

## Determinant Factors of Noncompliance on Treatment Among Hypertensive Patients Attending Outpatient Clinic in Sohag University Hospital

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### Abstract

**Background:** Hypertension predominance is expanding quickly. Uncontrolled hypertension or complications related to poor treatment adherence are a difficult challenge for everybody with hypertension, healthcare professionals and medical services frameworks. Hypertension predominance is expanding quickly. An uncontrolled hypertension or complications related to poor treatment adherence are a difficult challenge for everybody with hypertension, healthcare professionals and medical services frameworks. **Aim of the work:** This study aims to study the determinants of antihypertensive medications noncompliance among hypertensive patients. **Methodology:** A hospital-based cross-sectional study was conducted on hypertensive patients (N=409) 18 years old and above attending internal medicine outpatient clinic at Sohag University Hospital. **Results:** show that 57.5% of the participants are males and 49.4% are less than 65 years. It also shows that 51.8% of the patients are smokers, 50.12% of the participants are good compliers while 49.88% of them are poor compliers. **Conclusion:** Elderly, Illiterate patients and patients with high Perception of the barrier were less compliant.

### Introduction

The accessibility of antihypertensive treatment has improved the quality of life for high blood pressure patients by diminishing the impact of the accompanying symptoms and it assists in preventing the outcomes of complications<sup>1</sup>. Hypertension predominance is expanding quickly. It is estimated that hypertension accounts for more than 9.4 million deaths per year<sup>2</sup>. High blood pressure complications are irreversible and hypertension itself is one of the main causes of an increased burden on healthcare systems<sup>3</sup>.

Uncontrolled hypertension or complications related to poor treatment adherence are a difficult challenge for everybody with hypertension, healthcare professionals and medical services frameworks. This is because of the significant effort required in dealing with the resultant complications related to this poor compliance. Scientists recognized different indicators that impact antihypertensive treatment adherence<sup>4</sup>.

#### **Aim of the work**

This study aims to study the determinants of antihypertensive medications noncompliance among hypertensive patients.

### Methodology

A hospital-based cross-sectional study was conducted on hypertensive patients (N=409) 18 years old and above attending internal medicine outpatient clinic at Sohag University Hospital to detect factors affecting antihypertensive medication compliance. Using sample size formula which is:  $N = z^2 p (1 - p) / d^2$ .

Where: n=the desired sample size

Z=the standard normal deviation. (1.96)

P= the prevalence of the problem (24.6%).

d =the degree of accuracy required. (0.05)

The study sample was 286, the supervisor decided to double the sample to 409 for more accuracy. **Study tool:** Data were gathered through personal interviews with patients. Noncompliance on hypertensive treatment questionnaire<sup>5</sup> used to cover a variety of items, the questionnaire was divided into four sections; the first part included the sociodemographic characteristics of the patients, such as age, gender, educational level. The second part assessed the patient's compliance with medication regimen such as how frequently they forget to take their medication, how frequently they stop taking their medication since they feel much improved or feel more terrible. The third part was composed of questions regarding adherence with lifestyle modification regimen which include how frequently they smoke, engage in physical exercise, and eat meat with high animal fat. The last part included constructs of the health belief model (Perception of severity, Perceptions of susceptibility, Perception of benefits, Perception of barriers, and Cues to action)

The five items measuring perceived barriers were added up to get sum index with a distribution from 5 to 18, the median split 11 dichotomized it into low and high perception barrier.

### Analysis of data

Data were subjected to analysis and tabulation using SPSS version 16. Data were summarized using frequency tables and cross-tabulations. The Chi-squared test was used to compare the categorical data. Logistic regression was done to detect factors associated with good treatment compliance and to detect barriers associated with poor compliance. Odds ratio (OR) at a 95% confidence interval (CI) and p values were computed. A p-value was considered significant at or below 0.05.

The variable treatment compliance made out of lifestyle modification (4 items) and medication regimen compliance (8 items). The responses were measured on a 4-point Likert scale: (1) Every day (2) frequently, (3) rarely or (4) never. The 12 items were summed giving a distribution ranging from 21 to 48 with mean 34 (SD =5.31), the cutoff point of the compliance score was 70% (34), which was dichotomized into two groups i.e. 1 = those who are poor treatment compliant ( $\leq 34$ ) and 2 = treatment compliant ( $> 34$ ). The health belief constructs were measured as the following:

The perceived severity 6 items were summed giving a distribution from 7 to 18 with mean 11.77(SD =2.53), the median split 12 was used as a cutoff point and dichotomized into low and high perceived severity.

The perceived susceptibility 6 items were summed giving a distribution from 6 to 18, the median split was 12 was used as a cutoff point and dichotomized into low and high perceived susceptibility.

Perceived benefit six items were summed giving a distribution from 5 to 24 median split 14 and then dichotomized into high perceived benefit

Seven items measuring the cues to action were added up to get sum index with a distribution from 8 to 20 and a median split 14, then dichotomized into a low and high perception of cues to action

**Results:**

409 patients were participated in our study, as shown in table (1) Our results revealed that 57.5% of the participants are males and 42.5% are females and 49.4% are less than 65 years. Among the participants more than half are married and 67.5% are employed. It also shows that 51.8% of the patients are smokers. Table (2) shows that nonsmokers are 7.46 more compliant with antihypertensive medications than smokers. Patients with a low perception of barriers are significantly more liable to comply with treatment than those with a high perception of the barrier. Residence in rural areas and low income are strong predictors for non-compliance

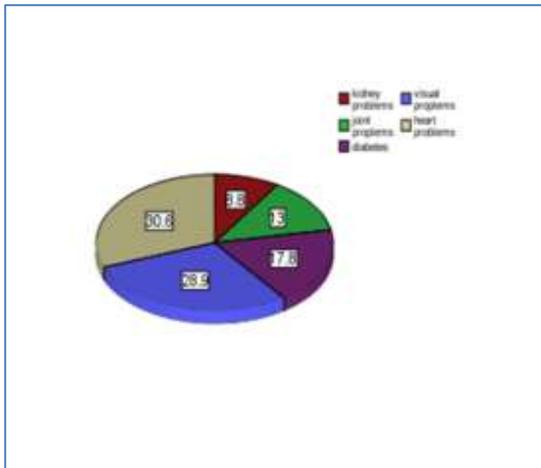
Figurer (1) demonstrates comorbid conditions other than hypertension among participants. Cardiac diseases counting for 30.6%, while visual problems are 28.9%, diabetes mellitus 17.8%, and kidney problems are 8.8%. As shown in Fig (2), 50.12% of the participants are good compliers while 49.88% of them are poor compliers

| Characteristic                        | N (%)       |
|---------------------------------------|-------------|
| <b>Age:</b>                           |             |
| Young age (18-)                       | 40 (9.8%)   |
| Middle age (40-)                      | 167 (40.8%) |
| Old age (>65)                         | 202 (49.4%) |
| <b>Gender:</b>                        |             |
| Male                                  | 235 (57.5%) |
| Female                                | 174 (42.5%) |
| <b>Marital status:</b>                |             |
| Unmarried                             | 146 (35.7%) |
| Married                               | 263 (64.3%) |
| <b>Residence</b>                      |             |
| Rural                                 | 243(59.5%)  |
| Urban                                 | 166(40.5%)  |
| <b>Education level:</b>               |             |
| Illiterate                            | 144 (35.2%) |
| Primary/Secondary                     | 175 (42.8%) |
| Higher                                | 90 (22%)    |
| <b>Occupation:</b>                    |             |
| Unemployed                            | 133 (32.5%) |
| Employed                              | 276 (67.5%) |
| <b>Income</b>                         |             |
| Low                                   | 190(46.5%)  |
| Moderate                              | 131(32%)    |
| High                                  | 88(21.5%)   |
| <b>Comorbidities</b>                  |             |
| No                                    | 99 (24.2%)  |
| Yes                                   | 310 (75.8%) |
| <b>No. of antihypertensive drugs:</b> |             |
| 1                                     | 254 (62.1%) |
| 2                                     | 99 (24.2%)  |
| 3-4                                   | 56 (13.7%)  |
| <b>Smoking:</b>                       |             |
| No                                    | 212 (51.8%) |
| Yes                                   | 197 (48.2%) |

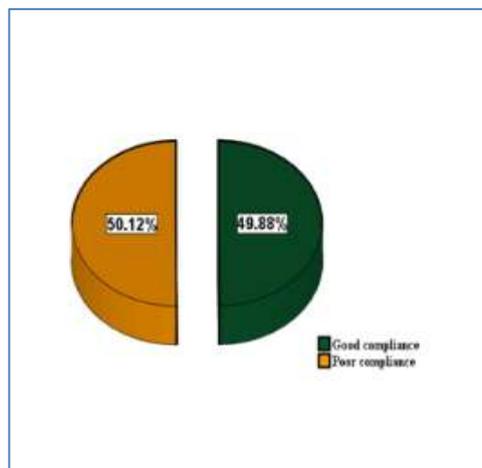
**Table (1): Distribution of the articipants by their sociodemographic characteristics in 2018**

| Characteristic                        | OR   | 95% CI     | P-value |
|---------------------------------------|------|------------|---------|
| <b>Age:</b>                           |      |            |         |
| 18-                                   | 7.29 | 2.36-      | 0.00    |
| 40-                                   | 2.58 | 22.53      | 0.00    |
| >65                                   | 1    | 1.48-4.5   | 0.00    |
| <b>Residence</b>                      |      |            |         |
| Rural                                 | 1    |            |         |
| Urban                                 | 2.93 | 1.54-4.89  | 0.03    |
| <b>Education level:</b>               |      |            | 0.03    |
| Illiterate                            | 1    |            |         |
| Primary/Secondary                     | 2.13 | 1.19-3.8   | 0.01    |
| Higher                                | 2.13 | 1.02-4.45  | 0.04    |
| <b>Income</b>                         |      |            | 0.00    |
| Low                                   | 1    |            |         |
| Moderate                              | 2.51 | 1.23-4.93  | 0.00    |
| High                                  | 4.86 | 2.03-9.06  | 0.00    |
| <b>Comorbidities:</b>                 |      |            | 0.02    |
| No                                    | 2.25 | 1.16-4.38  |         |
| Yes                                   | 1    |            |         |
| <b>No. of antihypertensive drugs:</b> |      |            |         |
| 1                                     | 6.98 | 2.74-17.74 | 0.00    |
| 2                                     | 7.21 | 2.64-19.72 | 0.00    |
| 3-4                                   | 1    |            |         |
| <b>Smoking:</b>                       |      |            | 0.00    |
| No                                    | 7.46 | 4.19-13.27 |         |
| Yes                                   | 1    |            |         |
| <b>Perception of susceptbility:</b>   |      |            | 0.00    |
| Low                                   | 1    |            |         |
| High                                  | 2.64 | 1.48-4.69  |         |
| <b>Perception of barrier:</b>         |      |            | 0.00    |
| Low                                   | 3.24 | 1.83-5.75  |         |
| High                                  | 1    |            |         |
| <b>Cue to action:</b>                 |      |            | 0.00    |
| Low                                   | 1    |            |         |
| High                                  | 0.34 | 0.18-0.65  |         |

**Table (2): Final regression model of participant's treatment compliance.**



**Figure 1:** Percentage of comorbid diseases among participants



**Figure 2:** Percentage of treatment compliance among participants.

### Discussion:

The antihypertensive treatment compliance status in our study was 49.88% of the patients were good compliers and that 50.12% of the patients were poor compliers to their antihypertensive medications.

In this study the compliance rate found was approximately within the rate of antihypertensive medication compliance estimated by the World Health Organization in 2003 which ranged from 50% to 70%<sup>6</sup>.

In our study 61.4% of old patients were poor compliant to antihypertensive treatments, Our results were similar to a cross-sectional study performed in Turkey demonstrated that 75.8% of 33 patients aged 70 years and older reported poor compliance<sup>7</sup>. On the other side a population-based study of 29,960 high blood pressure patients in Bangladesh, according to this study, the presence of compliance to antihypertensive treatment increased with age<sup>8</sup>.

In our study educated patients are more compliant than illiterate patients. The current study results were similar to a study surveyed 410 Palestinian hypertensive patients<sup>10</sup>, while multiple studies found that patients with higher educational levels might have higher compliance<sup>11</sup>.

According to the current study patients with no comorbid conditions are 2.25 more compliant to antihypertensive medications; these results were similar to a study conducted in the UAE with 250 high blood pressure patients<sup>12</sup>.

From this study, the constructs of the health belief model which showed a significant relationship were perceived susceptibility of being at risk of getting hypertension complications, perceived barriers to treatment and cues to action.

These results were closely similar to those of a Houston American study that revealed perceived barrier was a significant predictor in noncompliance to antihypertensive drugs<sup>13</sup>.

## Conclusion:

The main conclusion of this study is that 48.88% of the participants reported poor levels of antihypertensive medication compliance. Young and middle-aged patients were more compliant, while illiterate, patients with other comorbid conditions and patients taking three and more kinds of antihypertensive medications showed a lesser level of medication compliance. With the use of HBM patients with a high perception of susceptibility were more compliant than those with a low perception of susceptibility, while patients with high Perception of barrier were less compliant than those with a high perception of barrier.

## Recommendations:

Doctors/Nurse must educate hypertensive patients about their disease on the importance of complying with hypertensive medications, Doctors have to prescribe a lesser number of antihypertensive medications as possible, Training the health care provider on how to counsel patients and Strategies to improve antihypertensive compliance such as improving educational campaign.

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