MAK HILL Publications Research Journal of Medical Sciences

Research Article
doi: 10.36478/makrjms.2024.8.491.498

OPEN ACCESS

Key Words
Drug non-adherence, urban, south india

Corresponding Author
C. Rajendran,
Department of Sri Chamundeshwari Medical College, Bangalore, Karnataka, India
2611adu@gmail.com

Author Designation
[1]Senior Consultant Physician, Associate Professor

Received: 20 June 2024
Accepted: 29 July 2024
Published: 31 July 2024

Citation: C. Rajendran, 2024. A Study on the Prevalence of Drug Non-Adherence and the Causes of Drug Non-Adherence in Patients of an Urban South Indian Hospital . Res. J. Med. Sci., 18: 491-498, doi: 10.36478/makrjms.2024.8.491.498

A Study on the Prevalence of Drug Non-Adherence and the Causes of Drug Non-Adherence in Patients of an Urban South Indian Hospital

C. Rajendran
Department of Sri Chamundeshwari Medical College, Bangalore, Karnataka, India

Abstract
Drug non-adherence is widely prevalent in our patient population and works against effective management of diseases A prospective observational study was conducted on patients reporting to Outpatient clinic in an Urban South Indian tertiary level hospital. In the study, 200 patients with short-duration illness and 300 patients with long-duration illness were interviewed and the prevalence of drug non-adherence studied. In those patients with poor drug adherence, causes for the same were studied. The study showed that drug non-adherence was widely prevalent in the patient population. The most common reasons for drug non-adherence were that the patient forgot to take medicines, the medicines were costly, fear of side-effects and that the symptoms had subsided. The study found that drug non-adherenceis common in all sections of our society, even in graduates and post-graduates and more so in the elderly and patients with long duration of illness. This study concludes that Non-adherence to medicine therapy is an important issue in the healthcare of patients. This study has noted significant non-adherence in the latter part of short-duration illnesses and more so in long-duration illnesses.

INTRODUCTION

Every doctor who prescribes medicines assumes that the patient will take all the prescribed drugs exactly as advised. When the patient comes for follow-up, the same assumption continues and the doctor alters the drug regimen or adds new drugs, not catering to effect of patient non-adherence. Unfortunately, drug non-adherence in various degrees is a reality that must be recognized and 100 percent adherence must not be assumed.

Medication noncompliance with its associated detrimental effects is widespread and has been found to be most prevalent among patients with chronic diseases. Globally, chronic diseases have been found to be the leading cause of mortality and disability and the disease rates from these conditions are not only accelerating but advancing across every region and pervading every socioeconomic class[1]. The WHO projects that, by 2020, the incidence of chronic disease will account for almost three-quarters of all deaths occurring worldwide and that 71% of deaths due to ischaemic heart disease (IHD), 75% of deaths due to stroke, and 70% of deaths due to diabetes will occur in the developing countries[2].

Among patients with chronic diseases such as hypertension, diabetes, HIV/AIDS and psychiatric illnesses, medication noncompliance has been found to be very common[3,4]. Poor adherence to therapy among hypertensive patients contributes to two-thirds of poor blood pressure control[3]. Failure to achieve blood pressure control subsequently leads to development of cardiovascular complications including myocardial infarction and stroke. For patients with psychiatric disorders, not only do they have a challenge following a medical regimen, but they also have the greatest potential for benefiting from compliance[5]. Among patients living with HIV/AIDS, with the advent of antiretroviral drugs, anything <thorough compliance can result in reduced efficacy of the drugs and later lead to development of resistant viral strains[6]. There is a threefold effect to medication noncompliance and these effects are manifested in the clinical outcome of the patient, the cost of treatment and the risk of hospitalizations, all of which have been identified as the main cause of failure to effectively manage chronic diseases[7-9].

On this premise, the present study was undertaken on a group of patients reporting to Out patient Department (OPD) in a Tertiary Level Hospital in Urban Bangalore, Karnataka, India. The aim was to evaluate the prevalence of drug non-adherence and its causes in the subject population.

MATERIALS AND METHODS

The study was a prospective observational study. This study was conducted on a group of patients reporting to Outpatient Department (OPD) in a Tertiary Level Hospital in Urban Bangalore, Karnataka, India.

Inclusion Criteria: Since this was an observational study on the prevalence of Drug Non-adherence in the patient population, all the patients who were taking medicines were eligible. All patients who reported to OPD and who consented to take part in the study were included in the study. For evaluating drug adherence, two groups of patients were studied.

For studying drug adherence in diseases of short duration, patients reporting with Upper Respiratory Tract Infection and Acute Gastro-enteritis/ Diarrhea were studied.

For studying drug adherence in diseases of longer duration, patients of Diabetes Mellitus Type II and Primary Hypertension were studied

Exclusion Criteria: Patients who had emergent conditions and who needed inpatient admission were excluded from the study.

Study Methods: Every patient who was included in the study was interviewed and counseled. Informed consent was taken for the study. Detailed history about the patient's disease was taken. The patients were interviewed and specifically asked about Educational qualifications (illiterate/up to matriculation/ up-graduation/ graduate/ post-graduate), Socio-economic status (Monthly salary used as a surrogate marker., monthly salary less than Rupees 30,000 / Rupees 30,000-2 lakhs / >Rupees 2 lakhs), Duration of Disease (in case of long-duration diseases, in years), Degree of Disease control (in case of long-duration diseases, as good / poor /very poor). All patients included in the study were asked as above.

For evaluating drug adherence, two groups of patients were studied. For studying drug adherence in diseases of short duration, patients reporting with Upper Respiratory Tract Infection and Acute Gastro-enteritis/ Diarrhea were studied. For studying drug adherence in diseases of longer duration, patients of Diabetes Mellitus Type II and Primary Hypertension were studied. Patients who had emergent conditions and who needed inpatient admission were excluded from the study. This was done to exclude bias due to emergent conditions as patients who are more ill are expected to be more compliant. This study evaluated drug adherence in patients who were clinically stable.

All patients included in the study were then interviewed. They were asked to recall the drug adherence over the previous week. Duration of one week was selected to enable a reliable recall. The results were then tabulated.

For those patients with poor adherence (defined as adherence less than 80%), they were asked about

the causes for the non-adherence. The results were then tabulated.

For the purpose of the study, poor adherence was defined as drug intake <80%. For Socio-economic status, monthly income was used as a surrogate marker.

After the interviews, for all patients, a detailed health education session was conducted for all patients in an attempt to improve drug adherence. The health education session was conducted for a minimum of 20-25 minutes for every patient

The Results were then Tabulated and Studied:

Statistical methods and Data Analysis: Database was created in MS Excel and analyzed using IBM SPSS (Statistical Package for Social Sciences) statistics software version 22. Data was presented in numbers, percentages and mean+SD. Other statistical methods used in the data analysis were Standard Error of difference between Two Means as per the nature of data. For statistical significance p value was considered at 5% level ($p<0.05$).

RESULTS AND DISCUSSIONS

A total of 500 patients were studied. 200 patients had short-duration therapy for Upper Respiratory Tract Infections and Acute Gastro-enteritis and were studied. 300 patients were studied for drug adherence in long-duration illnesses and had DM-II or Primary Hypertension or both.

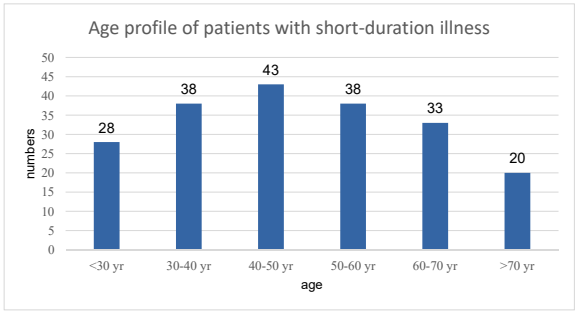

Fig. 1: Age profile of patients with short-duration illness

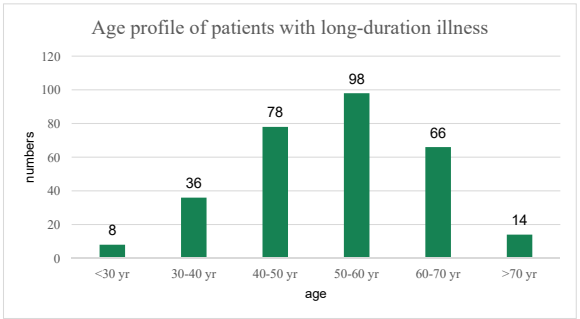

Fig. 2: Age profile of patients with long-duration illness

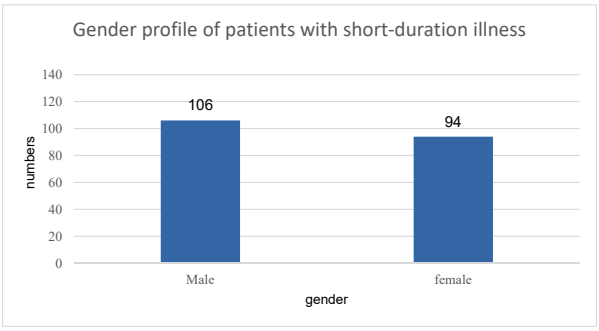

Fig. 3:Gender profile of patients with short-duration illness

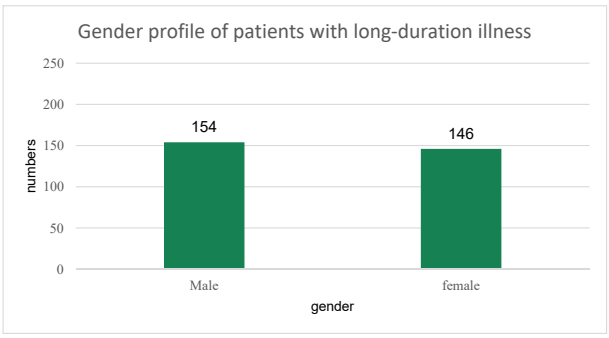

Fig. 4:Gender profile of patients with long-duration illness

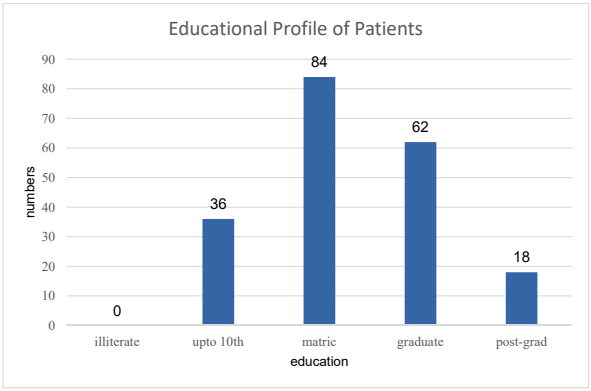

Fig. 5:Educational profile of patients with short-duration illness

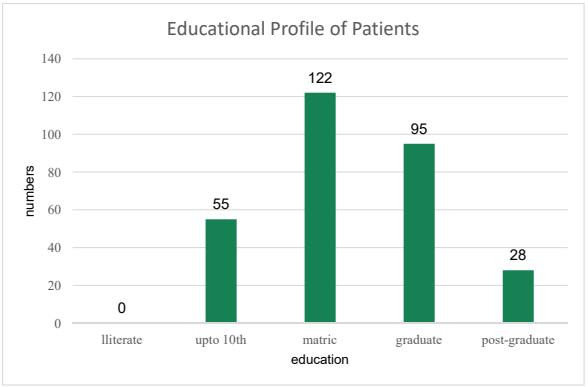

Fig. 6:Educational profile of patients with long-duration illness

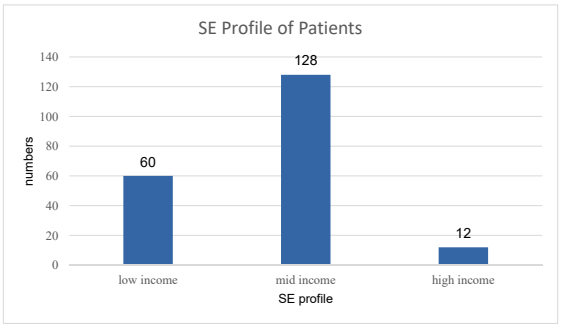

Fig. 7 :Socio-Economic status profile of patients with short-duration illness

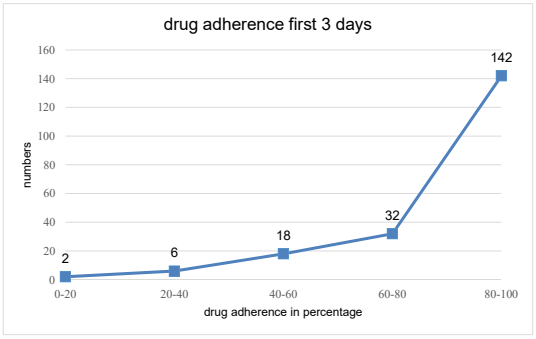

Fig. 11: Drug adherence in pt with short-duration illness for first 3 days

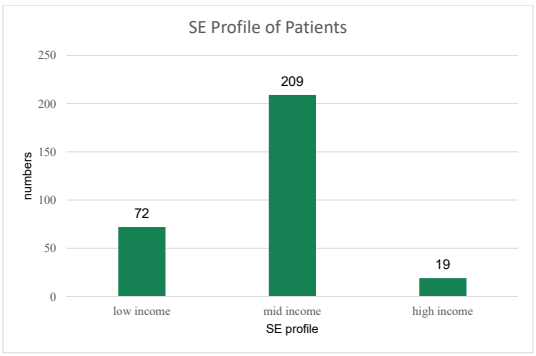

Fig. 8:Socio-Economic status profile of patients with long-duration illnesses

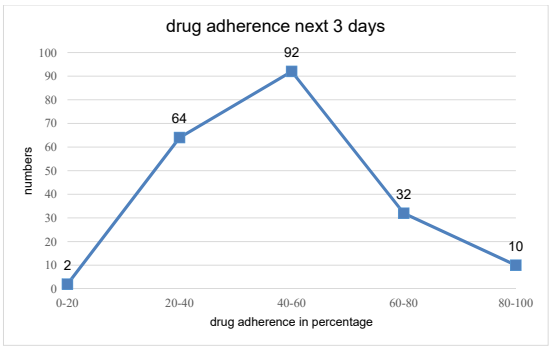

Fig. 12: Drug adherence in pt with short-duration illness for next 3 days

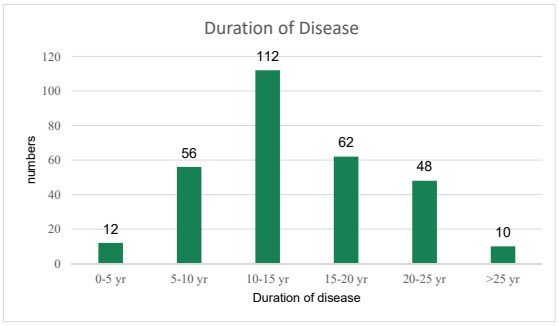

Fig. 9:Duration of Disease of patients with long-duration illnesses

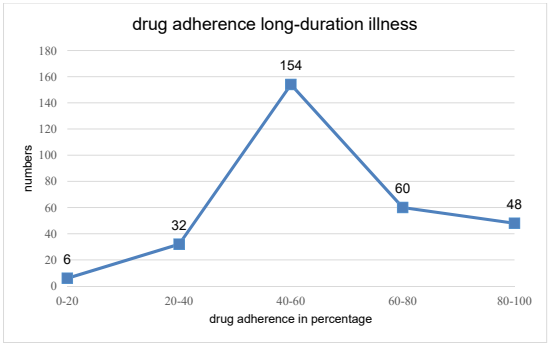

Fig. 13: Drug adherence in pt with long-duration illness

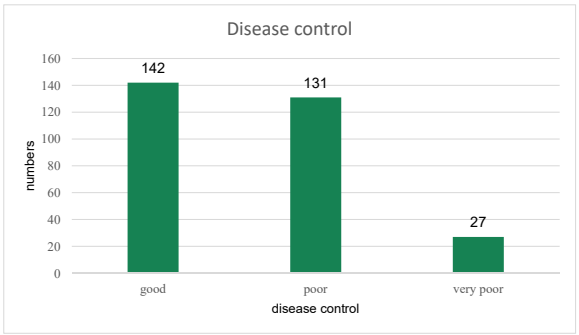

Fig. 10: Control of Disease of patients with long-duration illnesses

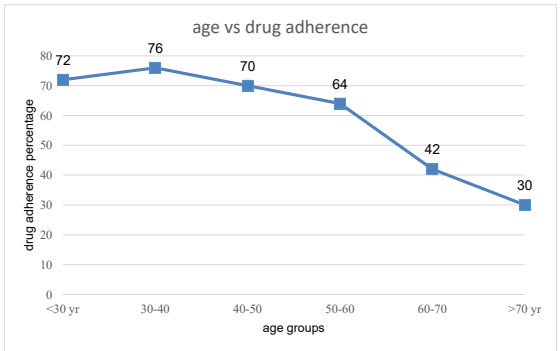

Fig. 14: Drug adherence analyzed with respect to age profile in short-duration illness

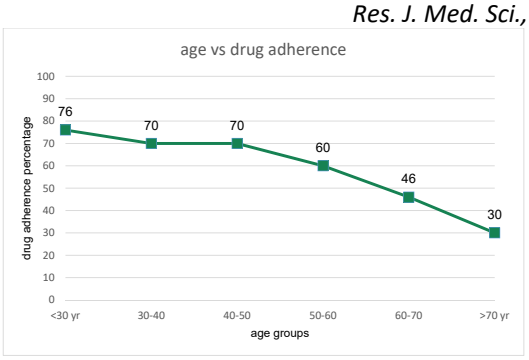

Fig. 15: Drug adherence analyzed with respect to age profile in long-duration illness

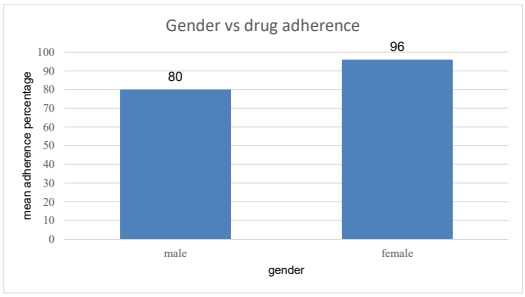

Fig. 16: Drug adherence analyzed with respect to gender in short-duration illness

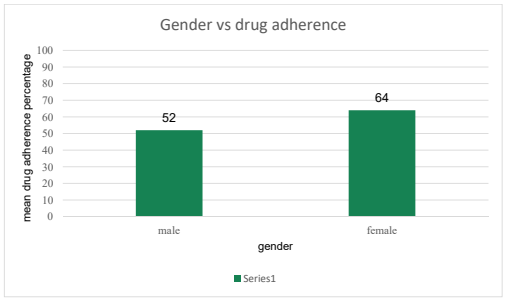

Fig. 17: Drug adherence analyzed with respect to gender in long-duration illness

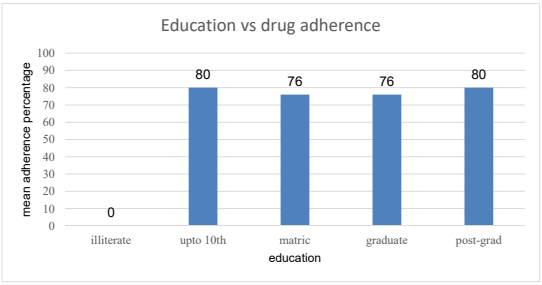

Fig. 18: Drug adherence analyzed with respect to education in short-duration illness

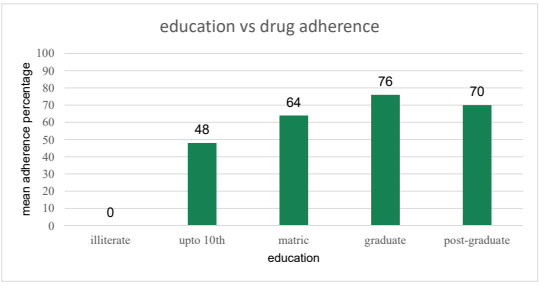

Fig. 19: Drug adherence analyzed with respect to education in long-duration illness

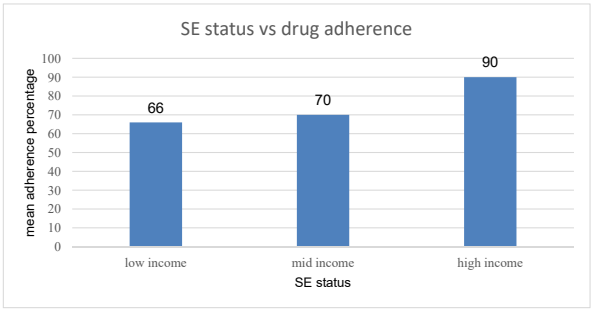

Fig. 20: Drug adherence analyzed with respect to SE status in short-duration illness

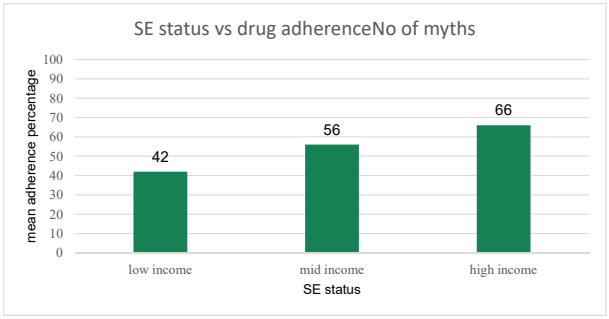

Fig. 21: Drug adherence analyzed with respect to SE status in long-duration illness

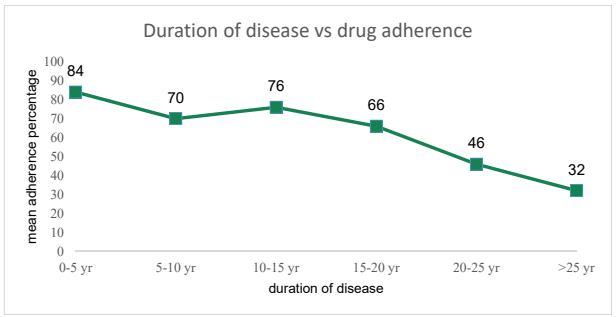

Fig. 22: Drug adherence analyzed with respect to duration of disease

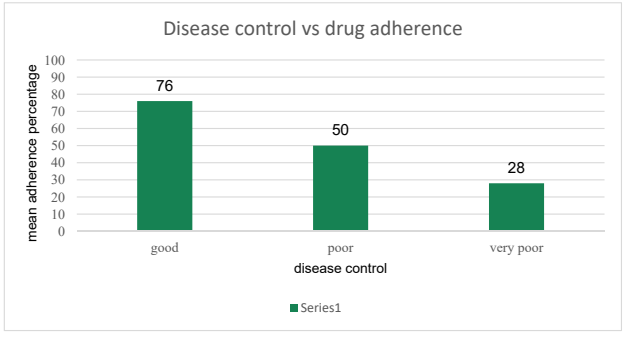

Fig. 23: Drug adherence analyzed with respect to degree of Disease control

Table 1: Reasons for Drug non-adherence

	Reason	Prevalence (in percentage)
1.	Trust issues with healthcare system	40
2.	Too many medicines	24
3.	Too complex therapy	30
4.	Symptoms absent or subsided	66
5.	Fear of addiction to medicines	26
6.	Want to see outcome if I stop medicines	22
7.	Don't like to take medicines	36
8.	I feel I don't need medicines	10
9.	Medicines taste bad	28
10.	Fear of side-effects	50
11.	Cost of therapy	60
12.	Forgot to take medicines	70
13.	Want to switch over to other modes of therapy	24
14.	Anxiety/ depression	12
15.	No one to give medicines	8

The age profile of the patients with short-duration illness and long-duration illness is shown in Fig. 1 and 2 respectively. Patients with short-duration illness were a mix of all ages. Most of the patients with long-duration illness were middle-aged and elderly. This seems quite natural as most were Diabetic and Hypertensive patients of some duration.

The gender profile of the patients is shown in Fig. 3 and 4. The number of male and female patients were almost equal.

The educational profile of the patients is shown in Fig. 5 and 6. Most of the patients were educated, mostly matriculates and graduates.

The Socio-economic profile of the patients is shown in Fig. 7 and 8. Most of the patients were from the mid socio-economic strata of the society.

The duration of the disease in the patients with long-duration illness is shown in Fig. 9. Most of the patients with long-duration illness had Hypertension and/or DM-II ranging from 10-20 years.

The disease control profile of the patients with long-duration illness is shown in Fig. 10. There were patients of both good and poor disease control in almost equal numbers

The drug adherence profile of patients with short-duration illness was studied. Though the overall drug adherence was high, an interesting finding came to light when the adherence was studied over the first three days and the next three days. In the first three days, adherence was very high but drastically fell over the next three days. This is shown in Fig. 11 and 12. This was presumably due to improvement in symptoms in the patient.

The drug adherence profile of patients with long-duration illness is shown in Fig. 13. A very interesting finding was that the drug adherence was not high in most of the patients. This finding is interesting and shocking at the same time as it shows that even though the clinicians were prescribing medicines to the best of their ability, below-par drug adherence was undoing all the effort.

The patients with poor drug adherence were asked the reasons for the same and the results obtained is shown Table 1. The most common reasons for drug non-adherence were that the patient forgot to take medicines, the medicines were costly, fear of side-effects and that the symptoms had subsided.

The drug adherence of patients was analyzed with reference to age (Fig. 14 and 15), gender (fig. 16 and 17), educational profile (Fig. 18 and 19), socio-economic status (Fig. 20 and 21), duration of disease (Fig. 22) and degree of disease control (Fig. 23).

In terms of age profile, drug adherence was found to be poor in the elderly. When gender profile was studied, drug adherence was better in the females. In terms of educational profile, drug non-adherence was equally prevalent in all groups. Surprisingly, graduates and post-graduates also had significant drug non-adherence, although a lower number.

In terms of the Socio-economic profile, low and mid-income patients had more drug non-adherence than the high-income patients. Cost of drugs could be an important causative factor here. Drug non-adherence is prevalent in all strata of our society, even in the well-to-do and educated sections.

In terms of duration of disease, patients with longer duration of disease had more drug non-adherence. This was probably due to the fatigue effect.

In terms of disease control, patients with good disease control had more drug adherence than the patients with poor and very poor disease control. This is not surprising as patients who make efforts to take medicines diligently are expected to have better disease control

Over the last two decades, there have been a plethora of studies that have examined variables that could be demonstrated as predictive of adherence to various medical regimens. The factors most often hypothesized in these studies as powerfully predicting compliance have generally been attributed to characteristics of both the disease and the patients.

For example, to explore and evaluate the most common factors causing therapeutic noncompliance, Jin and colleagues found factors that could be categorized into (a) patient-centered factors, (b) therapy-related factors, (c) social and economic factors, (d) healthcare system factors and (e) disease factors[7]. Factors which relate to patients (e.g., suboptimal health literacy and lack of involvement in the treatment decision-making process), physicians (e.g., prescription of complex drug regimens, communication barriers, ineffective communication of information about adverse effects and provision of care by multiple physicians) and health care systems (e.g., limited access to care, lack of health information technology and office visit times limitations) have also been found[10].

We focused on an urban South Indian patient population reporting to Outpatient Department (OPD) in a Tertiary Level Hospital. The patient should be at the centre of our Health Education effort because it is the patient's knowledge and behaviour that has a direct bearing on the success of treatment. The clinic can be an important place for this education as the patient is receptive to education effort especially if the physician is also involved.

This study found that in short-duration illnesses, though the overall drug adherence was high, an interesting finding came to light when the adherence was studied over the first three days and the next three days. In the first three days, adherence was very high but drastically fell over the next three days. This was presumably due to improvement in symptoms in the patient. This may contribute to inadequate treatment of diseases especially infections and may cause bacterial resistance

This study found that in long-duration illnesses, drug adherence was only 40-60 %. This is consistent with studies worldwide which also have reported compliance between 40- 60%[4,11,12,13]

The most common reasons for drug non-adherence were that the patient forgot to take medicines, the medicines were costly, fear of side-effects and that the symptoms had subsided. This finding is consistent with the study of Buabeng and colleagues conducted at the Korle-Bu Teaching Hospital (KBTH) in Ghana which found unaffordable drug prices as the major cause of noncompliance among patients with hypertension[12]. Difficulty in remembering medicines was a major cause for drug non-adherence in a study by Bright Addo[13].

An important finding in our study was that in terms of age profile, drug adherence was found to be poor in the elderly. This finding was seen in studies by Bright Addo[13] and Boima[9]. When gender profile was studied, drug adherence was better in the females. In terms of educational profile, drug non-adherence was equally prevalent in all groups. Surprisingly, graduates and post-graduates also had significant drug non-adherence, although a lower number.

In terms of the Socio-economic profile, low and mid-income patients had more drug non-adherence than the high-income patients. Cost of drugs could be an important causative factor here. Drug non-adherence is prevalent in all strata of our society, even in the well-to-do and educated sections.

In terms of duration of disease, patients with longer duration of disease had more drug non-adherence. This was probably due to the fatigue effect. Similar findings were seen in studies by Bright Addo[13] and Hyre[14]

In terms of disease control, patients with good disease control had more drug adherence than the patients with poor and very poor disease control. This is not surprising as patients who make efforts to take medicines diligently are expected to have better disease control

CONCLUSION

This study concludes that Non-adherence to medicine therapy is an important issue in the healthcare of patients. This study has noted significant non-adherence in the latter part of short-duration illnesses and more so in long-duration illnesses. Health education becomes very important in this context and all efforts should be made to educate patients on drug adherence.

REFERENCES

1. Laryea, J.G., 2013. "Factors influencing adherence to oral antihypertensive medication amongst patients attending the Korle-Bu Teaching Hospital,.
2. Nosé, M., C. Barbui, R. Gray and M. Tansella, 2003. Clinical interventions for treatment non-adherence in psychosis: Meta-analysis. Br. J. Psy., 183: 197-206.
3. Talam, N.C., P. Gatongi, J. Rotich, and S. Kimaiyo, 2008. "Factors affecting antiretroviral drug adherence among HIV/AIDS adult patients attending HIV/AIDS clinic at Moi Teaching and Referral Hospital, Eldoret, Kenya," East Afri Jou Publ Hea., 5: 74-78.
4. Jin, H.S., A.R. An, H.C. Choi, S.H. Lee and D.H. Shin et al., 2015. Physical activity level of korean adults with chronic diseases: The korean national health and nutritional examination survey, 2010-2012. Kore J. Fam Med., 36: 266-272.
5. Bruce,S.P., F. Acheampong and I. Kretchy, 2015. "WHO. Global status report on noncommunicable diseases 2014," Pharm Pract Gra., 13: 1-176.

6. Boima, V., A.D. Ademola, A.O. Odusola, F. Agyekum and C.E. Nwafor et al., 2015. Factors associated with medication nonadherence among hypertensives in Ghana and Nigeria. Int. J. Hype., 2015: 1-8.
7. Bardel, A., 2015. "31 – Factors Associated With Adherence to Drug Therapy, "
8. Abula, T. and A. Worku, 2001. "Compliance to chronic diseases," Ethi Jou Hea Dev., 15: 185-192.
9. Buabeng, K.O., L. Matowe and J.R. Plange, 2004. "Unaffordable drug prices: the major cause of non-compliance with hypertension medication in Ghana," Jour Phar Phar Scie., 7: 350-352.
10. Addo, B., S. Sencherey and M.N.K. Babayara, 2018. Medication noncompliance among patients with chronic diseases attending a primary health facility in a periurban district in Ghana. Int. J. Chr Dis., 2018: 1-10.
11. Hyre, A.D., P. Muntner, A. Menke, P. Raggi and J. He, 2007. Trends in atp-iii-defined high blood cholesterol prevalence, awareness, treatment and control among u.s. adults. Ann. Epidemiol., 17: 548-555.