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Original Research Article

An Observational, Cross-Sectional Assessment of the Adherence to Medication in Patients Suffering from Hypertension

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Abstract

Aim: To assess the adherence to medication in patients suffering from hypertension.

Material & Method: This observational, cross-sectional study was conducted in the Department of Pharmacology, RIMS, Ranchi, Jharkhand, India, for a period of 15 months. All patients suffering from hypertension and on medication were recruited in the study.

Results: Based on the number of medications used by patients, they were subdivided into two groups, Group 1 had patients who were on single medication for hypertension whether it was single compound or two compounds in single medication, whereas Group 2 had patients who were taking two or more medications in combination or single compound.

Conclusion: Patients' on single medication had significantly better adherence, slightly better quality of life and better adherence correlation as compared to patients on more than two medications.

Keywords: Hypertension, Adherence, Quality of life, Medication.

Introduction

The World Health Organization defines adherence as ''the extent to which a person's behavior-taking medication, following a diet, and/or executing lifestyle changes corresponds with agreed recommendations from a health-care provider'' [1].

Generally, adherence to a medical regimen is most likely to be a problem in chronic diseases such as diabetes, hypertension, coronary artery disease, osteoporosis, and asthma, and is responsible for suboptimal clinical outcomes, decreased quality of life, and increased expense to the health-care system [1–3].

The risk of cardiovascular disease can be reduced by appropriate treatment of hypertensive patients either through lifestyle interventions alone or in combination with medication. Lifestyle intervention in mild cases should be the initial approach to hypertension management which includes dietary interventions, weight reduction, tobacco cessation, and physical activity. [4] Study has shown that reduction of 3.8 mmHg and 1.5mmHg in systolic and diastolic

pressure, respectively, decreased the development of left ventricular hypertrophy by 37% and a decrease of cardiovascular event by 50%. [5-6]

Only 37% of hypertensive patients on medication have their blood pressure controlled [7]. Non-adherence to antihypertensive medications is a potential contributing factor to uncontrolled hypertension. With limited studies conducted to investigate this challenging issue, this cross-sectional study aims to assess the adherence rate among hypertensive patients and associated factors affecting adherence to antihypertensive medications.

Material & Method:

This observational, cross-sectional study was conducted in the Department of Pharmacology, RIMS, Ranchi, Jharkhand, India, for a period of 15 months. All patients suffering from hypertension and on medication were recruited in the study. The study was approved by the Institutional Ethics Committee and patients were recruited after they gave written informed consent.

Patients between the ages of 18 to 60 years, with a known history of hypertension (Blood Pressure > 140/100 mmHg), and registered for treatment of hypertension at any particular center for 12 months were included in the study. Patients with chronic renal disease or end stage renal disease, history of heart or respiratory failure, recent myocardial infarction (MI), shock, liver disease, chronic alcohol use, pregnant or lactating females were excluded from study.

The participants suffering from hypertension and on treatment for the past 12 month were recruited in the study after they gave a written informed consent. A detailed history was taken, and the participants underwent a thorough clinical examination, they were also given counselling for life style modifications. The patients were given questionnaire of Morisky Medication Adherence Scale-8 (MMAS-8) and WHO-QOL Bref; they were given time to fill up the questionnaire in a separate room without any interference from the treating physician

Measurement of adherence

To increase the strength and consistency of our results, we included an adherence assessment through the eight-item Morisky medication adherence scale (MMAS-8). The MMAS-8 asks patients to respond with ‘‘yes” or ‘‘no” to a set of 7 questions and to one 5-point Likert scale question. The score for full adherence is 8, with lower scores indicating a poorer level of adherence with a lower boundary of zero. In this study patients were described as non-adherent if they had an MMAS-8 score < 6 and as adherent if their score was ≥ 6.

Statistical Analysis:

The data was tabulated as mean ± standard deviation (SD). Results were analyzed using non parametric tests (Chi-Square Test), parametric tests (two tailed student t-test) and correlation (Pearson correlation coefficients) analysis. A $p<0.05$ was considered statistically significant.

Results:

A total of 200 patients participated in the study, the baseline demographics of the participants are shown in Table 1. The mean age of patients was 50.28±8.02 years, the mean number of medications used was 2.71±0.89 per person and 78.5% of patients were taking combination of drugs for hypertension. The mean MMAS-8 Score was 4.24±2.01, the mean scores of WHO-QOL Bref scores are shown in Table 1.

Based on the number of medications used by patients, they were subdivided into two groups, Group 1 had patients who were on single medication for hypertension whether it was single compound or two compounds in single medication, whereas Group 2 had patients who were taking two

or more medications in combination or single compound.

100 patients were included in Group 1 and 100 patients were included in Group 2. All the patients gave informed consent and were included in the analysis of result. The characteristics of the patients in both groups are shown in Table 2. As compared to participants in Group 1 who were taking a single medication, the participants in Group 2 were on 2.30± 0.50 medication per person for treatment of hypertension. The number of participants in Group 1 who were on single compound in one medication was 25 which was statistically ($p<0.05$) higher than participants in Group 2 (n=15). The mean duration of illness was significantly ($p<0.05$) less in Group 1 as compared to Group 2 (5.61±3.1 years vs. 6.83±4.84years), the MMAS-8 scores were significantly ($p<0.05$) higher in Group 1 (5.71±1.39 vs. 4.71±0.80) – patients in Group 1 were more adherent to treatment as compared to Group 2.

Estimates of correlation for MMAS-8 Scores with WHO-QOL Bref Scores along with their significant levels among patients in Group 1 and 2 are presented in Table 3. It has been observed that MMAS-8 Score had significant ($p<0.05$) correlation with physical health, and social relationship in Group 1.

Table 1: Baseline characteristic of participants

Characteristic	**(n=200)**
Age (years) (Mean±SD)	50.28±8.02
Sex(M:F)	80:65
Duration of illness (years) (Mean±SD)	5.9±3.7
Number of Medications used (Mean±SD)	2.9±0.62
% Medications as Drug Combination	78.5 % (n=157)
Morisky Medication Adherence Scale – 8 (MMAS-8) Score (Mean±SD)	4.24±2.01
Domain I/ Physical Health (Mean±SD)	9.8±1.02
Domain II/ Psychological (Mean±SD)	10.72±1.73
Domain III/ Social Relationship (Mean±SD)	10.73±1.38
Domain IV/ Environment (Mean±SD)	9.3±1.27

*p<0.05 and statistically significant #using student 't' test, *Chi Square Test

Table 2: Baseline characteristic of both groups

Characteristic	**Group 1 (n=100)**	**Group 2 (n=100)**	**p value**
Number of Medications used (Mean±SD)	1	2.30± 0.50	
Medications as Drug Combination (single drug: drug combination)	25:40	15:65	<0.05*
Morisky Medication Adherence Scale – 8 (MMAS-8) Score (Mean±SD)	5.71±1.39	4.71±0.80	<0.05*#
Domain I/ Physical Health (Mean±SD)	10.83±1.81	10.43±1.40	0.80#
Domain II/ Psychological (Mean±SD)	12.81±2.33	12.83±2.22	0.54#
Domain III/ Social Relationship (Mean±SD)	12.73±4.73	12.48±4.71	0.30#
Domain IV/ Environment (Mean±SD)	11.63±2.03	11.73±2.73	0.82#

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

Variables	MMAS-8 Scores			
	Group 1 (n=100)		Group 2 (n=100)	
	r	p	r	p
Domain I/ Physical Health	0.38	<0.05*	0.06	0.72
Domain II/ Psychological	-0.06	0.81	0.28	0.21
Domain III/ Social Relationship	0.24	<0.05*	0.07	0.66
Domain IV/ Environment	0.05	0.72	-0.05	0.78

*p<0.05 and statistically significant

Discussion:

The study conducted in Al-Khobar and higher than the study conducted in Taif where adherence rate was found to be 47and 34.7%, respectively [8-9]. Other studies conducted in different countries reported adherence rates ranging from 15 to 88% [10-11]. This discrepancy in adherence rate is potentially due to the differences in population characteristics, medication adherence assessment tools, and healthcare systems.

Hypertension is an important public health problem leading to increased mortality, morbidity, and disability mainly due to increased cardiovascular disease like cerebral vascular accidents, and myocardial infarction. Various studies have shown that poor compliance to antihypertensive medication significantly increases the short- and long-term risk of stroke in hypertensive patients.[12] This prospective study done to assess the adherence to medication in patients suffering from hypertension, the study showed that patients had a low adherence score and it was significantly lower in patients who were taking two or more medications in combination or single compound. Our study also demonstrated that quality of life was slightly better in patients on single medication and had better adherence correlation as compared to patients on more than two medications.

It seems that the people care more when they get older and/or start to have disease complications. This should be considered during patient counseling; complications of hypertension in addition to risks of poor adherence to medications should be explained well to patients in the younger age groups. Living in a village compared with a city was a reason for poor adherence also; this may be related to lower levels of education or income in addition to difficulties in reaching doctors and health-care facilities. Evaluating health status as very good, good or poor compared with excellent was significantly associated with poor adherence. In some studies, lower medication adherence was associated with poor health-related quality of life [13].

One more study done to measure the adherence to antihypertensive therapy in a representative sample of the hypertensive Pakistani population demonstrated that younger age, poor awareness, and symptomatic treatment adversely affected adherence to anti-hypertensive medication and mono therapy reduced adherence. The results of our study are different from this study as our study demonstrated that patients on single medication had better adherence as compared to patients taking two or more medication.[14]

Another study designed to describe hypertensive patients' beliefs about their illness and medication using the self-regulatory model showed that patients who believed in the necessity of medication were more likely to be compliant. Other

important predictive factors were age, emotional response to illness and belief in personal ability to control illness. Our study is dissimilar to this study as our study highlighted the importance of single medication and duration of illness to be a predictor for better adherence.[15,16]

Conclusion:

Patients' on single medication had significantly better adherence, slightly better quality of life and better adherence correlation as compared to patients on more than two medications.

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