



Assessment of medication adherence in chronic diseases

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ABSTRACT

Majority of people with chronic diseases have poor adherence to their therapeutic regimen. It can result in various complications physiologically with undesirable metabolic conditions. The main objective of this study is to assess the level of satisfaction attained after medication in comorbidities (either having diabetes only or having hypertension only or having Hypertension and Diabetes) and also focussed on creating awareness in patients who do not follow the medication. A prospective cross sectional study was conducted at tertiary care hospital, Khammam, Telangana. 200 patients were approached and were interviewed with their consent. The purpose of the same was to collect the information on socio demographics, medication that is followed, and behavioural characteristics. A structured questionnaire MMAS-8 an eight itemed scale was involved to identify individuals, determine their levels, the reliability and validity of the medication followed. The scrutiny of this study found that there is a better medication adherence in individual's diseases (Hypertension, Diabetes) whereas in hypertension and diabetes condition high and low adherence were reported because of their awareness, negligence and risk factors respectively. The study concludes that there is an increase in Medication adherence in individual diseases whereas in hypertension and diabetes there are equal ranges of both low and high adherence.



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INTRODUCTION

Hypertension is a chronic disease. It is defined as the persistent elevation of arterial blood pressure with forceful blood against walls and it has

another name 'high blood pressure'. Hypertension is one of the non-communicable disease (Lee *et al.*, 2013) which is also called as 'silent killer' and leads to major health issues. It is present across the world with 31.1% [1.39 billion] and this can be estimated using the increase in people by 1.56 billion in 2025 (Saqlain *et al.*, 2019). Hypertension is an avoidable risk factor for heart diseases which have mostly negative impacts on health that leads to morbidity and mortality (Riaz *et al.*, 2019). Most of the studies assess that the hypertension account 9.4 million deaths every year (Khayyat *et al.*, 2017) which makes the life expectancy less about 11.9% (Riaz *et al.*, 2019). A study stated that the adult populations were diagnosed around 26% of the world wide and it may increase with increase in age.

According to medical perspective diabetes belongs

to a group of metabolic diseases. It is characterized by different functions of insulin secreted by pancreas in which the action may be sufficient or insufficient or it may cause resistance which makes acceleration of glucose levels in blood mainly noted as hyperglycemia (Timar *et al.*, 2016). Diabetes is majorly classified into type I and type II along with some new variants like LADA /type 1.5 and gestational diabetes (Gupta *et al.*, 2019) some other types which include the monogenic diabetes like MODY that is inherited form of diabetes, cystic fibrosis and other hormonal disorders. IND stated that type II diabetes mellitus is 4th leading cause of death (Gupta *et al.*, 2019) globally, growing the global epidemic expect to accelerate 171 million cases in 2000 and in 2030 it is assessed up to 366 million along with morbidities like micro vascular damage, heart disease, stroke and obesity etc (Gupta *et al.*, 2019).

In 2016 WHO, estimated that 422 million people were diagnosed worldwide in 2014 (Timar *et al.*, 2016) and sheer in low and middle income countries (Poljičanin *et al.*, 2010; Singh *et al.*, 2019). Micro, macro vascular damage, organs dysfunctions like eye-retinopathy, nerves-neuropathy, kidney-nephropathy and hyperlipidemia, ulcer on feet and infection, may also decline in quality of life, risk if heart diseases along with hypertension. Cardio vascular complications are the permanent stress marker for diabetes (Timar *et al.*, 2016).

WHO-2003 defined medication adherence as a patient's medication consuming behaviour by accepting the statements of health care provider. (Lee *et al.*, 2013) It is a key element for disease specific management. (Sushma *et al.*, 2018) Over the past 25 years, studies have been stated that non adherent to medication for long term diseases has a great negative impact on health. In this study we decided to scrutinise the Medication Adherence in chronic diseases, especially in both Hypertension and Diabetes because these are the world's most common and snuffled out diseases.

PURPOSE OF THE STUDY

The need of this study is to set the non-adherence patients to an adherence, which is used for gaining good therapeutic outcome and also to understand the better illness of the disease condition and to their therapeutic management.

MATERIALS AND METHODS

A prospective cross sectional survey based study was conducted at tertiary care hospitals. Sample

size of 200 patients was taken. The study had been conducted within six months of period between August 2019 and January 2020. All the patients who were admitted in inpatient department have been approached to start prolific conversation and were followed up at the time of study duration. Eligible patients were invited and requested to participate in the study. Medication history interview was conducted on the patients above 16 years who suffered either with Hypertension or Diabetes or both. Self reports were collected to ensure the data of patient medication records. The limitation of the study was not to take the pregnant or postpartum women along with pre diabetic conditions and emergency care patients. A structured questionnaire was developed to collect information about Socio demographics and Medication adherence questionnaire. Morisky Medication Adherence Scale (MMAS-8) was taken to assess the behavior of the patient taking medication. Statistical data was drawn from a structured questionnaire which executed in Microsoft Excel 2007.

RESULTS AND DISCUSSION

Socio demographics and health related characteristics

Table 1 shows that out of 200 participants 105 were male (52.5%) and participants with the sum average age of adults 20-49(39.5%) and 50-89(60.5%) were considered as geriatrics. By assuming the data we found that 176 married (88%), 3 single (1.5%) and 21 widowed (10.5%). Most of the patients were uneducated (54.5%), graduated (34.5%) and up to school (11%). Majority of them are with different other occupations (48.5%), self employed (21.5%), farmer (30%).

Participants followed a diet diabetic (21%), no diet (35.5%), low cholesterol (8%), low salt (18.5%), weight reduction (9.5%) and vegetarian (7.5%) as in Table 2. The participants who done daily exercise (20.5%), irregular (15%), occasional (6.5%), no exercise (58%) Alcohol consumed patients with regular (17.5%), irregularly (20.5%), occasionally (25.5%), none (36.5%), and smokers were regular (21%), irregular (15%), occasional (14.5%), none (49.5%).

Participants suffered with a disease of Diabetes mellitus (12%), Hypertension (3.75%) and Diabetes and Hypertension (65.5%). Patients experiencing the disease from 1-4 years (34.5%), 5-9 years (31%), 10-14years (21%), and 15-20years (13.5%). Participants visited hospital for check-up (19.5%) monthly, (16%) every 3-4 months, (30.5%) every 6 months, (34%) once in a year. Among these (45.5%)

Table 1: Demographic details of age, gender and their studies

Age (years)	Frequency (n=200)	Percentage
20-29	2	1%
30-39	26	13%
40-49	51	25.5%
50-59	51	25.5%
60-69	47	23.5%
70-79	21	10.5%
80-89	2	1%
Gender		
Male	105	52.5%
Female	95	47.5%
Marital status		
Married	176	88%
Single	3	1.5%
widow	21	10.5%
Educational status		
Uneducated	109	58.5%
Up to school graduated	22	11%
	69	34.5%
Occupation		
Farmer	60	30%
Self employee	43	21.5%
Other [retired, housewives etc]	97	48.5%

participants were prescribed with <2drugs, (45%) 3-<5drugs and (9.5%) >5 drugs are seen in Table 3.

Determination of Medication Adherence Level

To determine the patient taking medication pattern MMAS -8 scale is used and the levels of individual patients were identified with score ranging of <6 shows low adherence, 6-8 indicates moderate adherence and 8,>8 determine the high adherence. In this study we focused on assessing the adherence ranges according to the diseases in which shown in Table 4. Respondents out of 200 patients 24 (12%) diabetic patients had (14) high adherence, (9) low adherence and (1) moderate adherence as scale score ranges and 45 (22.5%) hypertension patients with (11) low adherence, (25) high adherence, (9) moderate adherence. However, 131 (65.5%) participants are diagnosed with both comorbidities like Hypertension and Diabetes where there adherence levels are with (58) high adherence, (57) low adherence and (16) moderate adherence with results shown in Table 4.

Chronic conditions hypertension and diabetes are included in our study and assessed medication adherence (either having diabetes only or hypertension only or both diabetes and hypertension). However, patients with chronic diseases (especially diabetes and hypertension) are prone to risk factors which may lead to deaths because of their medication pattern used i.e., adhere to their medication. Many studies stated that half of the patients were not adhering to their long therapies.

Here we assessed medication adherence not only in individual long term diseases but also in both hypertension and diabetes in order to assess the effect of interaction of disease type and adherence level. Many studies stated that half of the patients did not adhere to their long therapies. However, in current study the low and higher rates of adherence in both hypertension and diabetes were reported due to low educational level and other specific occupations like living with pension. Whereas, low adherence rates shows the therapeutic failure which worsened the disease condition as in

Table 2: Distribution of data regarding diet, exercise, alcohol and smoking status

Diet plan		
Diabetic	42	21%
no diet	71	35.5%
low cholesterol	16	8%
low salt	37	18.5%
weight reduction	19	9.5%
Vegetarian	15	7.5%
Exercise		
Daily	41	20.5%
Irregularly	30	15%
Occasionally	13	6.5%
None	116	58%
Alcohol status		
Regular	35	17.5
Irregular	41	20.5
Occasional	51	25.5
None	73	36.5
Smoking status		
Regular	42	21%
Irregular	30	15%
Occasional	29	14.5%
None	99	49.5

Table 3: Details of diseases, duration of disease, checkups, and drugs prescribed

Disease		
Diabetes mellitus	24	12%
Hypertension	45	3.75%
both Diabetes and hypertension	131	65.5%
Duration of disease		
1-4years	69	34.5%
5-9years	62	31%
10-14years	42	21%
15-20years	27	13.5%
Checkups		
Monthly	39	19.5%
every 3-4months	32	16%
every 6months	61	30.5%
once a year	68	34%
Total number of drugs		
<2	91	45.5%
3-<5	90	45%
>5	19	9.5%

Table 4: Estimation of medication adherence levels

Diabetes		
Range	Parameter	N
<6	Low	9
6-7	Moderate	1
8,>8	High	14
Hypertension		
<6	Low	11
6-7	Moderate	9
8,>8	High	25
Hypertension and diabetes		
<6	Low	57
6-7	Moderate	16
8,>8	High	58

current study shows high number of participants with long term disease (hypertension and diabetes- n=131) was largely related to medication adverse effects. As most of the participants were geriatrics 50-89(60.5%) suffered with long term disease, seasonal disease [dengue fever] having less ability to tolerate environmental condition and also to improve their health. Most of the participants were uneducated having poor knowledge towards medication and disease related diet, physical stress, frequent visits to hospital etc. because of their work plan, negligence as most of them were housewives, retired officers, farmers. This study estimates that there might be an association between education level and adherence to medication seen in participant's adherence to their long term therapies.

Low and high levels of medication adherence was observed because most of the participants suffered with both diabetes and hypertension (65.5%), as diabetic patients having more risk for hypertension. Even though participants prescribed with drugs <2(45.5%), 3-5 drugs(45%) in prescription were affected due to multiple disease conditions with lack of knowledge, awareness, negligence towards prescribed drugs, which had an impact on the disease and led to other co morbidities finally resulting an increase in morbidity chances. The results showed that age, marital status, occupation, visits to the hospital were vulnerable to non-adherence. In conclusion, we are reported that a proximity of higher rate of adherence to prescribed medications among participants with individuals having chronic diseases is by their understanding levels related to medication, disease complications, and health fitness. The current study noticed that still some graduates, farm-

ers who lack in awareness about medications suffer with co morbidities like cardiovascular disease. In order to educate or to create awareness in them, a clinical pharmacist is needed to play an essential role in delivering good medication adherence practices in chronic disease patients. To ensure the medication adherence, various activities like focused group discussion, self engagement activities, open forum discussion etc are proposed.

CONCLUSION

By this study we conclude that when compared to non medication adherence patients, the patients who are adherent are more likely to enjoy their life with a better health status. Anyway self care is needed to prevent the hypertension and diabetes related morbidities and mortality. Still some participants were unaware of true causes of diabetes and hypertension. In fact, there is some lack of trust in physician, health providers or other health care professionals and acceptance of superstitious beliefs. To avoid this, health care professional should monitor the patient on their health illness and strictly suggest the patients about their diseased drugs to make them strictly adhere to their medication.

Ethical Approval

The study was approved by the institutional ethical committee.

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Abbreviations

MMAS- Morisky Medication Adherence Scale

MODY-Maturity Onset Diabetes of Young

LADA -Latent Autoimmune Diabetes of Adulthood

IND -International Diabetes Federation

Conflict of Interest

None.

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REFERENCES

- Gupta, L., Khandelwal, D., Lal, P. R., Gupta, Y., Kalra, S., Dutta, D. 2019. Factors Determining the Success of Therapeutic Lifestyle Interventions in Diabetes - Role of Partner and Family Support. *European Endocrinology*, 15(1):18.
- Khayyat, S. M., Khayyat, S. M. S., Alhazmi, R. S. H., Mohamed, M. M. A., Hadi, M. A. 2017. Predictors of Medication Adherence and Blood Pressure Control among Saudi Hypertensive Patients Attending Primary Care Clinics: A Cross-Sectional Study. *PLOS ONE*, 12(1):e0171255–e0171255.
- Lee, G. K. Y., Wang, H. H. X., Liu, K. Q. L., Cheung, Y., Morisky, D. E., Wong, M. C. S. 2013. Determinants of Medication Adherence to Antihypertensive Medications among a Chinese Population Using Morisky Medication Adherence Scale. *PLoS ONE*, 8(4):e62775–e62775.
- Poljičanin, T., Ajduković, D., Šekerija, M., Pibernik-Okanović, M., Željko Metelko, Mavrinac, G. V. 2010. Diabetes mellitus and hypertension have comparable adverse effects on health-related quality of life. *BMC Public Health*, 10(1):12–12.
- Riaz, H., Sadeeqa, S., Sultana, M. 2019. Hypertension-related knowledge, medication adherence and health-related quality of life (HRQoL) among hypertensive patients in Islamabad. *Pakistan. Tropical Journal of Pharmaceutical Research*, pages 1123–1132.
- Saqlain, M., Riaz, A., Malik, M. N., Khan, S., Ahmed, A., Kamran, S., Ali, H. 2019. *Medication Adherence and Its Association with Health Literacy and Performance in Activities of Daily Livings among Elderly Hypertensive Patients in Islamabad, Pakistan*, volume 55. MDPI AG, Pakistan. Medicina.
- Singh, C., Crawford, K., Willey, S., Hall, H., Harder, K., Plummer, V., Williams, A. 2019. Medication adherence among people of Indian ethnicity living with chronic disease following migration to Australia. *Collegian*, page 6.
- Sushma, P., Gali, N. C., Badhela, H., Palinga, A., Lakshmi, K. R. 2018. Evaluation of medication adherence in type-2 diabetic patients in tertiary care hospital. *International Journal of Research and Analytical Reviews (IJRAR)*, 5(4):921–929.
- Timar, R., Velea, P. I., Timar, B., Lungeanu, D., Oancea, C., Roman, D., Mazilu, O. 2016. Factors influencing the quality of life perception in patients with type 2 diabetes mellitus. *Patient Preference and Adherence*, Volume 10:2471–2477.