52

RESEARCH ARTICLE

Treatment Assessment Among Hypertensive Patients of a Rural Polyclinic in Russia: The Results of Structured Questionnaire

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Abstract:

Background:

Information on treatment obtained from hypertensive patients could add the data of medical records and reveal the problems addressed to hypertensives' attitudes and behavior.

Objective:

To evaluate patients' knowledge on hypertension and treatment behavior at a rural polyclinic with the help of structured questionnaire.

Methods:

We interviewed 83 patients with essential hypertension (64.6±9.6 yo; 30% - men) who referred to a polyclinic of a rural settlement in the Saratov region of the Russia. Consecutive patients with hypertension diagnosis specified in their medical records, visiting a therapeutist or cardiologist on one randomly selected workday, were enrolled in our study. The appointment took place during 1-31 July 2015. Eleven district therapeutists, two general practitioners and the only cardiologist of the polyclinic participated in the study. Structured questionnaire for patients with elevated Blood Pressure (BP) proposed by S.N. Gerasimov *et al.* (2015) was used for interviewing. The questionnaire included 16 questions addressed to the following issues: Awareness of hypertension and risk factors, BP self-monitoring, non-pharmacological and pharmacological treatment, adherence to antihypertensive therapy, referrals to medical care.

Results:

Ninety percent of respondents have known previously about BP elevation. Ninety four percent of patients had a tonometer at home. Eighty four percent of hypertensives measured their BP no rare than once a week, and fifty four percent did it every day. Eighty eight percent of study participants took antihypertensive drugs regularly. Only 36% of patients could be classified as adherent to therapy according to the Morisky-Green scale. Ninety two percent of respondents received one or more advices on lifestyle modification. Eighty two percent underwent diet counseling. Two-third of participants were advised to reduce their weight. About half of hypertensives were asked by the doctor to increase their physical activity. One-third of patients received smoking cessation advice, and the same part of enrollees received advice on alcohol consumption. The majority of patients (62.7%) were interested in organization of special follow-up program.

Conclusion:

With the help of structured questionnaire we revealed high frequency of BP self-measurement among visitors of rural polyclinic in Saratov region whereas the adherence to antihypertensive medication was low. We observed good level of knowledge on non-pharmacologic treatment interventions and revealed patients' interest in special follow-up program. Such program should be addressed to the increase of patients' adherence to treatment.

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1. INTRODUCTION

Hypertension (Htn) remains one of the most widespread Cardiovascular Diseases (CVD). Even taking into account the variety of antihypertensive drugs only one third of patients in Europe achieve a stable decrease of Blood Pressure (BP) to goal values [1]. According to Htn Register organized on the instructions of Health Department of the Russian Federation 44% of hypertensives have achieved goal BP [2].

Low rate of goal BP achieving is conditioned to a considerable degree by insufficient patients' adherence to treatment.

One of the factors decreasing patient's adherence to treatment is the absence of regular feedback with a physician. Benefit of increase of active contacts between physician and hypertensives (including remote contacts) was shown in the study made in Saratov: number of patients who achieved goal BP after 12 months of participating in remote monitoring program on basis of short message service of mobile communication had increased from 13% to 77% [3]. In the course of the study regular acquisition of structured information about BP level, smoking and body weight was organized. The study was conducted using the facilities of one of the cardiologic hospitals. However, most of the hypertensives take medical treatment in primary care medical institutions where it is difficult to organize such a monitoring as a result of different factors relating to limited financial and human resources. In connection with it the development of an instrument allowing to carry out regular acquisition of structured information from a patient in the course of standard medical consultation with district physician or polyclinic cardiologist is quite interesting.

Previously primary care specialists under the guidance of Saratov Institute of Cardiological Research developed questionnaire for estimation of hypertensives' awareness of their illness, risk factors, treatment and BP control [4]. The objective of this study was to apply the questionnaire for hypertensive patients of one of the Saratov region polyclinics to reveal fields of perfection of the treatment.

2. MATERIAL AND METHODS

83 patients (mean age 64.6±9.6 yo, 30% males) with the diagnosis of Htn in ambulatory card who referred consecutively to the polyclinic of workers settlement of Saratov Oblast during the period from 01 July 2015 to 31 July 2015 were interviewed. The following inclusion criteria were employed: Age ≥18 yo, diagnosis of Htn in ambulatory card, residency at the care area of the polyclinic. Exclusion criterion: Secondary Htn. Confirmation of the diagnoses of essential or secondary Htn was not conducted in the present study. Only diagnoses documented in patients' ambulatory cards were used as inclusion / exclusion criteria.

Five more patients fit for inclusion/exclusion criteria refused to participate in the interview.

Ambulatory questionnaire for patients with elevated BP developed by S.N. Gerasimov *et al.* (2015) was used [4]. The questionnaire included 16 questions organized in the following panels: patients' awareness of their illness and risk factors, BP self-monitoring, conducted treatment, adherence to antihypertensive therapy, referrals to medical care (see Appendix). The Morisky-Green scale was used to estimate patients' adherence to the treatment. The CAGE questionnaire was adopted for detection of excess alcohol consumption. All the patients were also asked if they wanted to participate in special follow-up program for hypertensives to find out their interest in such an initiative. The participation in the interview was anonymous.

3. RESULTS

The clinical traits of the study group are presented in Table **1**. The data of the interview are presented in Table **2**.

Table 1. Clinical traits of hypertensive patients of saratov oblast polyclinic.

Parameter	Value
Age, years (M±SD)	64.6±9.6
Males, %	30.0
Coronary artery disease, %	80.7
Stable angina, %	18.2
Myocardial infarction, %	17.0

(Table 1) contd.....

Parameter	Value
Chronic heart failure, %	57.9
Ischemic stroke, %	2.3
Atrial fibrillation, %	9.1
Diabetes mellitus, %	4.5
Systolic blood pressure, mm Hg (M±SD)	135.5 ±18.8
Diastolic blood pressure, mm Hg (M±SD)	80.3 ±10.3
Heart rate, bpm (M±SD)	72.7 ±7.1
Height, sm (M±SD)	164.1±10.0
Weight, kg (M±SD)	79.5 ± 12.7
BMI, kg/m^2 (M±SD)	29.1 ± 2.3
Left ventricle hypertrophy on electrocardiogram, %	14.7
Ejection fraction, % (M±SD)	63.5 ± 10.5
Total cholesterol, mg/dl (M±SD)	201.8 ± 42.6
Low density lipoprotein, mg/dl (M±SD)	82,2 ± 7.5
Triglycerides, mg/dl (M±SD)	71.7 ± 16.0
Glucose, mmol/l (M±SD)	6.2 ± 1.9
Creatinine, mg/dl (M±SD)	1.1 ± 0.3
Creatinine clearance, ml/min/1.73 (M±SD)	67.0 ± 19.1
Urea, mmol/l (M±SD)	5.6 ± 1.5
Hemoglobin, g/l (M±SD)	134.2 ± 15.4
Proteinuria, %	2.0
Statins, %	42.0
Aspirin, %	53.4

Comment: The data are presented as a mean with standard deviation (M±SD) for continuous variables, and as a frequency (percent) for categorical variables.

Table 2. Results of the structured interview of hypertensive patients of saratov oblast polyclinic.

Parameter	Value
Awareness of BP elevation, %: - aware - not aware - unable to answer	90.4 7.2 2.4
Availability of tonometer, %	94.0
Frequency of BP self-measurement, %: - every day - not every day, but every week - not every week, but every month - less than once a month, but more than once in 3 months - less than once in 3 months - unable to answer	54.2 30.0 11.0 2.4 2.4
Intake of antihypertensive drugs in the course of last 12 months, %: - regularly - occasionally	88.0 12.0
Average number of medications taken, abs. (M ± SD)	1.8±0.96
ACE-inhibitors, %	43.4
ARBs, %	30.2
Beta-blockers, %	32.1
Diuretics, %	32.1
Calcium antagonists, %	37.7
Adherence to the treatment (Morisky-Green scale), %: - adherent (4 points) - insufficiently adherent (3 points) - not adherent (≤ 2 points)	36.2 13.3 50.5

(Table 2) contd.....

Parameter	Value
Number of hospitalizations for last 12 months, % - 3 or more - 2 - 1 - 0	2.4 3.6 20.5 73.5
Number of emergency calls for last 12 months, % - 3 or more - 2 - 1 - 0	11.1 8.5 22.0 58.5
Advices on lifestyle modification, %: - eating - physical activity - weight reduction - smoking cessation - alcohol consumption reduction - no advices	81.9 55.4 66.3 27.7 26.3 8.4
Smoking, %	8.4
Alcohol consumption, %: - never - once a month or rarer - 2-4 times a month - 2-3 times a week - 4 or more times a week - unable to answer	34.0 41.0 4.0 1.0 3.0
Interested in special follow-up program, %	62.7

Comment: The data are presented as a mean with standard deviation (M±SD) for continuous variables, and as a frequency (percent) for categorical variables.

In the course of the study, it was established that 90% of interviewed hypertensives had known about BP elevation. Almost all of the patients (94%) had tonometer at home. More than half of the patients (54%) monitored their BP level on a daily basis, 30% of the patients did it every week. Only 5% of the interviewed patients measured their BP level rarer than once a month.

88% of the interviewed hypertensives reported that they took antihypertensive drugs regularly. However, according to the Morisky-Green scale only 36% of the patients could be considered adherent to treatment, 13% turned out to be insufficiently adherent to the treatment, 51% were not adherent to it.

Most of the patients took ACE-inhibitors or ARBs as a remedy against Htn – more than 70% of the interviewed patients were treated with them. Other types of the antihypertensive drugs were used with relatively the same frequency: 32% of the patients regularly took beta-blockers, the same percentage took diuretics, 38% of the hypertensives were treated with calcium antagonists.

In spite of conducted drug therapy, 42% of the patients had to call an ambulance at least once for the last year in connection with destabilization of condition, and 26% of the patients were hospitalized with cardiac pathology.

Most of the patients (92%) reported that they had been recommended previously on changing their lifestyle. The recommendations were most frequently connected with eating and weight: 82% of the patients had recommendations on diet, and 66% on weight control. Fifty five percent of the hypertensives had been recommended to change their physical activity. Counseling on hazard of smoking and alcohol consumption was conducted to 28% and 26% of hypertensives respectively. At the same time, only 8.4% of the patients smoked, and 6% took alcoholic drinks more frequently than once a month, but no one of them took high doses of alcohol.

About 63% of the patients were interested in taking part in special follow-up program for hypertensives.

4. DISCUSSION

The study showed that hypertensives who referred to the polyclinic were well-informed about their illness and conducted self-monitoring of the treatment carefully: they had tonometers at home and measured BP at regular basis. The received results agreed with the data of the RELIPH research carried out in 2006 and even exceeded them in part of BP self-monitoring frequency: 68.5% of the RELIPH participants measured their BP at least once a week while in this

study 84% of the patients did [5]. It is significantly higher than in the study by Kisokanth G *et al.* [6] in which 92.0% of patients have reported that they have not checked their blood pressure at home Information about the results of BP self-measurement should be used, undoubtedly, by the polyclinic doctor in charge for control of the treatment efficiency and the patient's prognosis. According to the latest European clinical guidelines, BP monitoring at home as compared with office measurements allows to prognosticate more precisely onset of cardiovascular diseases and death as a result of them. This method is recommended for usage in primary care to optimize case monitoring [7].

In spite of increase of patients' attention to their BP level, the interview showed that most of the hypertensives weren't sufficiently adherent to the drug treatment. Almost two thirds of the participants had ≤ 3 points according to the Morisky-Green scale and only 36% of the patients could be considered adherent to the therapy. The results agreed with the data of the ARGUS-2 research, carried out 10 years ago, in which 37% of the patients had 4 points according to the Morisky-Green scale [8] and with the study by Lyalomhe G.B.S. & Lyalomhe S.I [9]. in which 33.3% of hypertensive patients living in sub-urban Nigerian community were adherent with treatment. According to results of RELIPH (*transliteration:* "Regularnoye Letcheniye I ProPHylaktika; *translation:* "Regular Treatment and Prevention") research published in 2008, only 3.3% of patients did not miss intake of drugs, while more than 50% of hypertensives took medications only at BP elevation [10]. According to the study in one of Moscow cardiologic prophylactic centers 25.1% of patients in 6 months after primary medical consultation regularly missed taking of medications. Main reasons for irregular intake of antihypertensive drugs were patient's feeling of well-being and forgetfulness (73% and 30.9% respectively). More rare (21.7% of cases) cause of irregular treatment was high cost of treatment. In group of patients who took antihypertensive drugs regularly 32.3% of hypertensives had achieved goal BP. Patients with irregular intake of medications showed goal values of BP two times rarer, only in 15.8% of cases [11]. It is noteworthy that both above-mentioned studies testify that cost of antihypertensive drugs isn't the main cause of non-optimal treatment. It can be concluded that adherence to the treatment is the most complicated problem of hypertensives' long-term treatment in primary care and effective methods of its increase are still not adopted into clinical practice.

Most of the hypertensives (about 92%) who took part in the interview had received one or more advices on improvement of their lifestyle in the polyclinic. The most frequent (for about 82% of the patients) doctor's recommendation was about rational nutrition. Two thirds of the patients reported that they had been recommended to reduce their weight. Advices on physical activity had been given to more than half of the interviewees. Counseling on rational alcohol consumption and hazard of smoking were carried out with one third of the patients. In spite that the polyclinic physicians gave quite a consideration to certain non-drug methods of treatment it still wasn't enough. According to clinical recommendations in effect all the patients with diagnosis of Htn should receive advices on all of the above-mentioned risk factors [7, 12]. Moreover, it is necessary to control thoroughly the dynamics of lifestyle parameters in the course of the case monitoring in a polyclinic, as lifestyle modification is long-term and difficult-to-control process which requires a lot of will efforts from a patient. Owing to weak motivation and quick loss of interest measures of the lifestyle modification frequently do not give tangible result comparable with effectiveness of rightly selected drug therapy. Nevertheless, control of the lifestyle factors proved convincingly its benefit in relation to BP level decrease in the course of the specially designed research (class I, A level) [7].

It's worth noting that the target sample showed favorable profile of such risk factors as smoking and alcohol consumption. Only about 8% of the hypertensives smoked, and less than a third of them took alcoholic drinks more frequently than once a month. It is connected, obviously, to the fact that most of the interviewees were females of retirement age. It raises the issue about necessity of these very questions in the questionnaire as well as questions about specific risk factors in general, since information obtained as a result is fragmentary, for the questionnaire doesn't include questions about physical activity, weight, eating habits. Perhaps, it would be more useful to personalize this field of information, *i.e.* to reflect it directly in the patient's ambulatory card in the course of medical consultation and then check its usage by the doctor in charge for the case monitoring and follow up dynamics of risk factors in long-term period. It will become undoubtedly the subject of our further research.

Overall, the research showed that females of retirement age give great consideration to their health state. They turned out to be overwhelming majority among the polyclinic visitors and among the interviewees as well. So they should be the object of measures on increase of adherence to the drug therapy. Physicians need to use numerous results of BP self-measurement at home for timely correction of ineffective treatment regimen and to approach more accurately issues of lifestyle improvement. It is necessary at each medical consultation to reflect in the ambulatory card the patient's weight and physical activity level, to motivate the patient to keep eating diary and analyze it together with her or him, to inquire the smoking patients about number of cigarettes smoked and the alcohol-abusive ones about amount

of alcohol consumed according to the CAGE questionnaire. It should be remembered that the long-term monitoring within organized treatment monitoring system at ambulatory stage supplemented with self-monitoring is considered the most effective in respect of BP control for hypertensives. In the systematic review of 72 randomized controlled studies conducted in 2010, these activities were associated with reliable decrease of BP level and frequency of cardiovascular changes [13]. In the course of our research almost two thirds of the patients were interested in the special follow-up program.

As concerns to the applied questionnaire it is undoubtedly quite interesting both for the science and for medical practitioner. However, for systematical use in clinical practice it should be personalized and supplemented with questions on all risk factors under control. After that it can be applied by a polyclinic physician in the course of a patient's case monitoring providing necessary information in a structured view. At this stage it helped to get a picture of Htn treatment at the polyclinic from a patient's view. By comparing it with previously received results of analysis of ambulatory cards [14], it becomes possible to work out measures on improvement of medical care of hypertensives in the specific primary care institution. For example, it is reasonable to organize in the polyclinic special monitoring system for hypertensives to carry out systematic control of amendable risk factors and taking antihypertensive drugs. Patient's self-monitoring diaries (of blood pressure, weight, physical activity, number of cigarettes smoked, amount of alcohol consumed, eating and intake of antihypertensive drugs) should be the basis of the monitoring system. Precise protocol of long-term monitored hypertensive's consultation should be prescribed for the polyclinic physicians.

CONCLUSION

The developed questionnaire allowed to supplement the information of ambulatory cards about the hypertensives' treatment at primary care. It established high frequency of BP self-monitoring, patients' low adherence to the prescribed antihypertensive therapy and their awareness about main non-drug remedial measures. The received information confirmed the necessity of special follow-up program organization to systematize medical care of the hypertensives at the polyclinic and to increase their adherence to the treatment.

LIMITATIONS

Relatively small sample size in our study as well as descriptive cross-sectional design affected the generalizability of our findings.

In the present study patients were enrolled consecutively during one summer month. The causes of visits to the polyclinic as well as duration of hypertension were not analyzed. Thus, we not sure that study sample represent the total population of hypertensives in this sub-urban area.

It should be mentioned that there were few males of working age among the interviewees. At the same time the cohort causes the greatest concern at population level as it has extremely high mortality. In connection with it, it would be reasonable to apply the developed questionnaire for this category of the patients while also to give consideration to measures on involvement of male working population to primary care and their inclusion into prophylactic medical examination and particularly to increase of interest to their health and responsibility for it. Such risk factor as stress is of particular concern for the cohort especially in the present conditions of unstable economics of the Russian Federation. The role of the stress in real clinical practice should be studied in the course of further research.

In the present study hypertension-related knowledge of patients, their perceptions and attitudes, as well as risk factors were out of scope of the research.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study was approved by the ethics institute of saratov state medical university H, A, V, I. Razumovsky in Saratov, Russia.

HUMAN AND ANIMAL RIGHTS

No animals were used in this research. All research procedures followed were in accordance with the ethical standards of the committee responsible for human experimentation (institutional and national), and with the Helsinki Declaration of 1975, as revised in 2008 (http://www.wma.net/en/20activities/10ethics/10helsinki/).

CONSENT FOR PUBLICATION

Informed consent was obtained from all participants.

CONFLICT OF INTEREST

The authors testify that the article content has no conflict of interest. The authors have not received any financial support for the preparation of this manuscript.

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