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Barriers to Adherence to Pharmacotherapy among Patients with Hypertension: A Cross-Sectional Study

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ABSTRACT

There are multiple barriers in order to cause or improve adherence to medication among the patients with hypertension; and recognize the relevant obstacles is a significant stage in performing effective interventions. Accordingly, the current study seeks to examine personal psychological and environmental obstacles influencing adherence to pharmacotherapy in the patients with hypertension. In the current cross-sectional study, 390 patients with hypertension sponsored by health centers in Isfahan city (Iran) were examined. The sampling in the current research was performed in several stages. The data collection method was demographic factor questionnaire, eight-item Morisky Medication Adherence Scale (MMAS), Beck Depression Inventory, and John Henry Active Coping Scale. The data relevant to the subjects was collected and analyzed in a self-reporting manner. According to results,12 percent of patients had adherence to medication. The patients with low scores of active coping reported the greater level of non-adherence to pharmacotherapy(OR = 0.17 95% CI 0.06-0.65).Furthermore, the patients who had higher level of depression and interpersonal conflicts with family reported higher non-adherence to pharmacotherapy(respectively OR= 1.50 95% CI 1.05-3.46, OR=1.99 95% CI 1.03-3.6). The results suggest that depression, interpersonal conflicts and also application of active coping strategies in the patients with hypertension can play an important part in their adherence to pharmacotherapy.

Keywords: Hypertension; Adherence to Pharmacotherapy; Interpersonal Conflicts; Depression; Coping Strategies.

INTRODUCTION

According to reliable statistics, by 2005, there was one billion people in the world suffering from hypertension, and 4 million people a year died as a result of the direct implications of blood pressure. Contemporary reports indicate that in 2010 about 1.2 billion people worldwide have hypertension, and it can be anticipated that by 2025 the prevalence of hypertension may increase by 60 percent, thus 1.56 billion people worldwide will suffer from hypertension [1].

Despite the availability of effective medications for the treatment of hypertension that the effectiveness of all of such medications has been proved, the reported rates of blood pressure control is very disappointing, and this problem has still converted the control of high blood pressure into one major public health challenge[2]. In the world, it is estimated that only 57 percent of hypertensive patients under treatment have been able to control their blood pressure [3].In recent years, the statistics released in Iran have reported worse condition, such that in investigating the prevalence of blood pressure, on average, only 36 percent of patients with hypertension [23% in men and 43% women] used blood pressure-lowering medications. Of this number, only 40% [45% in men and 39% women]have

had normal blood pressure [4].it is estimated that almost 50% of patients who blood pressure medication is prescribed for them cut the treatment within a year [5].

The body of the research indicates that interventions performed on the increased adherence to medication to control health care costs are highly critical and significant with the framework of health systems. Due to a number of factors and major challenges, and more importantly, the multi-faceted nature of the adherence to medication, interventions to improve adherence to treatment have been highly intricate [6]. Thus, many interventions designed to improve adherence to treatment and control of hypertension have not had a high impact. This may be due to the failure of the approach "one size fits all"in designing suitable strategies and interventions for reducing barriers to adherence to medication [7].Since the obstacles to medication adherence can be significantly different between different people, many researchers have concluded that the barriers to adherence in patients should be recognized through screening methods, and then designed based on those interventions to address the needs of patients [8]. Accordingly, the current article seeks to investigate personal, psychological and environmental barriers to adherence to pharmacotherapy in the patients with hypertension.

MATERIALS AND METHODS

Participants

In this cross-sectional research, 390 patients with hypertension sponsored by health centers in Isfahan [Iran] were examined. Research sampling was performed in several stages. Out of a total of 11 health centers in Isfahan, four centers [two from each region] were randomly selected and a list of registered patients with hypertension that had inclusion criteria was provided, and then the samples were randomly selected with an equal volume from each center. The selected individuals include the ones with certain diagnosis of hypertension, follow-up treatment for a period of at least one year, being older than 18 and younger than 60 years, reading and writing ability, and consumers of at least one blood pressure lowering medicine. Exclusion criteria include the verification of specific mental illnesses and dissatisfaction or low interest to participate in the study.

Data Collection Tools

Demographic factors

Information related to age, sex, marital status, education, disease diagnosis duration, and also economic status of patients were collected through the patients' self-reporting to this self-made tools.

Adherence to treatment

A variety of tools and methods to evaluate patient adherence to medication is used in the world. However, none of them is recognized as a tool and method with gold standard [9, 10].One of the common and standard methods used in the evaluation of adherence to pharmacotherapy is self-administered questionnaire, which is applied in many studies due to its low cost and limited implementation time. Moreover, according to the research performed in this area, self-administered questionnaire has a more acceptable accuracy than pill counts or biological measurement [11, 12].In the present research, to evaluate patient adherence to medication, Morisky Medication Adherence Scale [MMAS] is applied. This is one of the most common structured self-report instruments regarding adherence to pharmacotherapy in chronic diseases [13-16].MMAS is are liable tool [alpha=0.83] in the evaluation of adherence to treatment and is significantly associated with blood pressure control [15]. The tool's sensitivity or detection of low versus high levels of adherence to treatment was reported to be 93% and its specificity to be 53%. This tool has 8 items ranging from zero to eight in the form of integers. A score of >2 means low adherence, 1 or 2 shows average adherence, and 0 is considered as high adherence [17].

Beck Depression Inventory

In order to study depression level among the subjects, the short form of Beck Depression Inventory was used. The main advantage of shorter form than the long form is that, in the former, the lower duration is needed to complete the tool. The choice of material for the short form was based on the analysis, and it provided the density of the material without losing the test's stability and reliability. In this 13-item form, there are several statements, each represents a mental state in an individual, and the individual should select the best statement that can optimally show its feeling at that particular moment. The maximum score in this form is 39, and a score of 0 to 4 indicates no or minimal depression, 5 to 7 indicates mild depression, 8 to 15 indicates moderate depression and 16 and above is indicative of severe depression. The relevant version was analyzed in terms of the psychometric properties, and its validity and reliability in various studies were confirmed [18, 19].

John Henry Active Coping Scale

The scale is a 12-item form that examines a person's thoughts and actions when confronting with stressful event of adherence to treatment. Low coping is a score less than the median in the tool. The tool has been used in various

studies to evaluate adherence to treatment in the patients with hypertension. Fernandez also reported the tool's good validity and reliability [20].

Interpersonal conflict

In order to evaluate individual conflicts, Relationship Quality Index [QRI] was applied. This is a self-report instrument designed by Pierce et al [1991], and it has three subscales that can measure perceived social support from parents, wife and friends, inter-personal conflicts and the depth of relationships. The questionnaire contained 29 items, but four of them were excluded in the next edition. QRI has three perceived social support subscales [7 items], interpersonal conflicts [12 items] and depth of relationships [6 items]. The scoring in 4-point Likert scoring tool was in the form of zero [score of 0], low [score 1], moderate [score 2] or severe [score 3]. For the subscales of social support, depth of relationships and conflicting relationships, Pierce and Sarason reported the alpha coefficients of 0.86, 0.88, and 0.83, respectively. In the current research, the interpersonal conflict subscale was used among both family and friends [21].

Data Collection Method

Data collection was performed in January 2016 and within a two-month interval. Therefore, after selecting the subjects, through the experts practicing in the centers, the patients were contacted and invited to participate in the study, and in case of the patients' lack of consent, other persons were replaced.At the time of the patients' presence, the research objectives were explained and their consent to participate in the study received. The tools were completed in the presence of the data collector in a self-reporting form. After the participants completed the tools, the data collector reviewed the tools in terms of responding to all of the items.

Information Analysis Method

The patients' characteristics were calculated in two groups including low and high adherence to treatment, and Chi-square test was utilized to assess significant differences. The odds ratio (OR) of different barriers to pharmacotherapy in both groups (low and high adherence to pharmacotherapy) was investigated using multivariate logistic regression model and 95% confidence intervals. The confounding function of the factors including age, sex, and history of afflicting with disease were studied in logistic regression analysis and the adjusted analysis results were provided.

RESULTS

Out of a total of 390 patients participating in the study, the data relevant to 381 participants were studied and analyzed. The data relevant to nine of the participants were excluded due to ineligibility and erasure. The majority of the subjects were 41-50 years old (52 per cent), and 51-60 and 31-40 years old, and then, they accounted for 13 and 35 percent of our study population, respectively. 55 percent of the participants were female and 95 percent were married. 51 percent of the participants had high school level, 38 percent had primary school degrees, and 11% of them had university level education. 66% of participants reported a family history of developing hypertension. Only 12 percent of participants reported adherence to pharmacotherapy based on the scale used in the study (Table 1).

Table 2 reports the average score of active coping score, interpersonal conflicts with family, interpersonal conflicts with friends and depression among the subjects in both groups (adherence to treatment and non-adherence to treatment). In the current research, the relationship between adherence to treatment and the average active coping score, interpersonal conflicts with family, friends, and depression were examined with and without adjustment of demographic and economic variables (Table 3). Based on the results, the patients who had low scores on active coping reported greater non-adherence to pharmacotherapy(OR=0.17 95% CI 0.06-0.65). Moreover, patients who had higher depression and interpersonal conflicts with family reported higher level of non-compliance to pharmacotherapy, respectively (OR=1.50 95% CI 1.05-3.46, OR=1.99 95% CI 1.03-3.60, respectively).After controlling the demographic variables and economic factors, similar results were observed as well. Accordingly, the score of low coping, interpersonal conflicts with family, and also depression was correlated with the greater level of non-adherence to treatment. The results show a significant association between adherence to treatment and interpersonal conflicts with friends.

DISCUSSION

Patients are faced with a variety of barriers to adhere to treatment. The results obtained from the current research showed that high levels of depression and interpersonal conflicts, particularly with family members play significant parts in causing barriers to adherence to pharmacotherapy. On the other hand, the lack of use of active coping strategies can also act as another preventive factor in such adherence in the patients with hypertension. The shock caused by fear, a sense of impending death and the lack of information or uncertainty about the future of the disease

and its treatment in many cases cause inconsistencies in the patient. In addition, depression and other mental problems can contribute to inconsistent and abnormal behaviors in the patients and disruption of treatment compliance and disease management. Consistent with the current research, other studies state that adverse psychiatric reactions including depression can be one of the most common causes of chronic diseases and the patients' noncompliance with the treatment [22]. Apparently, depression and mental conflict is one of the most common reactions when faced with a crisis that could have an influential impact on crisis management [23]. In general, when encountering an illness, different people show different reactions. Personality, psychological functioning and available coping strategies play important parts in reducing psychological conflicts. It should be noted that the reactions of patients at the beginning of the disease is different with psychological incompatibility [24].

Depression can change the patient physical and mental strength, and reduce its ability for eliciting positive and effective reactions, and play influential roles on therapeutic results and disease management. The negative impacts of depression can influence some of the most fundamental factors relevant to a patient including patient's immunological responses and response to stress, its nutrition and reduced compliance of illness, weakened effort for access to treatment and medication, etc. [25]. One of the consequences of depression is that patients forget to take medication. The impact of such forgetting on the continuation of medication adherence in hypertension cases has been noted in several research endeavors, and different studies have sought to reduce such deterrent cause using various strategies [26, 7].

As stated also by other researchers, patient active coping can play an important role in reducing inconsistency to treatment adherence. Active copings causes that patients do not surrender to illness, rather they feel that they can continue normal life along with the treatment process. Che et al. state that empowerment of patients in the use of these strategies can have an important role in the management of their lives [27]. Holland points out in his study that, patients weeks or months after diagnosis apply different coping strategies and styles to combat it [28]. Thus, to continue their life, patients with chronic diseases require different strategies to manage their disease and its treatment [29]. Potter et al. believe that the different people have different coping strategies, and to manage the illness, patients take advantage of various methods and strategies based on individual situation and features. However, these strategies can play roles in their management of their treatment [30].

Table 1. Baseline characteristics of study participants (N=381)

Characteristics	N	Percentage
Age		
31-40	49	13
41-50	198	52
51-60	134	35
Sex		
Male	171	45
Female	210	55
marital status		
married	361	95
single	20	5
Education		
<High school graduate	145	38
Diploma	194	51
College graduate	42	11
Family history		
Yes	251	66
No	130	34
Number Of drugs		
<3	80	21
≥3	301	79
Duration of disease		
<5	213	56
≥5	168	44
Medication Adherence		
Adherence	35	12
Non- Adherence	336	88

Table 1. Mean±SD of barriers to Adherence to Pharmacotherapy

Characteristics	Mean±SD	
	Adherence (n=336)	Non- Adherence (n=35)
Coping	31.37±11.61	25.49±10.73
Interpersonal conflict (family)	18.34±8.49	25.19±10.36
Interpersonal conflict (friends)	15.32±8.22	16.48±9.42
Depression	7.34±3.36	9.45±5.73

Table3. Barriers to Adherence to Pharmacotherapy Factors and Medication Non-adherence

Variable	OR & CI 95% Unadjusted			OR & CI 95% Adjusted*		
	OR	**95% CI**	**P- value**	**OR**	**95% CI**	**P- value**
Coping	0.17	0.06-0.65	0.003	0.21	0.07-0.73	0.01
Interpersonal conflict (family)	1.99	1.03-3.60	0.007	2.06	1.05-5.20	0.001
Interpersonal conflict (friends)	2.31	0.81-8.72	0.07	2.33	0.83-6.80	0.23
Depression	1.50	1.05-3.46	0.003	1.25	1.11-3.06	0.03

** Adjusted for age, sex, physician gender, education, duration of disease.*

Conflicts between patients and family is another obstacle in the way of patient adherence to treatment. Patient dissatisfaction with interpersonal relations can cause negative thinking, apathy, lack of adherence to medical recommendations and the lack of follow-up treatment, which all of the factors can cause barriersto manage disease, and efforts to adhere to treatment. Other studies have confirmed that patients' dissatisfaction with family environment and supports can severely affect individuals' quality of life and their adherence to pharmacotherapy [31]. Given that the family plays the most important role in supporting the patient, lack of cooperation, integration and family's care of the patient cause the patient to feel unsupported and isolated, and ultimately this state can lead to humiliation, despair, disappointment, fear and concern for the patient. Dolder believes that family disruption may affect the admission of the disease by the patient itself and interfere with a person's ability to change lifestyle [32]. The conflicts between the patients and families along with everyday life problems cause them to pay less attention to their treatment, and this can forces patients to forget to take medications [33].

The current research had some limitations. Assessment of adherence to treatment in this study was based on self-reporting. Some studies have questioned the accuracy of self-report in the patients' adherence to treatment [34]. Because a significant number of the patients with hypertension in Iran refer to private clinics, and they are different from the patients referred to health and therapeutic centers in terms of demographic characteristics, the results obtained from the current research cannot be generalized to all patients with high blood pressure. Meanwhile, this study does not present a full picture of all barriers affecting adherence to pharmacotherapy in patients with hypertension.

To conclude, the current research results indicated that depression in patients, interpersonal conflicts and coping strategies are the most important factors inhibiting treatment adherence among the patients with hypertension. The findings obtained from this research can be utilized to plan effective interventions to reduce barriers, and then be applied to contribute to an increase in adherence to treatment in patients with hypertension in Iranian society.

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