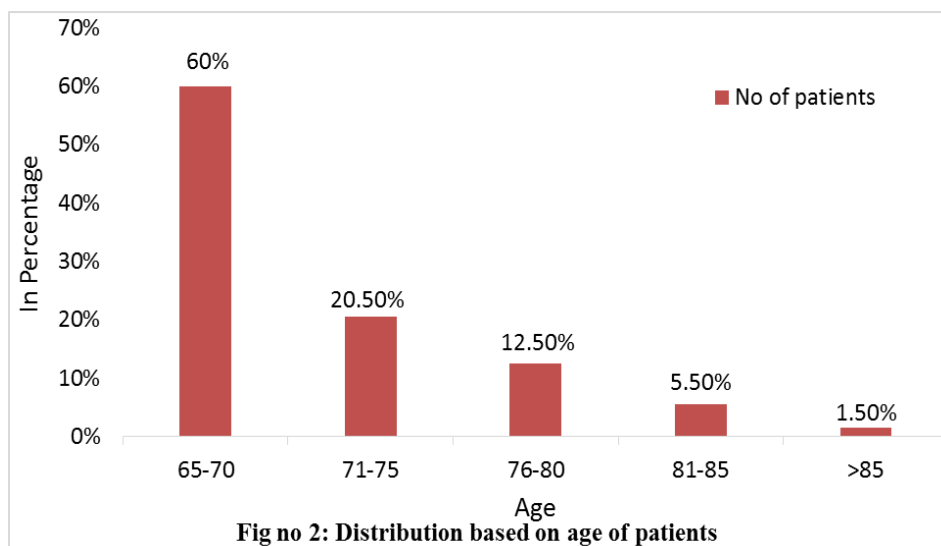
**4.2 Patient distribution based on age**

Among 200 patients age group between 65-70 years are having high risk of chronic illness which includes

120(60%)patients, followed by 41(20.5%) patients of age group 71-75 years, 25 (12.5%)patients of age group 76-80 years, 11(5.5%) patients of age group 81-85years, 3(1.5%) patients of age group >85years.

**Table 2: Distribution based on age of patients.**

| Sl.no | Age   | No of patients(n=200) | Percentage (%) |
|-------|-------|-----------------------|----------------|
| 1     | 65-70 | 120                   | 60%            |
| 2     | 71-75 | 41                    | 20.5%          |
| 3     | 76-80 | 25                    | 12.5%          |
| 4     | 81-85 | 11                    | 5.5%           |
| 5     | >85   | 3                     | 1.5%           |

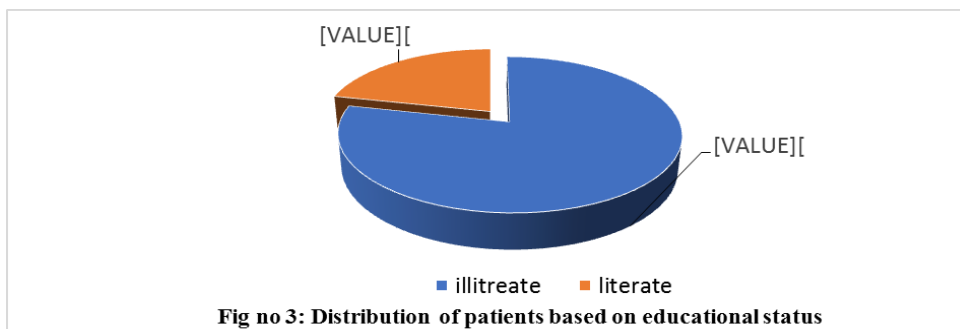
**4.3 Distribution of patients based on educational status**

Out of 200 patients, 157(78.5%) patients were Illiterate and 43(21.5%) patients were Literate. Among literates

28(14%) patients studied primary, 11(5.5%) studied high school and 4(2%) patients are degree holders.

**Table 3: Percentage distribution of patient based on educational status.**

| Sl. No. | Education status | No of patients | Percentage (%) |
|---------|------------------|----------------|----------------|
| 1       | Literate         | 43             | 21.5%          |
|         | Primary          | 28             | 14%            |
|         | High School      | 11             | 5.5%           |
|         | Degree           | 4              | 2%             |
| 2       | Illiterate       | 157            | 78.5%          |



**Fig no 3: Distribution of patients based on educational status**

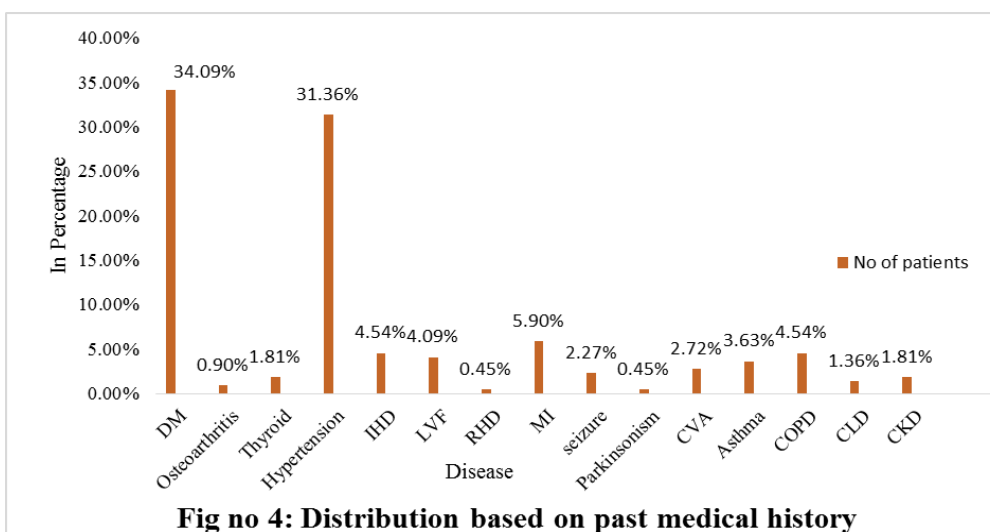
**4.4 Distribution of patient based on past medical history**

All the patients were assessed for different condition status and classified. Out of these patients,75(34.09%) patients suffering from diabetes mellitus, followed by 69(31.36%) hypertension cases, 13(5.90%)MI cases,

10(4.54%) IHD cases, 10(4.54%) COPD cases, 9(4.09%) LVF cases, 8(3.63%) asthma cases, 6(2.72%) CVA cases, 5(2.27%) seizure cases, 4(1.81%) thyroid cases, 4(1.81%) CKD cases, 3(1.36%) CLD cases, 2(0.90%) osteoarthritis cases, 1(0.45%) RHD cases, 1(0.45%) Parkinsonism cases.

**Table 4: Percentage distribution of past medical history.**

| Sl. No. | Conditions              | Diseases       | No of diseases(n=220) | Percentage (%) |
|---------|-------------------------|----------------|-----------------------|----------------|
| 1.      | Metabolic disorder      | DM             | 75                    | 34.09%         |
|         |                         | Thyroid        | 4                     | 1.81%          |
| 2.      | Cardiovascular disease  | Hypertension   | 69                    | 31.36%         |
|         |                         | IHD            | 10                    | 4.54%          |
|         |                         | LVF            | 9                     | 4.09%          |
|         |                         | RHD            | 1                     | 0.45%          |
|         |                         | MI             | 13                    | 5.90%          |
|         |                         | Seizure        | 5                     | 2.27%          |
| 3.      | Cerebrovascular disease | Parkinsonism   | 1                     | 0.45%          |
|         |                         | CVA            | 6                     | 2.72%          |
|         |                         | Asthma         | 8                     | 3.63%          |
| 4.      | Respiratory disease     | COPD           | 10                    | 4.54%          |
|         |                         | CLD            | 3                     | 1.36%          |
| 5.      | Hepatorenal disease     | CKD            | 4                     | 1.81%          |
|         |                         | Osteoarthritis | 2                     | 0.90%          |



**Fig no 4: Distribution based on past medical history**

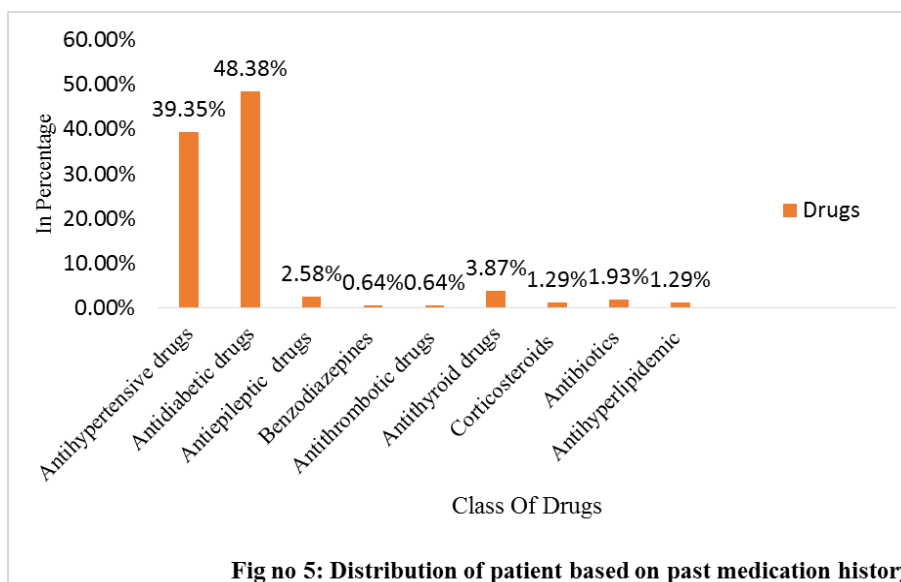
**4.5 Distribution of patient based on past medication history**

Among different class of drugs. The commonly prescribed class of drug is Antidiabetic drugs 75(48.38%), followed by Antihypertensive drugs

61(39.53%), Antithyroid drugs 6(3.87%), Antiepileptic drugs 4(2.58%), Antibiotics 3(1.93%), Corticosteroids 2(1.29%), Antihyperlipidemic drugs 2(1.29%), Benzodiazepines 1(0.64%), Antithrombotic drugs 1(0.64%).

**Table 5: Percentage distribution based on past medication history.**

| Sl. no. | Class of drugs         | No of drugs(n=155) | Percentage (%) |
|---------|------------------------|--------------------|----------------|
| 1       | Antihypertensive drugs | 61                 | 39.5%          |
| 2       | Antidiabetic drugs     | 75                 | 48.38%         |
| 3       | Antiepileptic drugs    | 4                  | 2.58%          |
| 4       | Benzodiazepines        | 1                  | 0.64%          |
| 5       | Antithrombotic drugs   | 1                  | 0.64%          |
| 6       | Antithyroid drugs      | 6                  | 3.87%          |
| 7       | Corticosteroids        | 2                  | 1.29%          |
| 8       | Antibiotics            | 3                  | 1.93%          |
| 9       | Antihyperlipidemic     | 2                  | 1.29%          |



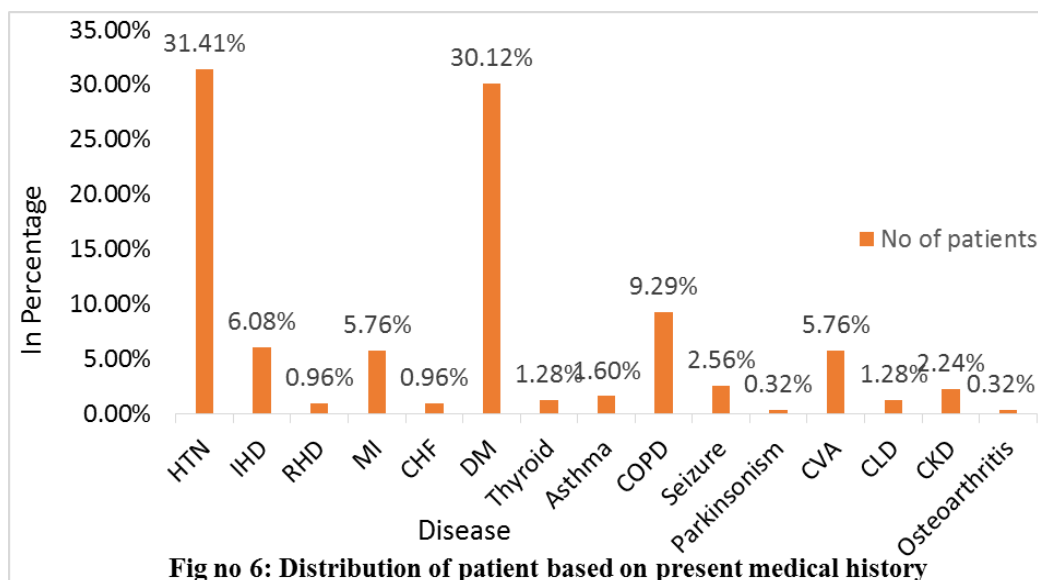
#### 4.6. Distribution of patients based on present medical history

All the patients were assessed for different condition status and classified. Out of these patients, 98(31.41%) of patients suffering from hypertension, followed by 94(30.18%) diabetes mellitus cases, 29(9.29%) COPD

cases, 19(6.08%) IHD cases, 18(5.76%) MI cases, 18(5.76%) CVA cases, 8(2.56%) seizure cases, 7(2.24%) CKD cases, 5(1.60%) asthma cases, 4(1.28%) CLD cases, 4(1.28%) thyroid cases, 3(0.96%) RHD cases, 3(0.96%) CHF cases, 1(0.32%) parkinsonism cases, 1(0.32%) Osteoarthritis cases.

**Table 6: Percentage distribution based on present medication.**

| Sl. No. | Conditions               | Disease        | No of diseases(n=312) | Percentage (%) |
|---------|--------------------------|----------------|-----------------------|----------------|
| 1       | Cardiovascular disease:  | HTN            | 98                    | 31.41%         |
|         |                          | IHD            | 19                    | 6.08%          |
|         |                          | RHD            | 3                     | 0.96%          |
|         |                          | MI             | 18                    | 5.76%          |
|         |                          | CHF            | 3                     | 0.96%          |
| 2       | Metabolic disorder:      | DM             | 94                    | 30.12%         |
|         |                          | Thyroid        | 4                     | 1.28%          |
| 3       | Respiratory disease:     | Asthma         | 5                     | 1.60%          |
|         |                          | COPD           | 29                    | 9.29%          |
| 4       | Cerebrovascular disease: | Seizure        | 8                     | 2.56%          |
|         |                          | Parkinsonism   | 1                     | 0.32%          |
|         |                          | CVA            | 18                    | 5.76%          |
| 5       | Hepatorenal disease:     | CLD            | 4                     | 1.28%          |
|         |                          | CKD            | 7                     | 2.24%          |
| 6       | Musculoskeletal disease: | Osteoarthritis | 1                     | 0.32%          |



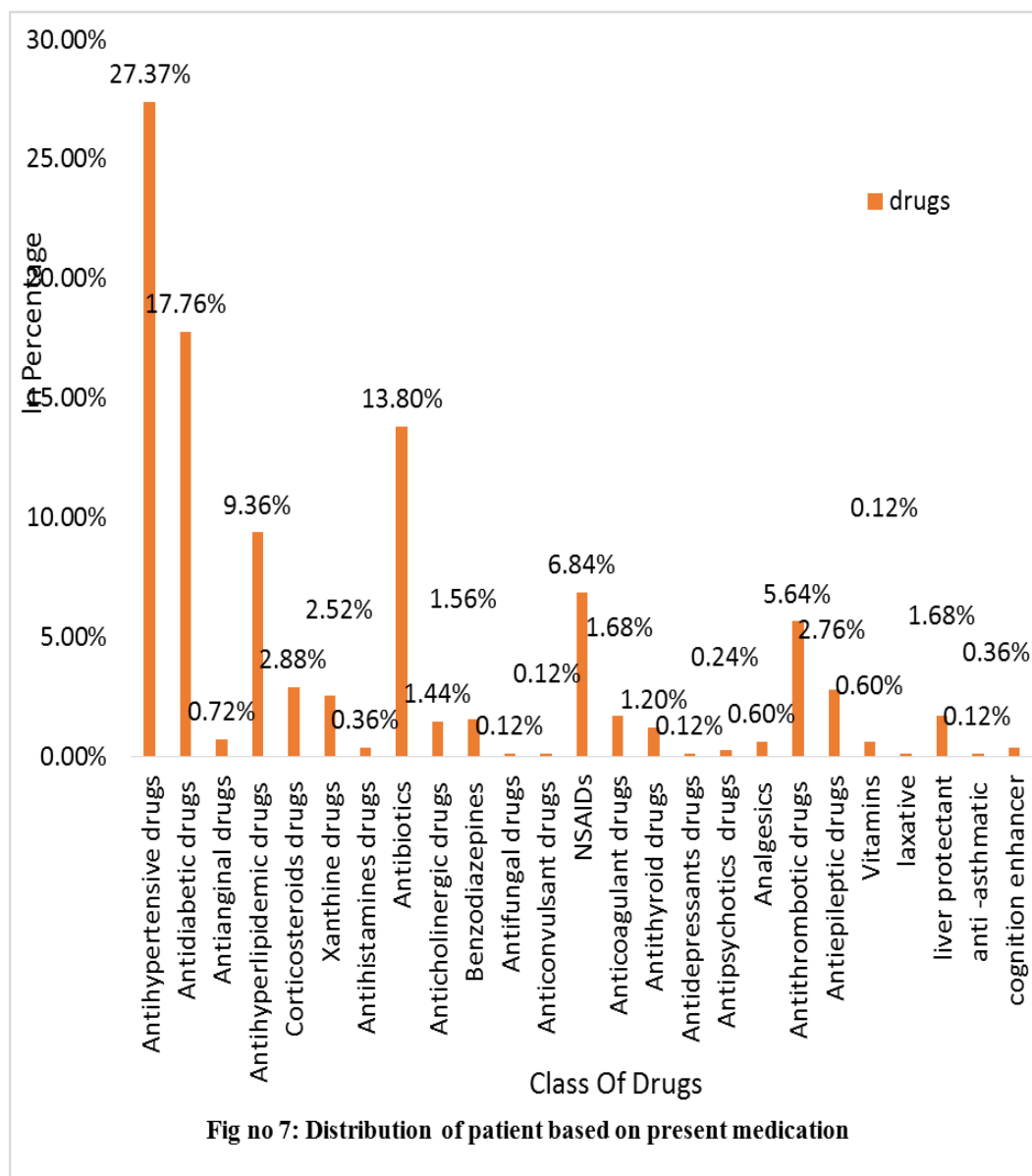
#### 4.7. Distribution of patient based on present medication history

Among different class of drugs. Commonly prescribed class of drug is 228(27.37%) Antihypertensive drugs followed by 148(17.76%) Antidiabetic drugs, 115(13.80%) Antibiotics, 78(9.36%) Antihyperlipidemic drugs, 57(6.84%) NSAIDs, 47(5.64%) Antithrombotic drugs, 24(2.88%) Corticosteroids, 23(2.76%) Antiepileptic, 21(2.52%) Xanthine drugs, 14(1.68%) Anticoagulant

drugs, 14(1.68%) liver protectant, 13(1.56%) Benzodiazepine, 12(1.44%) Anticholinergic, 10(1.20%) Antithyroid drugs, 6(0.72%) Antianginal drugs, 5(0.60%) Analgesic, 5(0.60%) Vitamins, 3(0.36%) Antihistamines, 3(0.36%) Cognition enhancer, 2(0.24%) Antipsychotic drugs, 1(0.12%) Antidepressants, 1(0.12%) Antifungal drugs, 1(0.12%) Anticonvulsant drugs, 1(0.12%) Laxative, 1(0.12%) Anti-asthmatic.

**Table 7: Percentage distribution based on present medication.**

| Sl. No. | Present medication       | No of drugs(n=833) | Percentage (%) |
|---------|--------------------------|--------------------|----------------|
| 1       | Antihypertensive drugs   | 228                | 27.37%         |
| 2       | Antidiabetic drugs       | 148                | 17.76%         |
| 3       | Antianginal drugs        | 6                  | 0.72%          |
| 4       | Antihyperlipidemic drugs | 78                 | 9.36%          |
| 5       | Corticosteroids          | 24                 | 2.88%          |
| 6       | Xanthine drugs           | 21                 | 2.52%          |
| 7       | Antihistamines drugs     | 3                  | 0.36%          |
| 8       | Antibiotics              | 115                | 13.80%         |
| 9       | Anticholinergic drugs    | 12                 | 1.44%          |
| 10      | Benzodiazepines          | 13                 | 1.56%          |
| 11      | Antifungal drugs         | 1                  | 0.12%          |
| 12      | Anticonvulsant drugs     | 1                  | 0.12%          |
| 13      | NSAIDS                   | 57                 | 6.84%          |
| 14      | Anticoagulant drugs      | 14                 | 1.68%          |
| 15      | Antithyroid drugs        | 10                 | 1.2%           |
| 16      | Antidepressants drugs    | 1                  | 0.12%          |
| 17      | Antipsychotics drugs     | 2                  | 0.24%          |
| 18      | Analgesics               | 5                  | 0.6%           |
| 19      | Antithrombotic drugs     | 47                 | 5.64%          |
| 20      | Antiepileptic drugs      | 23                 | 2.76%          |
| 21      | Vitamins                 | 5                  | 0.6%           |
| 22      | Laxative                 | 1                  | 0.12%          |
| 23      | Liver protectant         | 14                 | 1.68%          |
| 24      | Anti -asthmatic          | 1                  | 0.12%          |
| 25      | Cognition enhancer       | 3                  | 0.36%          |



#### 4.8. Distribution based on number of chronic illness

All the patients were assessed for different condition status and classified. Out of these patients 243(45.67%) Cardiovascular disease were presented followed by

177(33.27%) metabolic disease, 52(9.77%) respiratory diseases, and 39(7.33%) Cerebrovascular diseases, 18(3.38%) Hepatorenal disease, 3(0.56%) Musculoskeletal disease were presented.

**Table 8: Percentage distribution of chronic illness.**

| Sl. No. | No of chronic illness   | No of diseases(n=532) | Percentage (%) |
|---------|-------------------------|-----------------------|----------------|
| 1       | Cardiovascular disease  | 243                   | 45.67%         |
| 2       | Metabolic disorder      | 177                   | 33.27%         |
| 3       | Cerebrovascular disease | 39                    | 7.33%          |
| 4       | Respiratory disease     | 52                    | 9.77%          |
| 5       | Hepatorenal disease     | 18                    | 3.38%          |
| 6       | Musculoskeletal disease | 3                     | 0.56%          |

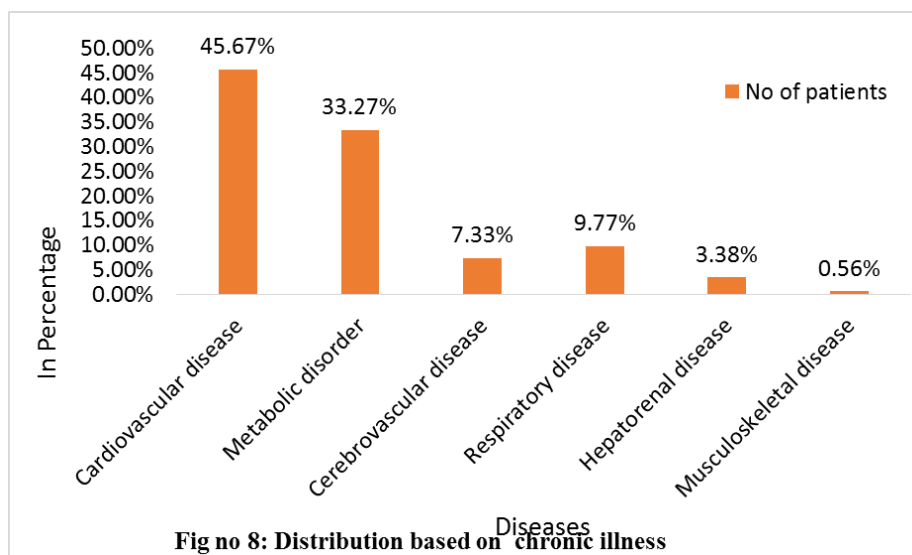


Fig no 8: Distribution based on chronic illness

#### 4.9 Distribution of Patients Based on Type of Adherence

Out of 200 patients, 106(53%) patients are non-adherent to medication and 94(47%) Patients are adherent to medication.

Table 9: Percentage distribution of patients based on types of adherence.

| Sl. No. | Types of adherence | No of patients(n=200) | Percentage (%) |
|---------|--------------------|-----------------------|----------------|
| 1       | Non-adherent       | 106                   | 53             |
| 2       | Adherent           | 94                    | 47             |

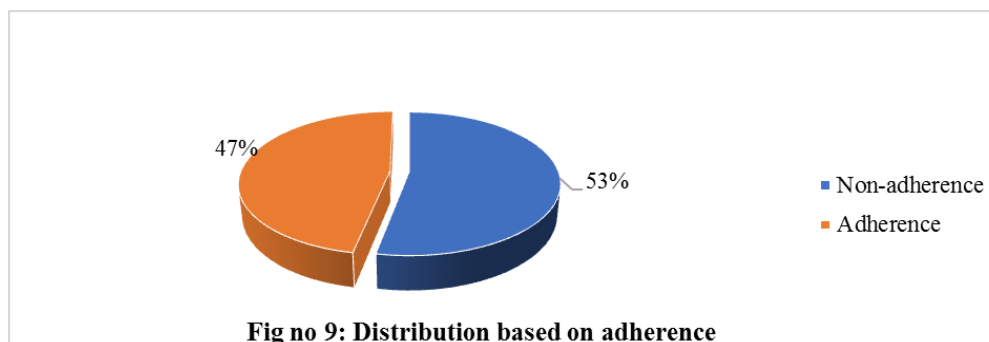


Fig no 9: Distribution based on adherence

#### 4.10 Distribution Based on Reasons for Non-Adherence

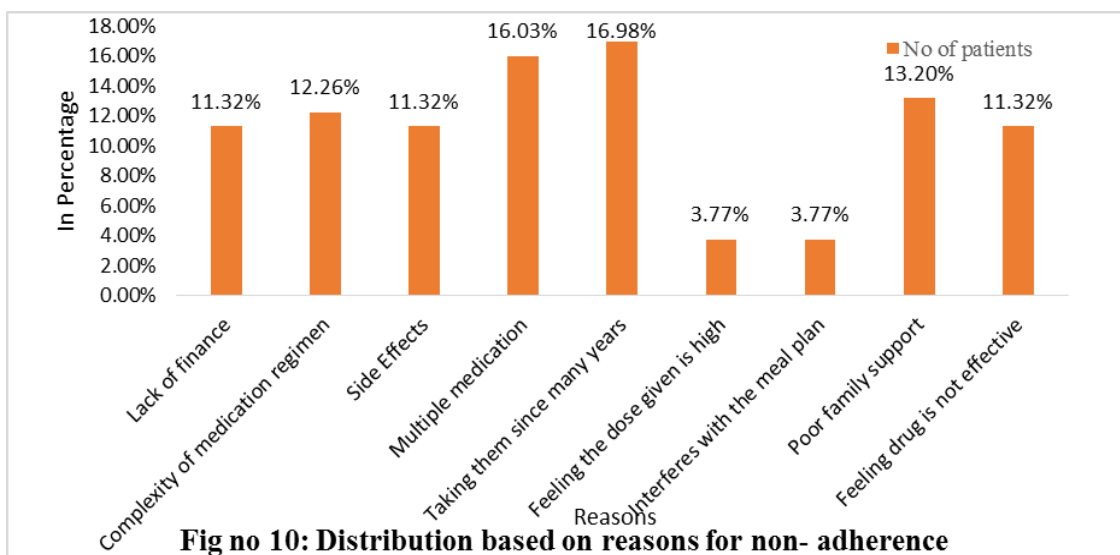
Out of 200 patients, 106(53%) patients are non-adherent due to 18(16.98%) patients taking medication for many years, 17(16.03%) patients have multiple medication, 14(13.20%) patients have poor family support,

13(12.26%) patients have complexity of medication regimen, 12(11.32%) patients have feeling that drug is not effective, 12(11.32%) patients have lack of finance, 12(11.32%) patients have side effects, 4(3.77%) patients have feeling that the dose given is high, 4(3.77%) patients medication interferes with the meal plan.

Table 10: Percentage distribution of reason for non-adherence.

| Sl. No | Reasons                          | No of patients (106) | Percentage (%) |
|--------|----------------------------------|----------------------|----------------|
| 1      | Lack of finance                  | 12                   | 11.32%         |
| 2      | Complexity of medication regimen | 13                   | 12.26%         |
| 3      | Side effects                     | 12                   | 11.32%         |
| 4      | Multiple medication              | 17                   | 16.03%         |
| 5      | Taking them since many years     | 18                   | 16.98%         |
| 6      | Feeling the dose given is high   | 4                    | 3.77%          |
| 7      | Interferes with the meal plan    | 4                    | 3.77%          |
| 8      | Poor family support              | 14                   | 13.20%         |
| 9      | Feeling drug is not effective    | 12                   | 11.32%         |





**Fig no 10: Distribution based on reasons for non-adherence**

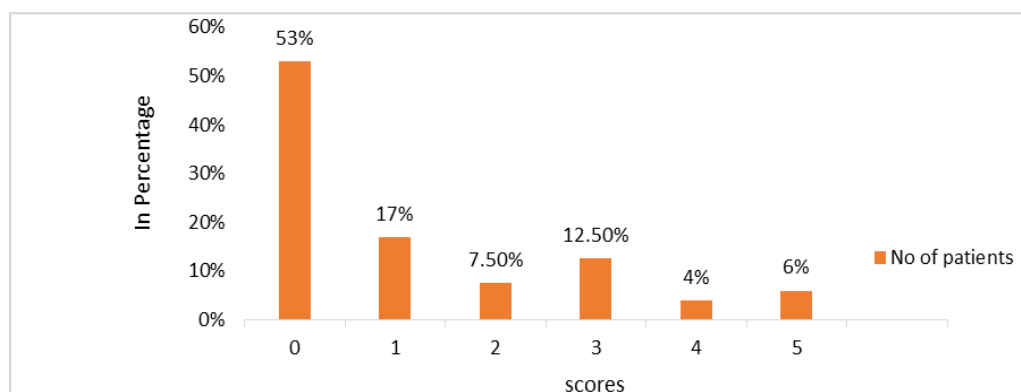
**4.11 Distribution Based on Morisky Medication Adherence Scale**

According to Morisky medication adherence scale scoring, 106(53%) patients scored zero, 34(17%) patients

scored one, 15(7.5%) patients scored two, 25(12.5%) patients scored three, 8(4%) patients scored four, and 12 (6%) patients scored five.

**Table 11: Percentage distribution of Morisky medication adherence scale.**

| Sl. No. | Scores | No of patients (200) | Percentage (%) |
|---------|--------|----------------------|----------------|
| 1       | 0      | 106                  | 53%            |
| 2       | 1      | 34                   | 17%            |
| 3       | 2      | 15                   | 7.5%           |
| 4       | 3      | 25                   | 12.5%          |
| 5       | 4      | 8                    | 4%             |
| 6       | 5      | 12                   | 6%             |



**Fig no 11: Distribution based on morisky adherence scale**

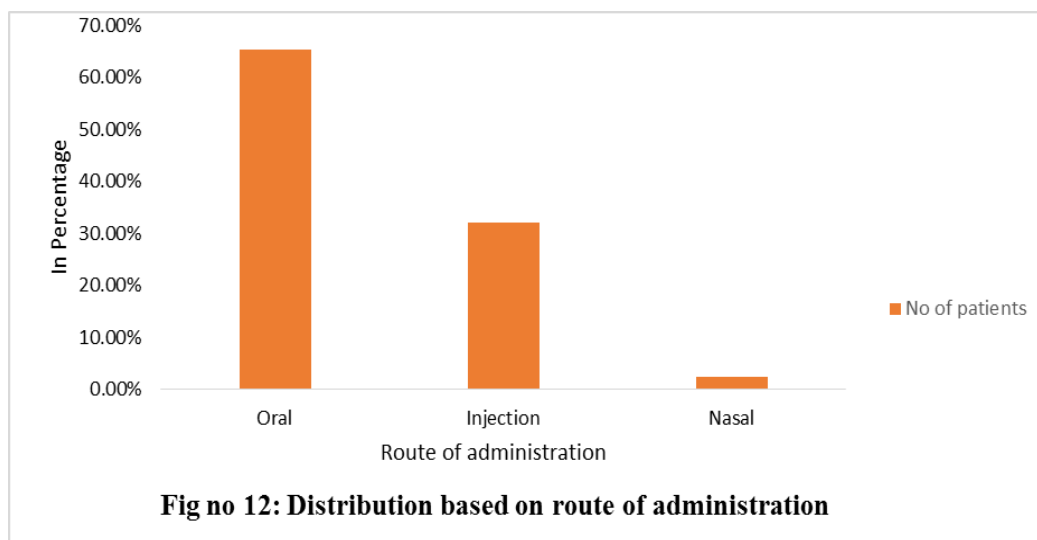
**4.12 Distribution of Drug Based on Route of Administration of Drug**

Totally 963 drugs was prescribed for patients among them 645(66.97%) drugs are given by oral route,

318(32.18%) drugs are given through injections and 25(2.53%) drugs are given by nasal route.

**Table 12: Percentage distribution based on route of administration.**

| Sl. No. | Route of administration | No of drugs (n=988) | Percentage (%) |
|---------|-------------------------|---------------------|----------------|
| 1       | Oral                    | 645                 | 65.28%         |
| 2       | Injection               | 318                 | 32.18%         |
| 3       | Nasal                   | 25                  | 2.53%          |



**Fig no 12: Distribution based on route of administration**

## DISCUSSION

A cross sectional study was conducted to analyze the Medication adherence of chronic illness in geriatric patients in General Medicine Department of Mandya Institute of Medical Science and Teaching Hospital, Mandya.

A total of 200 patients admitted in MIMS were enrolled in the study based on study criteria. Data collected using suitable pre-determined questionnaire which includes Morisky Medication Adherence Scale (MMAS) and reasons for non-adherence.

Among 200 patients, 84(42%) patients were males and 116(58%) patients were female. Out of 200 patients, 120 patients with chronic illness were in the age group of 65-70(60%). Education plays an important role for understanding disease conditions and role of pharmacotherapy in disease management. So, in our study 157(78.5%) patients were Illiterate. All the patients were assessed for different condition status and classified. Out of these patients, 75(34.09%) patients suffering from diabetes mellitus and the commonly prescribed class of drug was Antidiabetic drugs that is 75(48.38%) for their illness. Maximum number of patients who are admitted to hospital were diagnosed as hypertension that is 98(31.41%) of patients. So, totally 833 drugs was prescribed among subject in that 228(27.37%) were Antihypertensive drugs used for treatment of hypertension.

Out of 200 patients, 106(53%) patients are non-adherent to prescribed medications and 94(47%) Patients are adherent to prescribed medication. The main reason for non-adherence is that patients taking medications for many years that is 18(16.98%). According to Morisky medication adherence scale scoring, 106(53%) patients scored zero, 34(17%) patients scored one, 15(7.5%) patients scored two, 25(12.5%) patients scored three, 8(4%) patients scored four, 12(6%) patients scored five. Totally 963 drugs was prescribed for patients among them 645(66.97%) drugs are given by oral route,

318(32.18%) drugs are given through injections and 25(2.53%) drugs are given by nasal route.

## CONCLUSION

The present study concludes that most common chronic illness in geriatric patients was cardiovascular diseases and majority of the patients were female and illiterate. The patients having history of diabetes mellitus and on pharmacotherapy with hypoglycemic agents. Maximum number of patients are admitted to hospital having symptoms of hypertension on antihypertensive medications were prescribed. According to Morisky medication adherence scale scoring most of the patient scored zero it shows that they are adherent to the prescribed medications and non-adherence is due to therapy related problems.

Medication adherence play an important role in the management of chronic diseases, particularly in geriatric patients. Awareness among the elderly population should be created to improve medication adherence and prevent further complications. Pharmacist interventions require for improving quality of life in geriatric patients.

## ACKNOWLEDGEMENT

We are very thankful to our Director Dr. T. Tamizh Mani and Principal Dr. Senthil Kumar G P and also Head of the Department of Pharmacy Practice Dr. Suresha B S. Bharathi College of Pharmacy, Bharathinagara for their suggestions and advice. We would like to thank MIMS hospital for supporting us to conduct this research. Finally our deepest gratitude goes to MIMS staffs, who helped and allowed us in collecting and gathering data.

**CONFLICT OF INTEREST:** The authors declared no conflict of interest.

## BIBLIOGRAPHY

1. Narayana Goruntla, Vijaya Jyothi Mallela, Devanna Nayakant. Impact of One-Dose Package Dispensing with Patient Counselling on Medication Adherence in Geriatrics Suffering from Chronic

- Disorders. *Chrismed J Health Res.*, 2018; 5(1): 18-22.
2. R. Shruthi, R. Jyothi, H.P. Punda Rikaksha, G.n. Nagesh, T.J. Tushar. A Study of Medication Compliance in Geriatric Patients with Chronic Illnesses at a Tertiary Care Hospital. *Journal of Clinical and Diagnostic Research*, 2016; 10(12): 40-43.
  3. Dhananjay Kumar, HariShanka. Prevalence of Chronic Diseases and Quality of Life among Elderly People of Rural Varanasi. *International Journal of Contemporary Medical Research*, 2018; 5(7): 1-4.
  4. Angela Frances yap, thiruthirumoorthy, yuheng kwan. Medication adherence in the elderly. *Journal of clinical gerontology and geriatrics*, 2016; 7(1): 64-67.
  5. Ratana Somrongthong, Donnapa Hongthong, Sunanta Wongchalee, and Nualnong Wongtongkam. The Influence of Chronic Illness and Lifestyle Behaviours on Quality of Life among Older Thais. *BioMed Research International*, 2016: 1-7.
  6. Aml A. Salama, Abd El-Rahman A. Yasin, Walaa Elbarbary. Medication knowledge as a determinant of medication adherence in geriatric patients, Serse Elian City, Menoufia Governorate, Egypt. *Menoufia Medical Journal*, 2017; 3(1): 63-68.
  7. K. E. O Quin, T. Semalulu and H. Orom. Elder and caregiver solutions to improve medication adherence. *Health education research*, 2015; 30(2): 323–335.
  8. Hwa Yeon Park, sin Aeseo, hyeyoung Yoo Kiheon lee. Medication adherence and beliefs about medication in elderly patients living alone with chronic diseases. *Patient Preference and Adherence*, 2018; 12(1): 175-181.
  9. Naveen Thekkemelathil Roy, Manjusha Sajith, Madhu Pankaj Bansode. Assessment of Factors Associated with Low Adherence to Pharmacotherapy in Elderly Patients. *J Young Pharm*, 2017; 9(2): 272-276.