Original Research Article

IMPACT OF SOCIO – ECONOMIC, HEALTH AND PATIENT REATED FACTORS ON MEDICATION ADHERANCE IN PATIENTS WITH HYPERTENSION AND TYPE II DIABETES

ABSTRACT

Aim: The main objective of this study was to evaluate the level of drug adherence in patients with hypertension and type II diabetes. **Study design:** A prospective cross sectional study. **Methodology:** This study was carried out in tertiary care hospitals of Khammam region, Telangana with a size of 2880 patients. A structured questionnaire has been designed using MMAS 8 scale to determine the compliance level and the socioeconomic status of the objects was analyzed by Kuppuswamy scale. **Results:** In our study, the following results were reported, age (*P* <0.001), gender (*P* <0.001, OR = 1.954), residence (*P* <0.0001, OR = 3.102), level of education (*P* <0.0001), profession (p <0.0001), net monthly income (*P* <0.001), socio economic class (*P* <0.001), medication Costs (*P* <0.001 OR = 0.2346), Health Literacy (*P* <0.001, OR =0.2051), Social support (*P* <0.001, OR =3.549, 95% CI=2.701 to 4.649). Frequency of Visits (*P* <0.001, OR =0.09421), No of medications (*P* <0.001, OR =0.2506), Complexity (*P* <0.001, OR =0.1862), Self-Monitoring (*P* <0.001, OR = 0.1011), felt worse (p<0.0001,OR=0.1591). **Conclusion:** Our results showed that demographic variables, socio economic factors, health care factors had direct influence on medication adherence. Illiterates, lower-economy patients have not followed the recommendations of health care providers who insist on the need to increase drug adherence in primary care. Our findings call for the need to design new interventions on multidimensional factors likely to interfere with this study, such as patient knowledge and information to improve compliance.

Key words: Hypertension, Type II Diabetes, Medication adherence, Socio economic, health care, patient related factors.

1. INTRODUCTION

Recently, it has been observed that the coexistence of diabetes and hypertension is incredibly increased in India. Hypertension has been recognized as the major risk factors for morbidity and mortality resulting 10.8% of all deaths from India. Although microvascular complications are often associated with hyperglycemia, studies have demonstrated that hypertension is importantly associated with the development of these complications. In diabetic patients, the co-occurrence of hypertension significantly increases the risk of coronary heart disease, stroke, kidney disease and retinopathy [1]. A variety of pharmacological therapies are available to extend the lifespan of current chronically ill patients and minimize illness complications and disabilities [2]. To take full advantage of the treatment of both the patient's drug adaptability and the provider's recommendations, poor compliance can compromise the effectiveness of the treatment. In addition, lifestyle and genetic factors, socioeconomic status, age, gender, occupation, and lack of awareness also contribute to a significant increase in the prevalence of the illness.

Medication compliance is a complex and dynamic behavior associated with many aspects such as socioeconomic status, medical teams and systems, condition-related factors, treatment-related factors, and patient-related factors [3]. It is estimated that approximately 50% of patients do not receive long-term treatment for the prescribed chronic illness [4]. These non adaptations are a major public health issue. This has serious negative consequences for both patients and donors, such as loss of treatment and increased medical costs [5].

Socioeconomic status (SES) is one of the important indicators of family health and nutritional status. In other words, socio-economic status can be defined as "the status acquired by an individual within the rank social structure system" [6]. SES plays an important role in finding medical services, accessibility issues, economics, costs, beneficiary acceptance and the overall utilization of services by people [7]. Certain groups that tend to be at higher risk of non-compliance include elder people [8], women [9], with limited health abilities [10], racial/ethnic minorities [11] and people with less education [12], or low income [13]. Among the low-income class, patients with self-pay for statin treatment are distinguished, suggesting that there is a possibility that there is a subtle relationship between the SES index and medication adherence. .

2. METHODOLOGY

2.1 Study design and study setting

A prospective cross sectional survey based study was conducted at tertiary care hospitals in khammam region. Sample size 2880 patients were taken. The study had been conducted for period of 2 year between August 2018 and august 2020. All the patients who were admitted in inpatient and outpatient department has been approached to start productive conversation and followed up during study duration. Suitable patients were requested to participate in the study.

2.2 Selection of participants

Sampling was done randomly among the hypertension and type 2 diabetic patients.

2.3 Inclusion criteria

Patients over 20 years of age. Patients with only type 2 diabetes and high blood pressure. In ward and outpatients who are outpatients in hospital. Patients who were willing to participate in the study and patients whose medication records, self reports, previously on medications, looking for physician's check-up had required data were included.

2.4 Exclusion criteria

Patients with chronic diseases other than diabetes and hypertension. Patients under 20 years of age. Pregnant or postpartum women and Pre diabetes and emergency medical patients were excluded.

2.5 Source of data

A structured questionnaire was developed to collect information about Socio demographics. Health and medication related characteristics, Clinical diagnosis, Checkups and Daily activities like exercise, Health literacy, Morisky Medication adherence scale 8 (MMAS 8).

2.6 Method of assessment

Kuppuswamy scale was used for assessing the socio economic class of patients. Medication adherence of hypertensive and diabetic patients was assessed using Modified Morisky Scale 8.

2.7 Statistical analysis

Statistical data was drawn from a structured questionnaire which executed in Microsoft excel 2007 and Chi Square Test is used to determine the significance correlation in Graph Pad Prism 8.

3. RESULTS

3.1 Age

The cases collected were categorized according to the age group. 14 (0.48%) cases were collected in 20-30 age group, 342 (11.87%) cases in 31-40 age group, 512 (17.77%) cases were in 41-50 age group, 695 (24.13%) cases in 51-60 age group, 717 (24.89%) cases were in 61-70 age group, 358

(12.43%) cases were collected in 71-80 age group, 242 (8.4%) cases in 81-90 age group. Highest number of cases (66.79%) was seen in the age group of 41-70 age group. This show that increase in age was causing factor for the incidence and progression of diseased condition in patients.

Impact of age on medication adherence was assessed in the patients and categorized in table 1. It was observed that high medication is seen in age group 21-50 years, moderate adherence was seen in age group of 51-70 years and patients of age above 70 years had very poor adherence towards taking medication regularly. A significant relationship (*P* value <0.001) has been found after performing the statistical analysis.

Table 1. Impact of age on Medication Adherence

Age	No of patients	%	Medication adherence					
			High	%	Moderate	%	Low	%
20 - 30	14	0.48	7	0.81	4	0.33	3	0.36
31-40	342	11.87	295	34.30	37	3.08	10	1.21
41-50	512	17.77	217	25.23	255	21.25	40	4.87
51- 60	695	24.13	176	20.46	387	32.25	132	16.09
61-70	717	24.89	139	16.16	376	31.33	202	24.63
71-80	358	12.43	20	2.32	127	10.58	211	25.73
81-90	242	8.40	6	0.69	14	1.16	222	27.07

P <0.001

3.2 Gender

In our study, male patients were 1620 (56.25%) and female patients were 1260 (43.75%). Impact of gender on medication adherence was assessed in the study population. It was observed that males are more adherent (82.55%) in taking the medication than female who were reported to be poorly adherent (64.63%) in taking the medication (table 2).

Table 2. Impact of Gender on Medication Adherence

Gender			Medication adherence					
	No of patients	%	High	%	Moderate	%	Low	%
Male	1620	56.25	710	82.55	620	51.66	290	35.36

Female	1260	43.75	150	17.44	580	48.33	530	64.63
P <0.001			Odds ratio = 1.954			95 % CI = 1.624 to 2.3450		

3.3 Civil status

Patients who were diagnosed with hypertension and type 2 diabetes from urban places were 1420 (49.30%) and from rural areas were 1460 (50.69%). The results were given in table 3. Place of residence has direct impact on adherence as it would affect the availability of medicines and also frequency of visits. In our study we observed that urban people were more adherent (75.58%) in taking the medicines than the patients from rural areas who were poorly adherent (76.82%).

Table 3. Impact of Residence on Medication Adherence

Residence			**Medication adherence**					
	No of Patients	**%**	**High**	**%**	**Moderate**	**%**	**Low**	**%**
Urban	1420	49.30	650	75.58	580	48.33	190	23.17
Rural	1460	50.69	210	24.41	620	51.66	630	76.82
P <0.001		Odds ratio - 3.102			95% CI - (2.541 to 3.782)			

3.4 Body mass index:

In our study, 50 (1.73%) patients were reported as underweight, 700 (24.30%)patients were in normal weight, 580 (20.13%) patients had overweight, 1400 (48.61%)obese patients were reported and morbidly obese cases were in 150(5.20%) patients (table 4).

Table 4. BMI status of patients

BMI	**No of Patients**	**%**
Underweight (< 18.5 kg/m2)	50	1.73
Normal weight (18.5–24.9 kg/m2)	700	24.30
Overweight (25.0–29.9 kg/m2)	580	20.13
Obese (30.0–39.9 kg/m2)	1400	48.61
Morbidly obese (≥40.0 kg/m2)	150	5.20

3.5 Physical activity

Among the patients diagnosed with chronic disease, 720 (25%) patients had regular physical activity, moderate activity was seen in 1160 (40.27%) cases and 1000 (34.72%) cases reported of not having any type of physical activity and found difficulty in daily activities.

3.6 Smoking habit

Patients having regular smoking habit were 1490 (51.73%) and patients with occasional smoking habit were 360 (12.52%) and 1030 (35.76%) patients reported that they don't smoke.

3.7 Alcoholic habit

Patients having regular alcohol intake habit were 1230 (42.70%), patients having alcohol occasionally were 470 (16.31%) and patient with no alcohol consumption were1180 (40.97%).

3.8 Duration of disease

Patients were enquired for the duration from which they were diagnosed with disease and it was categorized as 1-2 years 164 (5.69%), 2-4 years 453(15.72%), 4-6 years 696 (24.16%), 6 -8 years 741 (25.72%) and more than 8 years were 826 (28.68%).

3.9 Frequency of Checkups

Patients were enquired for how often do they visit hospitals for monitoring the condition. It was reported as follows, 932 (32.36%) patients visited every month, 456 (15.83%) patients visit every 2 months, 498 (17.29%) patients visited for every 4 months, 353 (12.25%)patients visited for every 6 months and 641(22.25%)patients visited yearly (table 5).

Table 5. Frequency of Checkups

Frequency	No of Patients	%
Monthly	932	32.36
Every 2 months	456	15.83
Every 4 months	498	17.29
Every 6 months	353	12.25
Yearly	641	22.25

3.10 Number of medications

Upon enquiry it was observed that three to five medications were given per prescription in 870 (30.20%) patients, five to seven medications were given per prescription in 1080 (37.50%) and more than seven medications were given to 930 (32.29%) patients (table 6).

Table 6. Number of medication per prescription

Number of medication	No of Patients	%
3-5	870	30.20
5-7	1080	37.50
>7	930	32.29

3.11 Educational status

Patients were enquired for their educational qualification. It was reported that 192 (6.66%) patients had professional degree, 688 (23.88%) had done their graduation, 283 (9.82%) patients had qualification of inter and above, 377 (13.09%) studied only up to their matriculation, 364 (12.63%)patients had education up to upper primary level, 556 (19.30%)patients had primary education, 420 (14.58%) patients were illiterates (table7). Patients having professional (17.67%) and graduate or post graduate degree (62.55%) were found to have better adherence in taking the medication while patients with educational qualification of SSC (22.33 %) and inter or above qualification (16.75%)were found to be moderately adherent. Patients with less educational background (38.65%) and illiterates (33.17%) were poorly adherent as they do not understand the medication regimen properly.

Table 7. Impact of Education on Medication Adherence

Education	No of Patients	%	Medication adherence					
			High	%	Moderate	%	Low	%
Professional	192	6.66	152	17.67	20	1.66	20	2.43
Gradute or Post graduate	688	23.88	538	62.55	131	10.91	19	2.31
Intermediate or above SSc	283	9.82	24	2.79	201	16.75	58	7.07
SSC	377	13.09	28	3.25	268	22.33	81	9.87
Upper Primary education	364	12.63	19	2.20	292	24.33	53	6.46
Primary school education	556	19.30	31	3.60	208	17.33	317	38.65
Illiterate	420	14.58	68	7.90	80	6.66	272	33.17

*P <0.001

3.12 Occupational status

We have enquired the patients about their occupation and it was reported that 200 (6.94%) patients were doing professional jobs like software, medical etc, 650 (22.56%) patients were doing Semi professional jobs, 310 (10.76%) patients were involved in works like Clerk, shop owner , farming, 380 (13.19%) patients were Skilled workers, 600 (20.83%) patients were Semi skilled workers, 240 (8.33%) are doing unskilled works and 500 (17.36%) were unemployed and surviving on schemes provided by the government. Work nature, working hours and work pressure would thought to have direct impact on adherence. From our study it was observed that patients who wee involved in professional (18.60 0%) and semi professional jobs (51.51%) were having good adherence while patients doing jobs like Clerk, shop owner , farming (13.83%), Skilled worker (20.75%), Semi skilled worker (32.58%) had moderate adherence and patients involved in unskilled (15.85%) and unemployed (38.41%) were poorly adherent due to non affordability of medications (table 8).

Table 8. Occupational status of patients

Profession	No of Patients	%	Medication adherence					
			High	%	Moderate	%	Low	%
Professional	200	6.94	160	18.60	24	2	16	1.95
Semi professional	650	22.56	443	51.51	135	11.25	72	8.78
Clerk, shop owner , farming	310	10.76	81	9.41	166	13.83	63	7.68
Skilled worker	380	13.19	60	6.97	249	20.75	71	8.65
Semi skilled worker	600	20.83	56	6.51	391	32.58	153	18.65
Unskilled worker	240	8.33	21	2.44	89	7.41	130	15.85
Unemployed	500	17.36	39	4.53	146	12.16	315	38.41

*P <0.001

3.13 Family Income

After enquiring about how much income do they earn every months it was reported that 460 (15.97%) patients earn very less income which is less than 2640rs, 520 (18.05%) patients earn income in the range of 2641 -7886 rupees, 630 (21.87%) patients earn 7887 – 13160rs every month, 220 (7.63%) earn around 13161 – 19758rs per month, 300 (10.41%) were earning a decent amount of 19759 –

26354rs, 430 (14.93%) patients had high income of around 26355 – 52733rs, 320 (11.11%) patients belong to high income group which is more than 52734rs. Family Income plays major role in adherence as most of the families whose income was vey less they were not able to afford the treatment expenditure. They have to rely on government schemes for proper treatment. In our study patients having high income (34.41%, 40.69%, 20%) were found to be highly adherent while patients having income in the range of 13 to 25k (15.5%, 42.5%) were moderately adherent and patients of low income (35.24%, 41.70%) are poorly adherent (table 9).

Table 9. Impact of Income on Medication Adherence

Income			Medication adherence					
	No of Patients	%	High	%	Moderate	%	Low	%
>52734	460	15.97	296	34.41	20	1.66	4	0.48
26355 - 52733	520	18.05	350	40.69	59	4.91	21	2.56
19759 - 26354	630	21.87	172	20	91	7.58	37	4.51
13161 - 19758	220	7.63	14	1.62	186	15.5	20	2.43
7887 - 13160	300	10.41	13	1.51	510	42.5	107	13.04
2641 -7886	430	14.93	9	1.04	222	18.5	289	35.24
<2640	320	11.11	6	0.69	112	9.33	342	41.70

**P* <0.001

3.14 Socio economic status

From the above data which was collected after the enquiry, we have categorized the patients into different socio economic class. 310 (10.76%) patients belong to upper class, 650 (22.56%) patients were in upper middle class, 380 (13.19%) patients were in lower middle class, 1120 (38.88%) patients were in upper lower class and 420 (14.58%)patients belong to lower economic class

Influence of socio economic class on medication adherence was assessed and it was observed that patients belonging to upper (27.90%) and upper middle class (54.65%) were having good adherence and patients of lower middle (21.66%) had moderate adherence and upper lower class (60%) moderately adherent, (40.24%) had low adherence. Patients of lower economic class (47.56%)were found to be poorly adherent (table 10).

Table 10. Impact of Socio economic class on Medication Adherence

Socio economic class	Number of patients	%	Medication adherence					
			High	%	Moderate	%	Low	%
Upper	310	10.76	240	27.90	50	4.16	20	2.43
Upper middle	650	22.56	470	54.65	160	13.33	20	2.43
Lower middle	380	13.19	60	6.97	260	21.66	60	7.31
Upper lower	1120	38.88	70	8.13	720	60	330	40.24
Lower	420	14.58	20	2.32	10	0.83	390	47.56

**P* <0.001

3.15 Medication Adherence

The patients were given a questionnaire to answer regarding the way they are following the instructions given by the doctors in taking the medication, problems faced by them in taking the medications, availability, side effects and various other problems. It was reported that 860 (29.86%) patients were highly adherent in taking the medications, 1200 (41.66%) patients were found to be moderately adherent and 820 (28.47%) patients were found poorly adherent in following the instructions and taking them medications properly (table 11).

Table 11. Medication Adherence in patients

Medication Adherence	No of patients	%
High	860	29.86
Moderate	1200	41.66
Low	820	28.47

3.16 Socio Economic Factors affecting Medication adherence

Patients having no difficulty (668) in affording the medication cost, adequately literate (744), having good housing facility to live in (563) and having social support (781) showed good adherence while patients who had difficulty to buy medications (917, 765), no proper knowledge (948, 778), with no proper living condition (864, 623) and lack of social support (891, 747) showed moderate to poor adherence (table12).

Table 12. Socio Economic Factors affecting Medication adherence

Social and Economic Factors affecting	Medication adherence (No of patients)			*P* value	Odds ratio	95% CI
	High	Moderate	Low			
Medication Costs						
Having Difficulty	192	917	765	<0.001	0.2346	0.1733 to 0.3178
No Difficulty	668	283	55			
Health Literacy						
Having Difficulty	116	948	778	<0.001	0.2051	0.1462 to 0.2877
No Difficulty	744	252	42			
Housing						
Having Difficulty	199	958	693	0.008	0.7267	0.5741 to 0.9198
No Difficulty	621	242	127			
Social support						
Yes	781	309	73	<0.001	3.549	2.701 to 4.649
No	79	891	747			

3.17 Health care Factors affecting Medication adherence

Upon enquiry patients who do not had difficulty with Provider-Patient Relationship (685), Frequency of Visits (758), Polypharmacy (783), Complexity (739), Number of medications (755), Side Effects (767), Therapy duration (773), Availability (782) reported good adherence and the rest who had difficulty showed moderate to poor adherence. The results were given in table 13

Table 13. Health care Factors affecting Medication adherence

Health Care Factors affecting	Medication adherence (No of patients)			*P* value	Odds ratio	95% CI
	High	Moderate	Low			
Provider-Patient Relationship						
Having Difficulty	175	911	745	<0.001	0.3189	0.2431 to 0.4182
No Difficulty	685	289	75			
Frequency of Visits						

Having Difficulty	102	656	761	<0.001	0.09421	0.07069 to 0.1256
No Difficulty	758	544	59			
Polypharmacy						
Having Difficulty	77	714	755	<0.001	0.1273	0.09647 to 0.1681
No Difficulty	783	486	65			
Complexity						
Having Difficulty	121	883	769	<0.001	0.1862	0.1366 to 0.2539
No Difficulty	739	317	51			
No of medications						
Having Difficulty	105	977	776	<0.001	0.2506	0.1793 to 0.3505
No Difficulty	755	223	44			
Side Effects						
Having Difficulty	93	955	780	<0.001	0.202	0.1429 to 0.2853
No Difficulty	767	245	40			
Therapy duration						
Having Difficulty	87	845	763	<0.001	0.1791	0.1333 to 0.2406
No Difficulty	773	355	57			
Availability						
Having Difficulty	78	676	772	<0.001	0.08098	0.05929 to 0.1106
No Difficulty	782	524	48			

3.18 Patient related Factors affecting Medication adherence

Upon enquiry patients who do not had difficulty with understanding about therapy (794), Forgetfulness (791), Being Busy (777), Decision to omit (796), Felt Worse (763), Self-Monitoring (807), stress (482)reported high adherence and rest of them reported moderate to poor adherence (**Table 14)**

Table 14. Patient related Factors affecting Medication adherence

Patient related Factors affecting	**Medication adherence (No of patients)**			***P* value**	**Odds ratio**	**95% CI**
	High	**Moderate**	**Low**			

Inadequate knowledge about therapy						
Having Difficulty	66	783	747	<0.001	0.1845	0.1412 to 0.2411
No Difficulty	794	417	73			
Forgetfulness						
Having Difficulty	69	811	748	<0.001	0.2018	0.1541 to 0.2643
No Difficulty	791	389	72			
Being Busy						
Having Difficulty	83	633	767	<0.001	0.07781	0.05768 to 0.1050
No Difficulty	777	567	53			
Decision to omit						
Yes	64	834	783	<0.001	0.109	0.07680 to 0.1546
No	796	366	37			
Felt Worse						
Yes	97	721	742	<0.001	0.1591	0.1227 to 0.2063
No	763	479	78			
Self-Monitoring						
Having difficulty	53	641	754	<0.001	0.1011	0.07675 to 0.1331
No difficulty	807	559	66			
Stress						
Yes	178	863	723	<0.001	0.3448	0.2696 to 0.4410
No	682	337	97			

4. DISCUSSION

Adherence to drug therapy is essential in achieving the greatest therapeutic benefits [14]. Drug non adherence was a major obstacle in chronic treatment that reduces the effectiveness of treatment and increases medical costs. Many methods were used in clinical practice to measure compliance, but in the Indian setting, self-reporting of the drug taken was set up in India to facilitate most rational, accurate and ideal exchange between the treating clinician and the patient being treated [15].

Age has a significant impact on the incidence of disease. The study found that the highest incidence of chronic disease was found in people aged 51-70 (49.02%). You may find that adherence to medication decreases with age. Contrary to the previously reported literature, there were few patients aged 20-40 years, found to be low adherent as they focus was on occupational and social life rather than disease.

Although equally men and women predominate in this study population, this differed from other studies conducted in India [16]. The reasons are smoking, alcoholism, other lifestyle changes in men and hormonal imbalances, family stress, housework, etc were common in women and these factors affect health in chronic diseases.

Our results showed that men were more committed to the management of disease than women because they felt that they should pay more attention to their health as it affects the future of their families.

The majority of the population surveyed was married. Previous studies have found a relationship between marriage and lower suffering, particularly in men with protective effects of marriage on disease management. We believe that positive marriage and marital sharing reduces the level of disease burden and improves management skills. Therefore, these patients can be more successful during difficult long-term treatment and follow-up of chronic diseases [17].

Medication compliance was higher in patients in cities as they do not have any difficulty in visiting regional hospitals and clinics than rural patients with no medical facilities in the vicinity.

Patients with chronic illness can cause other complications and should be advised to maintain a proper BMI. The Importance of Regular Physical Activity Physical activity requires you to control your weight and provide enough energy to carry out your daily activities. In this study, the number of patients with social habits was similar to in other studies [18].

Socioeconomic status was determined by the Kuppuswamy classification based on three variables: education, occupation, and income. Our study found that less educated patients (46.51%) had hypertension and type 2 diabetes. Educational levels had a significant impact on the drug adaptability of the study population. The higher the educational background, the more likely it was to understand its importance and the higher the compliance. According to a study conducted by Sweileh W, et al, illiterate patients who do not distinguish between drugs have an increased risk of adaptation, called errors, and their medical knowledge also has a negative impact [19].

In the employment status, the patients involved in farming, skilled and semi skilled, unskilled works and unemployed had more prevalence (70.50%) than employed (29.50%) which was similar to other study [20].

Current analysis reveals that workplaces, working conditions, and income are strongly related to both compliance and self-efficacy. Previous authors have found a variety of factors like income [21] and occupation [22] had strong influence on adherence to the recommended regimens.

Comparing the impact of monthly net income, the level of compliance of participants with high net income was greater than that of the lowest income group [23]. However, since this factor is probably very dependent, it can only be interpreted as a knowledge of the patient on particular underlying health care system and whether the drug supply is dependent on the patient's own financial resources.

Diabetes and hypertension not only cause enormous financial burdens, especially due to the direct cost of treating complications, but also the labor lost due to the debilitating effects of the disease on individuals and their families and societies. It brings a huge financial burden in terms of time. Communication-based family discussions should be conducted separately from the individual and the family in a beneficial approach to adapt and meet the needs of the patient. Our findings suggest that adherent patients have less restrictions on social activities, health knowledge, housing and social activities with family, friends and neighbors. Better family and / or social support reflected adherent patients. In this regard, several studies have found that social factors have a positive impact on patients' adherence to medication [24].

With age, patients with diabetes and hypertension were more likely to suffer from multiple complications. They are at higher risk of polypharmacy (51%) and become non adherent to medications compared to the younger population

Treatment-related factors that affect medication compliance are several medications needed throughout the day. Patients who did not receive appropriate information for medication from their physicians were also more likely to be not adherent. Many patients consciously choose not to fill out a prescription or not take their medications as prescribed. These choices are influenced by many factors related to the patient's experience, including the complexity of use, frequency of visits, and understanding of the disease, such as the severity of the disease, the fear of side effects, and stopping use of the drug after symptoms improve or when you feel better you can.

In patients with multiple co-morbidities, treatment over a longer period of time was perceived as worse than in patients with fewer conditions, if not accompanied by good clinical outcomes. This can lead to non-compliant behavior [25].

Also, patients who did not have sufficient knowledge of the dosing regimen (53.12%) were more likely to be non-compliant.

Our study determined forgetfulness (54.13%) and busyness (48.61%) as part of the reasons why some patients did not take their medications as prescribed. Beliefs and misconceptions affect both intentional and unintentional compliance. Several participants also identified that certain circumstances caused non-compliant behaviors for treatment: lack of satisfactory results that continued to initial expectations, concerns about side effects, and decision to exclude from high pill burden (56.14%).

Healthcare professionals are therefore required to engage chronic patients in order to improve positive health outcomes, communicate with them about their health beliefs, and provide appropriate information about their disease and treatment. This helps both healthcare professionals and patients collaborate effectively.

5. Conclusion:

This study revealed a number of barriers in medication adherence associated with high levels of self-reported non adherence, treatment changes and low follow ups. Our study concluded that low and moderate socioeconomic status was a strong risk factor for DM and HTN. Lack of drug information, and in rural areas there were no availability of drugs, low awareness of the disease, and no reminders to take medications on time. In addition to their age, lifestyle habits such as exercise, smoking and alcohol consumption and diet, SES factors like income, education, occupational and are significantly correlated with adherence to recommended therapies. Future research is needed to assess the extent to which pharmacists are integrated into a new team-based model of primary care for current and future challenges in providing better primary care to the patients.

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ABBREVIATIONS:

DM: Diabetes mellitus, HTN: Hypertension, SES: Socio economic status, OR: Odds ratio, CI: confidence interval, BMI: Body mass index, MMS8: Modified Morisky Scale 8.