Original Research

To improve medication adherence in hypertensive patients

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ABSTRACT:
Aim: To improve medication adherence in hypertensive patients. **Methods and materials:** The Department of Pharmacology conducted this cross-sectional observational research. Participants with hypertension who had been on therapy for the previous 12 months were recruited for the trial after providing written informed permission. A full history was obtained, and the subjects were subjected to a thorough clinical evaluation, as well as counselling for lifestyle changes. The patients were given the Morisky Medication Adherence Scale-8 (MMAS-8) and WHO-QOL Bref questionnaires, and they were given time to complete them in a separate room away from the treating physician. **Results:** The average age of the patients was 53.98±10.78 years, the average number of medications taken per individual was 1.82±0.79, and 74% of the patients were using a combination of pharmaceuticals for hypertension. The mean MMAS-8 Score of 4.52±1.22 and the mean WHO-QOL Bref Scores. The mean duration of illness in Group 1 was substantially (p0.05) smaller than in Group 2 (4.41±2.52 years vs. 5.51±2.81 years), and the MMAS-8 scores in Group 1 were significantly (p<0.05) higher (4.81±1.42 vs. 3.79±0.76) — patients in Group 1 were more adherent to treatment than patients in Group 2. Group 1 had better scores in three domains: physical health (12.12±1.42 vs. 12.11±1.42), social connection (13.54±4.25 vs. 12.89±4.52), and environment (12.02±1.28 vs. 12.06±1.47), but Group 2 had higher scores in one domain: psychological (13.11±2.36 vs. 12.95±2.41). Because the surveys were only to be filled out by patients, there was a risk of interpretation bias based on the patients' comprehension. **Conclusion:** To summarise, patients had a poor adherence score, which was considerably lower in patients who were taking two or more drugs in combination or as a single component.
Keywords: Medication adherence, hypertensive

INTRODUCTION

Blood pressure control is a continual effort to avoid undesirable health consequences such as coronary heart disease, heart failure, stroke, and early death.[1] Despite the availability of safe and effective medications, hypertension therapy is still far from ideal, which is mostly responsible for poor medication adherence. [2] Pharmaceutical adherence is defined as how well the patient adheres to the medication, nutritional, and behavioural adjustments. Poor adherence is particularly frequent with hypertensive individuals. Existing research indicates that in numerous European nations, fewer than 60% of treated hypertension people adhere to their therapy more than 80% of the time. [3,4] Poor adherence was also identified in surveys among hypertensive patients (53.4 percent in Malaysia and 41 percent in Bangladesh). Adherence to antihypertensive treatment by patients is an essential component in meeting blood pressure goals. Patients are accountable for taking their prescriptions, regardless of how well the practitioner conveys the advantages of antihypertensive treatment. Poor antihypertensive medication adherence is likely to be a key factor to medication failure, which may result in extra visits to healthcare experts, additional drug switching, dosage escalation, and possibly hospitalisation. [5] Several studies looked at the adherence rate among hypertension patients and the sociodemographic characteristics that influence medication adherence, such as age, gender, co-morbidities, patients' awareness of the condition, and the amount of drugs they were taking. A Saudi Arabian survey discovered that just 34.7 percent of male hypertension patients were adhering to their treatment. [6] The existence of co morbidities was shown to have a negative

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relationship with adherence level in the research. [6] A cross-sectional research on medication adherence among hypertensive patients in Malaysia discovered a link between adherence and understanding of the drugs and illness. 7 The research also discovered that increasing the number of medications individuals take had a detrimental impact on medication adherence. [7] Other research found a link between the amount of drugs a person takes and adherence. [8-10] In an Iranian cross-sectional investigation, older patients reported higher adherence to antihypertensive treatment and a better understanding of their ailment than younger patients. [9] However, a number of studies found no statistically significant links between age and medication adherence. [11] Female patients were more likely than males to stick to their treatment regimen. [12] According to another research on the prevalence and correlates of poor antihypertensive adherence, male patients were more adherent than female patients. [13] Some research found no link between gender and adherence. [11] Medication adherence has been linked to educational level and health literacy. A cross-sectional research in Iraq found that adherence decreased in patients with elementary and secondary school education, but not in patients with higher education or undereducated patients. [13]

MATERIALS AND METHODS

After receiving clearance from the protocol review committee and the institutional ethics committee, this observational cross-sectional research was carried out at the Department of Pharmacology. The research included all hypertensive individuals who were taking medication. The research comprised patients aged 20 to 61 years old with a known history of hypertension (Blood Pressure > 140/100 mmHg) who had been registered for hypertension therapy at any specific centre for 12 months. Patients with chronic or end-stage renal illness, a history of heart or respiratory failure, a recent myocardial infarction (MI), shock, liver disease, chronic alcohol use, and pregnant or lactating women were all excluded from the research.

METHODOLOGY

Participants with hypertension who had been on therapy for the previous 12 months were recruited for the trial after providing written informed permission. A full history was obtained, and the subjects were subjected to a thorough clinical evaluation, as well as counselling for lifestyle changes. The patients were given the Morisky Medication Adherence Scale-8 (MMAS-8) and WHO-QOL Bref questionnaires, and they were given time to complete them in a separate room away from the treating physician.

ADHERENCE ASSESSMENT

We incorporated an adherence evaluation using the Morisky medication adherence scale to strengthen the consistency our findings (MMAS-8). [14] The MMAS-8 invites patients to answer "yes" or "no" to a series of seven questions and one 5-point Likert scale question. Full adherence is scored at 8, with lower scores indicating a lesser degree of adherence and a lower threshold of zero. Patients in this research were classified as non-adherent if their MMAS-8 score was <6, and adherent if their score was ≥ 6.

THE WHOQOL

Bref: was measured during the visit. This is a self-administered general questionnaire with 26 items, which is a condensed version of the WHOQOL-100 scales. It may be assessed from six different perspectives (physical health, psychological health, degree of independence, social interactions, environment, and spiritual) or four different perspectives (physical health, psychological health, social relations, and environment). [15] Each domain's QOL index and its connections with demographic characteristics were evaluated; a higher score indicated a greater quality of life. [16-18]

STATISTICAL EVALUATION

The information was summarised as mean standard deviation (SD). Non parametric tests (Chi-Square Test), parametric testing (two tailed student t-test), and correlation (Pearson correlation coefficients) were used to assess the results. A $p<0.05$ level of significance was judged statistically significant.

RESULTS

Table 1 shows the baseline demographics of the participants in the trial, which included 100 patients. The average age of the patients was 53.98±10.78 years, the average number of medications taken per individual was 1.82±0.79, and 74% of the patients were using a combination of pharmaceuticals for hypertension. Table 1 shows the mean MMAS-8 Score of 4.52±1.22 and the mean WHO-QOL Bref Scores.

Table 1: Baseline parameter of participants

Parameter	(n=100)/ (Mean±SD)
Age (years)	53.98±10.78
Male	53
Duration of illness (years)	4.91±3.12
Number of Medications used	1.82±0.79
% Medications as Drug Combination	74 %
Morisky Medication Adherence Scale – 8 (MMAS-8) Score	4.52±1.22

Domain I/ Physical Health	11.78±1.42
Domain II/ Psychological	13.11±2.45
Domain III/ Social Relationship	12.92±4.32
Domain IV/ Envoirment	11.98±1.56

Patients were divided into two groups based on the number of medications they used. Group 1 had patients who were on a single medication for hypertension, whether it was a single compound or two compounds in a single medication, whereas Group 2 had patients who were taking two or more medications in combination or single compound. Group 1 consisted of 50 patients, whereas Group 2 consisted of 50 patients. All of the patients provided informed permission and were included in the data analysis. Table 2 shows the characteristics of the patients in both groups.

In comparison to Group 1 participants, who were taking a single medicine, Group 2 individuals were using 2.49±0.58 medications per person for hypertension therapy. Group 1 included 17 people who were on a single chemical in one medicine, which was significantly ($p<0.05$) greater than Group 2 (n=8). The mean duration of illness in Group 1 was substantially (p0.05) smaller than in Group 2 (4.41±2.52 years vs. 5.51±2.81 years), and the MMAS-8 scores in Group 1 were significantly ($p<0.05$) higher (4.81±1.42 vs. 3.79±0.76) — patients in Group 1 were more adherent to treatment than patients in Group 2.

Table 2: Baseline characteristic of both groups

Characteristic	Group 1 (n=79)	Group 2 (n=73)	p value
Age (years)	54.02±7.58	53.87±10.43	0.28
Male	28	25	0.58
Duration of illness (years)	4.41±2.52	5.51±2.81	<0.05
Number of Medications used	1.2	2.49±0.58	
Medications as Drug Combination (single drug: drug combnation)	35:65	15:85	<0.05
Morisky Medication Adherence Scale – 8 (MMAS-8) Score	4.81±1.42	3.79±0.76	<0.05
Domain I/ Physical Health	12.12±1.42	12.11±1.42	0.58
Domain II/ Psychological	12.95±2.41	13.11±2.36	0.51
Domain III/ Social Relationship	13.54±4.25	12.89±4.52	0.27
Domain IV/ Environment	12.02±1.28	12.06±1.47	0.82

WHO-QOL BREF SCORES

Group 1 had better scores in three domains: physical health (12.12±1.42 vs. 12.11±1.42), social connection (13.54±4.25 vs. 12.89±4.52), and environment (12.02±1.28 vs. 12.06±1.47), but Group 2 had higher scores in one domain: psychological (13.11±2.36 vs. 12.95±2.41). Because the surveys were only to be filled out by patients, there was a risk of interpretation bias based on the patients' comprehension.

CORRELATION

Table 3 shows the estimates of association for MMAS-8 Scores with WHO-QOL Bref Scores, as well as their significant values among patients in Groups 1 and 2. MMAS-8 Score was shown to have a significant ($p<0.05$) association with physical health and social relationship in Group 1.

Table 3: Correlation coefficients for MMAS-8 scores with WHO-QOL Bref Scores among patients in both groups

Parameter	MMAS-8 Scores			
	Group 1		Group 2	
	r	p	r	p
Domain I/ Physical Health	0.34	<0.05	0.08	0.64
Domain II/ Psychological	-0.09	0.58	0.13	0.33
Domain III/ Social Relationship	0.31	<0.05	0.08	0.61
Domain IV/ Environment	0.07	0.71	-0.07	0.71

DISCUSSION

Several research have looked at the variables that influence drug adherence. Hypertension is a major public health issue that causes increased mortality, morbidity, and disability, mostly as a result of increased cardiovascular disease such as cerebral vascular accidents and myocardial infarction. Several studies have shown that poor adherence to antihypertensive treatment increases the short and long term risk of stroke in hypertensive individuals. [19] This prospective research was conducted to examine medication adherence in hypertensive patients. The study found that patients had a poor adherence score, which was considerably lower in patients who were taking two or more drugs in combination or as a single component. Our research

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also found that individuals on a single medicine had somewhat higher quality of life and a better adherence correlation than those on more than two medications.

A research conducted to measure the degree of adherence to hypertension therapy and to determine its related characteristics in a sample of hypertensive patients in Lebanon and Jordan discovered that 55.9 percent of the patients were on their antihypertensive medication. Older age was related with greater adherence, but being divorced or widowed was associated with a worse quality of life. Our findings are pretty comparable to those of this research, as individuals in our study who were on a single medicine for a shorter period of time showed higher adherence. Our research participants' quality of life was also marginally improved in those on single drug. [20]

Another research that looked at treatment adherence in people with hypertension found that patients who had been sick for a longer period of time were not treated, and the majority of patients were not adhering to antihypertensive medication. This study's findings are fairly similar to ours in that individuals with a longer length of sickness and on more than two medicines were less adherent than the other group. [19]

Another study on hypertensive ethnic minority patients of African descent to identify patient-related determinants of adherence to lifestyle and medication recommendations found that paying attention to patients' medication self-efficacy, concerns about medication use, and patients' perceptions of hypertension can help support medication adherence. The findings are comparable to ours, except that it was a one-time survey and patients were not followed up on. [21]Another research that measured adherence to hypertension therapy in a representative sample of hypertensive Pakistanis found that younger age, low knowledge, and symptomatic treatment all had a negative impact on adherence to antihypertensive medication, and monotherapy decreased adherence. Our findings vary from those of this research in that we found that patients using a single medicine had greater adherence than patients taking two or more medications.[22]Another research that used the self-regulatory model to explain hypertension patients' views about their condition and medicine found that patients who believed in the need of treatment were more likely to be compliant. Age, emotional reaction to disease, and trust in one's own competence to manage illness were other major predictors. Our research differs from previous one in that we focused on the impact of single drug and illness duration as predictors of improved adherence. [23]

CONCLUSION

To summarise, patients had a poor adherence score, which was considerably lower in patients who were taking two or more drugs in combination or as a single component. Our research also found that individuals on a single medicine had somewhat higher quality of life and a better adherence correlation than those on more than two medications.

REFERENCES
1. Ramli A, Ahmad NS, Paraidathathu T. Medication adherence among hypertensive patients of primary health clinics in Malaysia. Patient Prefer Adherence.2012;6: 613-622.
2. DegliEsposti L, Saragoni S, Benemei S, Batacchi P, Geppetti P, et al. Adherence to anti-hypertensive medications and health outcomes among newly treated
3. hypertensive patients. Clinicoecon Outcomes Res.2011;3: 47-54.
4. Breitscheidel L, Ehlken B, Kostev K, Oberdiek MS, Sandberg A, et al. Reallife
5. treatment patterns, compliance, persistence, and medication costs in patients with
6. hypertension in Germany. J Med Econ.2012;15: 155-165.
7. Hossain A, Mithila O. Sleep duration and treatment compliance: A populationbased cross-sectional study of hypertensive patients in Bangladesh. BMC Research Notes.2016;9: 271.
8. Vrijens B, Antoniou S, Burnier M, de la Sierra A, Volpe M. Current Situation of
9. Medication Adherence in Hypertension.Front Pharmacol.2017;8: 100.
10. Elbur AI. Level of adherence to lifestyle changes and medications among male hypertensive patients in two hospitals in taif; kingdom of Saudi Arabia. Int J Pharm Pharm Sci. 2015;7(4):168–72.
11. Ramli A, Ahmad NS, Paraidathathu T. Medication adherence among hypertensive patients of primary health clinics in Malaysia. Patient Prefer Adherence. 2012;6:613–22.
12. Al-Sowielem LS, Elzubier AG. Compliance and knowledge of hypertensive patients attending PHC centres in Al-Khobar, Saudi Arabia. East Mediterr Heal J. 1998;4(2):301–7 Available from: https://apps.who.int/iris/handle/10665/118129. [cited 2020 May 4].
13. Hadi N, Rostami-Gooran N. Determinant factors of medication compliance in hypertensive patients of Shiraz, Iran. Arch Iran Med. 2004;7(4):292–6 Available from: https://www.sid.ir/en/journal/ViewPaper.aspx?ID=13626. [cited 2020 May 4].
14. Roger VL, Go AS, Lloyd-Jones DM, Benjamin EJ, Berry JD, Borden WB, et al. Heart disease and stroke statistics-2012 update: a report from the American heart association. Circulation. 2012;3:125(1).
15. Goussous LS, Halasah NA, Halasa M. Non - Compliance to Antihypertensive Treatment among Patients Attending Prince Zaid Military Hospital. World Fam Med Journal/Middle East J Fam Med. 2015;13(1):15–9 Available from: https://platform.almanhal.com/Files/2/58839. [cited 2020 May 4].
16. Schoberberger R, Janda M, Pescosta W, Sonneck G. The COMpliancepraxiS survey (COMPASS): a multidimensional instrument to monitor compliance for patients on antihypertensive medication. J Hum Hypertens. 2002;16(11): 779–87.

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17. Hyre AD, Krousel-Wood MA, Muntner P, Kawasaki L, KB DS. Prevalence and Predictors of Poor Antihypertensive Medication Adherence in an Urban Health Clinic Setting. J ClinHypertens. 2007;9(3):179–86.
18. Morisky DE, Ang A, Krousel-Wood M, Ward HJ. Predictive value of a medication adherence measure in an outpatient setting. Journal of Clinical Hypertension 2008;10(5):348-54.
19. Skevington SM, Lotfy M, O' Connell KA, the WHOQOL Group. The World Health Organization's WHO-QOLBref quality of life assessment: psychometric properties and results of the international field trial. A report from the WHOQOL group. Qual Life Res 2004;13:299-310.
20. Sainfort F, Becker M, Diamond R. Judgments of quality of life of individuals with severe mental disorders: patient self-report versus provider perspectives. Am J Psychiatry 1996;153:497-502.
21. Alshubaili AF, Ohaeri JU, Awadalla AW, Mabrouk AA. Family caregiver quality of life in multiple sclerosis among Kuwaitis: a controlled study. *BMC Health Services Research* 2008, 8: 206 doi:10.1186/1472-6963- 8-206. This article is available from: http://www.biomedcentral.com/ 1472-6963/8/206.
22. Anees M, Hameed F, Mumtaz A, Ibrahim M, Khan MNS. Dialysis-related factors affecting quality of life in patients on haemodialysis. Iranian J Kidney Dis 2011;5:9-14
23. Amaral O, Chaves C, Duarte J, Coutinho E, Nelas P, Preto O. Treatment adherence in hypertensive patients – A cross sectional study. Procedia-Social and Behavioral Sciences 2015;171:1288-95
24. Alhadad IA, Hamoui O, Hammoudeh A, Mallat S. Treatment adherence and quality of life in patients on antihypertensive medication in a Middle East population: Adherence. Vascular Health and Risk Management 2016;12:407-13
25. Meinema JG, van Dijk N, Beune EJAJ, Jaarsma DADC, van Weart HCPM, Haafkens JA. Determinants of adherence to treatment in hypertensive patients of African Descent and role of culturally appropriate education. PLoS ONE 2015;10(8):e0133560.
26. Hashmi SK, Afridi MB, Abbas K, Sajwani RA, Saleheen D, Frossard PM, et.al. Factors associated with adherence to antihypertensive treatment in Pakistan. PLoS ONE 2007;2(3):e280. doi.10.1371/journal.pone.0000280
27. Ross S, Walker A, MacLeod MJ. Patient compliance in hypertension: Role of illness perception and treatment beliefs. Journal of Human Hypertension 2004;18:607-13.