Barriers to effective outpatient hypertension treatment: a view of physicians and patients

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Aim. To study the opinion of primary care physicians and hypertensive (HTN) outpatients with different compliance rate on factors preventing effective antihypertensive therapy (AHT).

Material and methods. Primary care physicians and HTN outpatients were questioned. Questionnaires for physicians and patients included informative and survey parts, with a list of possible factors aggravated adherence to treatment. The assessment was carried out using visual analogue scale. The patient questionnaire also included questions about AHT and the eight-item Morisky Medication Adherence Scale (MMAS-8). The calculation was carried out with a 95% confidence interval (CI).

Results. The survey involved 298 physicians and 517 patients. Among patients, about 1% had a high compliance rate, 34% — moderate, 65% — low. In all groups, AHT did not significantly differ and was characterized by a low frequency of prescribing fixed-dose combinations (27,1%). According to physicians, the most significant and equivalent are the economic aspects of treatment — 7,9±2,1 (95% CI: 7,51-8,38), the need for lifestyle change — 7,9±2,4 (95% CI: 7,37-8,38) and, to a slightly lesser extent, psychological aspects 6,8±2,2 (95% CI: 5,43-6,43). The economic aspects of treatment and need for lifestyle change were also most significant factors according to patients with high (8,8±1,8 (95% CI: 7,23-10,37) and 8,4±1,7 (95% CI: 6,93-9,87), respectively) and low (95% CI: 6,4±3,0 (5,65-7,07) and 6,2±2,8 (95% CI: 5,5-6,82) respectively) compliance rates. For patients with moderate compliance rate, the most significant and almost equivalent factors were the need for lifestyle change — 5,6±3,3 (95% CI: 4,53-6,71), the need for regular visits — 5,6±3,1 (95% CI: 4,53-6,58) and the need for self-management — 5,6±2,8 (95% CI: 4,63-6,48).

Conclusion. The results obtained make it possible to forecast the compliance rate of patients with HTN, and, therefore, direct more efforts to those with a low rate, thereby increasing the effectiveness of AHT.

Key words: hypertension, antihypertensive therapy, adherence to treatment, questionnaire, economic aspects of therapy.

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Achieving a target level of blood pressure (BP) is critical to reducing the risk of cardiovascular events (CVE) and improving the prognosis in patients for hypertension (HTN) [1]. However, in actual clinical practice, only about a third of patients receiving antihypertensive therapy (AHT) reach BP <140/90 mm Hg and a little more than 10% — <130/80 mm Hg. [2]. Inadequate control of BP may be due to medical influence (irrational AHT, insufficient dosing, low frequency of using fixed-dose combinations (FDC), etc.), as well as factors related to patients. First of all, this regards to a low adherence to treatment, expressed in non-compliance or incomplete compliance with prescribed AHT, which, in turn, is influenced by various aspects of pharmacotherapy and personal characteristics of patients [3]. The present work is devoted to the study and evaluation of these factors.

The aim was to study the opinion of primary care physicians and HTN outpatients with different compliance rate on factors preventing effective AHT.

Material and methods

The multicenter (18 ambulatory clinics of Volgograd and Volzhsky) open-label observational study was performed. A voluntary, anonymous survey of primary care physicians, cardiologists and HTN outpatients was conducted. Doctors completed the questionnaire independently. Questioning of patients was carried out by doctors in the same health facilities after completing the informed consent. The questionnaires were based on questions similar to those used in the previous studies [4]. The questionnaire for medical practitioners consisted of two sections. The first was informational in nature and consisted of questions about demographics (sex and age) and work experience. In the second section, a list of possible factors lowing patient compliance with the prescribed treatment was proposed. Respondents were asked to determine the level of significance of each of them. Evaluation of these factors was carried out using visual analogue scale (VAS), where 0 was considered as the minimum and 10 as the maximum value. The content of this section corresponded to the same section in the patient questionnaire. The questionnaire for patients with HTN consisted of three sections. The first included questions about socio-demographic data (sex, age, education, marital status, social status, financial standing, presence/absence of disability, and questions on the AHT). These questions were clarified, if necessary, by the questioning doctors. The second section included the eight-item Morisky Medication Adherence Scale [5, 6], which is necessary for assessing medication adherence. The results of this test were evaluated as follows: 1 point was awarded for each negative answer, except for the question of taking all drugs yester-

day — 1 point was given for a positive answer to this question. In the question, how often do you have difficulty remembering to take all your medications, 1 point was awarded only for the answer "never". Patients who scored 8 points had high adherence, those with 6-7 points — medium adherence, and those with 5 or less points — low adherence. In the third section of the questionnaire, it was proposed to evaluate the significance of factors that, in the opinion of patients, prevent medication compliance. The assessment was carried out using VAS, in which 0 was taken as the minimum, and 10 as the maximum value. This section for patients corresponded in content to the second section for doctors and was intended to assess the agreement between the opinions of practitioners and patients regarding the main issues of HTN treatment. The inclusion criteria were as follows: signed informed consent; age >18 years; verified HTN and taking AHT. There were following exclusion criteria: not signed informed consent; age <18 years; hospitalization due to cardiovascular disease over the past 3 months (including revascularization), severe clinical course and/or severe decompensated heart failure (HF), chronic kidney disease, liver failure, cognitive impairment, symptomatic hyperuricemia/gout, pregnancy, lactation. The data of patients as a whole and in subgroups with different medication adherence rates were analyzed. For data assessing, descriptive statistics were used: proportions (%), mean (M), standard deviation (σ). The calculation was carried out with a 95% confidence interval (CI). Assessment of the normality of the distribution was carried out using the Kolmogorov-Smirnov test. For the normally distributed traits, independent-samples Student's t-test was used to assess the statistical significance of differences. For the non-normally distributed traits, the nonparametric Mann-Whitney U-test was used. To assess the statistical significance of differences in qualitative traits, the Pearson's chi-squared test was used. Statistical processing was performed using the software package BIOSTAT and SPSS 16.0.

Results

The survey involved 298 primary care physicians (112 men and 186 women) with mean age 45,6±11,6 years (95% CI: 43,28-47,87) and mean work experience 21,5±11,9 years (95% CI: 19,13-23,89). The study also included data of 517 patients (176 men and 341 women) who met the inclusion criteria. The mean age of the patients was 61,8±12,3 (95% CI: 59,53-64,15) years. Table 1 presents data for the studied population of HTN patients as a whole and in groups with different medication compliance rate. Groups were comparable with respect to age and sex (p>0,05). The results of a survey using MMAS-8 are

Table 1

Data of patients in general study population and in subgroups with different medication adherence rate

Parameter	General study population	Subgroups with different medication adherence rate according to MMAS-8*		
		High, 8 points	Medium, 6-7 points	Low, 0-5 points
Proportion, % (n)	100 (517)	1 (5)	34 (181)	65 (331)
Demographic information				
Male/Female, % (n)	34/66 (176/341)	40/60 (2/3)	27,6/72,4 (50/131)	36,0/64,0 (119/221)
Age, years (M±σ)	61,8±12,3	60,4±11,3	63,4±13,4	61,1±11,8
Social information				
Higher education, % (n)	39,8 (206)	40 (2)	38,9 (70)	1,5 (5)
Intermediate vocational education, % (n)	59,2 (306)	60 (3)	61,1 (111)	58,2 (193)
Basic general education, % (n)	0,97 (5)	-	-	40,3 (133)
Marital status				
Married, % (n)	67,0 (346)	100 (5)	69,4 (126)	65,8 (218)
Divorced, % (n)	9,7 (50)	-	5,6 (10)	10,4 (34)
Widowed, % (n)	8,7 (45)	-	19,4 (35)	11,9 (39)
Single, % (n)	14,6 (76)	-	5,6 (10)	11,9 (39)
Social status				
Working, % (n)	32 (165)	40 (2)	30,6 (55)	32,8 (109)
Unemployed pensioner, % (n)	47,6 (246)	40 (2)	52,8 (96)	44,8 (148)
Employed pensioner, % (n)	20,4 (106)	20 (1)	16,6 (30)	22,4 (74)
Disability				
Disability, % (n)	17,4 (90)	-	11,1 (20)	21,2 (70)

Disability category, % (n)	I	II	III	I	II	III	I	II	III	I	II	III
	-	14,5 (75)	2,9 (15)	-	-	-		100 (20)			78,6 (55)	21,4 (15)

Parameter	General study population	High, 8 points	Medium, 6-7 points	Low, 0-5 points
**Financial standing **				
Above the average, % (n)	0,97 (5)	-	2,8 (5)	-
Average, % (n)	84,5 (437)	100 (5)	91,7 (166)	80,6 (267)
Below the average, % (n)	14,6 (75)	-	5,6 (10)	19,3 (64)
Numbers of antihypertensive agents				
Average (M±σ)	2,9±1,1	2,0±1,4	2,6±0,9	2,6±1,0
One agent, % (n)	9,7 (50)	0	8,3 (15)	10,6 (35)
Two agents, % (n)	38,1 (197)	60 (3)	36,0 (65)	38,0 (126)
Three agents, % (n)	35,0 (181)	40 (2)	39,2 (71)	31,7 (105)
Four or more agents, % (n)	17,2 (89)	0	16,7 (30)	19,6 (65)
Prevalence of fixed-dosed combinations				
Number of administrations, % (n)	27,1 (140)	40 (2)	28,7 (52)	26,0 (86)

Note: * — MMAS-8 — 8-item Morisky Medication Adherence Scale, ** — subjective patient's opinion about his material well-being.

presented in Table 2; an analysis of the data obtained is shown in Table 3. It was found that the proportion of patients with a high medication adherence was about 1% (n=5). Medium adherence was noted in 34% (n=176) of patients. The remaining 65% (n=336) of patients had a low medication adherence. Most patients had an intermediate vocational training. In the group with a low adherence, the proportion of patients with higher education was 1,5% (n=5), which is significantly lower compared to other groups

Table 2

Eight-item Morisky Medication Adherence Scale (MMAS-8). Patient survey results

Questions that suggest discrete answers		
Questions	Answers, %	
	Yes	No
Do you sometimes forget to take your antihypertensive medications?	31,1	68,9
Thinking over the past two weeks, were there any days when you forget to take your antihypertensive medications?	33	67
Have you ever cut back or stopped taking your medication without telling your doctor, because you felt worse when you took it?	37,9	62,1
When you travel or leave home, do you sometimes forget to bring along your medication?	36,9	63,1
Did you take your medicine yesterday?	93,2	6,8
When you feel like your blood pressure is under control, do you sometimes stop taking your medicine?	46,6	53,4
Do you ever feel hassled about sticking to your antihypertensive treatment plan?	44,7	55,3
A question that involves choosing one of the options		
How often do you have difficulty remembering to take all your antihypertensive medications?		
Never	49,5	
Once in a while	26,2	
Sometimes	18,4	
Usually	3,9	
All the time	1,9	

Table 3

Assessment of adherence rate according to 8-item Morisky Medication Adherence Scale (MMAS-8)

Score, adherence rate	Proportion of patients, % (n)
8 points, high	1 (5)
7 points, medium	4,3 (22)
6 points, medium	29,8 (154)
5 points, low	17,8 (92)
4 points, low	17,9 (93)
3 points, low	11,8 (61)
2 points, low	13,3 (69)
1 point, low	3,9 (20)
0 point, low	0,2 (1)

(p<0,01), while the proportion of basic general education was significantly greater (40,3%; n=133) than in other groups (p<0,01). All groups were dominated by married persons. In the studied population, unemployed pensioners prevailed — 47,6% (n=246). There were no significant differences in relation to this parameter between groups. There were 17,4% of patients with disabilities, and their largest proportion (21,2%; n=70) was noted in the low adherence group (p<0,05). None of the groups revealed individuals with category I disability. There were no disabled patients in high adherence group. Majority of respon-

dents rated their financial standing as average (84,5%), however, in the low adherence group, the percentage of people who rated their financial situation as lower than average was significantly higher — 19,3% (n=64) than in other groups (p<0,05). To assess the possible effect on the opinion of patients, characteristics of AHT was studied, which did not have significant differences in the groups. Dual and triple AHT was most frequently prescribed — 38,1% (n=197) and 35,0% (n=181), respectively. The prevalence of FDC was extremely low in all groups. These drugs have been used in less than a third of patients. Assessment of factors affecting AHT, according to physicians and patients, is presented in Table 4. According to physicians, the most significant and equivalent are the economic aspects of treatment — 7,9±2,1 (95% CI: 7,51-8,38), the need for lifestyle change — 7,9±2,4 (95% CI: 7,37-8,38) and, to a slightly lesser extent, psychological aspects 6,8±2,2 (95% CI: 5,43-6,43). The lowest meaning had insufficient knowledge of patients about their disease — 5,5±2,3 points (95% CI: 5.05-6.01). The economic aspects of treatment and need for lifestyle change were also most significant factors according to patients with high (8,8±1,8 (95% CI: 7,23-10,37) and 8,4±1,7 (95% CI: 6,93-9,87), respectively) and low (95% CI: 6,4±3,0 (5,65-7,07) and 6,2±2,8 (95% CI: 5,5-6,82) respectively) compliance rates. For patients with moderate compliance rate, the most significant and almost equivalent factors were the need for life-

Table 4

Assessment of factors affecting antihypertensive therapy according to physicians and patients

Factors	Physicians		Patients							
	Score, M±σ (95% CI)	Factor rank	General study population		Subgroups with different medication adherence rate					
			Score, M±σ (95% CI)	Factor rank	High rate		Medium rate		Low rate	
					M±σ (95% CI)	Factor rank	M±σ (95% CI)	Factor rank	M±σ (95% CI)	Factor rank
Insufficient patient knowledge about the disease	5,5±2,3 (5,05-6,01)	8	4,7±3,3 (4,07-5,33)	7	5,8±4 (2,33-9,27)	6	5,1±3,3 (3,91-6,04)	7	4,5±3,4 (3,67-5,28)	7
Inadequate patient awareness about possible complications	5,9±2,4 (5,43-6,43)	6	4,9±3,2 (4,31-5,54)	6	7,6±2,5 (5,4-9,8)	3	5,2±3,2 (4,16-6,23)	6	4,6±3,3 (3,8-5,36)	6
Need for regular office visits	5,9±2,4 (6,37-5,37)	7	5,6±3,1 (5-6,15)	3	5,6±3,8 (2,29-8,91)	7	5,6±3,1 (4,53-6,58)	2	5,6±3,0 (4,86-6,31)	3
Need for self-management	6,3±2,4 (5,79-6,79)	4	5,4±2,9 (4,85-5,93)	5	7,6±2,6 (5,31-9,89)	4	5,6±2,8 (4,63-6,48)	3	5,1±2,8 (4,45-5,82)	5
Need for regular drug taking	6,2±2,7 (5,62-6,74)	5	5,5±3,1 (4,89-6,06)	4	7,4±2,6 (5,11-9,69)	5	5,3±3,3 (4,21-6,34)	5	5,4±3,1 (4,7-6,17)	4
Need for lifestyle change	7,9±2,4 (7,37-8,38)	2	6,1±3,3 (5,53-6,64)	2	8,4±1,7 (6,93-9,87)	2	5,6±3,3 (4,53-6,7)	1	6,2±2,8 (5,5-6,82)	2
Psychological problems	6,8±2,2 (6,35-7,25)	3	4,7±3,4 (4,13-5,26)	8	5,8±3 (3,14-8,46)	8	5,0±3,1 (4-6)	8	4,4±2,9 (3,74-5,15)	8
Economic aspects of treatment	7,9±2,1 (7,51-8,38)	1	6,2±3,2 (5,56-6,77)	1	8,8±1,8 (7,23-10,37)	1	5,4±3,6 (4,27-6,61)	4	6,4±3 (5,65-7,07)	1

Abbreviations: M — mean, σ — standard deviation, CI — confidence interval.

style change — 5,6±3,3 (95% CI: 4,53-6,71), the need for regular visits — 5,6±3,1 (95% CI: 4,53-6,58) and the need for self-management — 5,6±2,8 (95% CI: 4,63-6,48). Lower meaning had economic aspects of treatment — 5,4±3,6 points (95% CI: 4,27-6,61). Patients of all groups rated the insufficient knowledge about their disease and psychological aspects as the least significant factors. Groups with low and medium medication adherence had significant difference regarding the value of need for lifestyle change (χ^2=11,012; d.f.=9; p<0,05). No significant intergroup differences with respect to other factors were found.

Discussion

The practitioners participated in this study mainly had a long-term work experience, which gives reason to consider the information obtained as objective. The demographics of patients in subgroups with different adherence rates did not significantly differ. In all compared groups of patients, AHT did not have significant differences. Dual and triple AHT were prescribed most frequently, at the same time, the prevalence of using FDC was extremely low. Noteworthy is the quantitative dis- proportion of groups with high and low medication adherence (1% and 65%, respectively). This is probably due to the fact that the majority of HTN participants had features that did not allow them to achieve a high adherence. This may be due to low level of education, which can lead to a misunderstanding of the need to comply with medical recommendations, reassessment of one's own knowledge in medicine, and, consequently, propensity to self-medication. Perhaps these factors explain the unexpected low number of patients with high adherence and the significant socio-economic differences in low adherence group (lower level of education, lower financial standing, higher number of disabled patients). The dependence of adherence rate on the level of education (the higher the level of education, the higher the medication adherence rate) was demonstrated in earlier studies [7]. According to physicians, the most significant factors preventing effective therapy were the economic aspects of treatment and, equally, the need for lifestyle change, as well as the mental problems. According to patients, economic aspects of treatment and, equally, the need for lifestyle change were the most significant factors. The value of these factors in the subgroups had

some differences. For patients with medium medication adherence, the most significant were the need for lifestyle change and for self-monitoring during treatment and, to a lesser extent, the need for regular physician office visit. The economic aspects of treatment were in fourth place. In patients with low adherence, economic aspects of treatment were the most important, followed by the need for lifestyle change and for regular physician office visit. Perhaps it is precisely the socio-economic vulnerability of these patients that affected the results of the study. In contrast to the physicians' opinion regarding the importance of psychological aspects, patients themselves, regardless of the adherence rate, rated this factor as the least significant. The influence of psychological factors on medication adherence was noted in other studies [8]. Both among practitioners and patients, insufficient knowledge about the disease had a low value. In previous studies [4], dissociation was revealed regarding the importance of economic aspects, which physicians considered the most significant, and patients put them only in the 5th place. In our study, both physicians and most patients rated this factor as the most significant, as well as the need for lifestyle changes. Thus, at present, the opinion of doctors and patients on AHT have become more consolidated.

Conclusion

According to most physicians and patients, the economic aspects of treatment and the need for lifestyle change are the most significant factors preventing effective AHT. Most patients had a low medication adherence rate. Among them, the smallest proportion of people with higher education was noted; one fifth of these patients rated their financial standing below the average level and the same proportion were disabled. In addition, psychological problems were considered by physicians as one of the most significant factors of ineffective treatment. However, patients rated this factor as the least significant. The results obtained make it possible to form a preliminary judgment on the expected level of adherence of patients with AH, and, therefore, direct more efforts to work with patients with a low level of adherence, thereby increasing the effectiveness of AHT.

Relationships and Activities: not.

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