ADHERENCE TO TREATMENT AMONG HYPERTENSIVE PATIENTS AS A RESULT OF SPECIALISED PHARMACEUTICAL CARE

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ABSTRACT

Arterial hypertension (AH) is one of the main risk factors for cardiovascular diseases and mortality among the population. Major problems in treating hypertension are the lack of adherence and poor blood pressure control.

Purpose: To study the level of adherence to pharmacotherapy among hypertensive patients after the provision of specialised pharmaceutical care.

Materials/Methods: Pharmaceutical care has been provided through a custom-made algorithm for consulting hypertensive patients, designed by the authors. Community pharmacists, involved in the study, have been trained in advance to provide specialised pharmaceutical care to hypertensive patients. A direct anonymous questionnaire has been delivered to hypertensive patients. The questionnaire consists of two parts. The first part includes questions about demographic details, lifestyles, the frequency of blood pressure measurement, etc., and the second part is a validated tool - the Morisky Medication Adherence Scale.

Results: The study involved 50 patients with AH: 53% women and 47% men. After pharmaceutical care was provided through the established algorithm, 84% of the surveyed patients reported having no difficulties in the use of the prescribed medicines, and only 16% reported difficulties. Good management of blood pressure was observed in 73% of the respondents, while poor control was reported in only 27%. The Morisky coefficient for the study group was 3.74, at a maximum score of 4, where the score for men was 3.75 and for women – 3.72.

Conclusions: The studied sample group shows a very high level of adherence to the treatment and hence good blood pressure control. It can be assumed that the achieved outcomes are due to the specialised pharmaceutical care performed in accordance with the established algorithm.

Keywords: pharmaceutical care, hypertension, adherence,

INTRODUCTION

Arterial hypertension (AH) or high blood pressure is a medical condition in which the arterial blood pressure is higher than 140 mm Hg systolic and 90 mm Hg diastolic pressure. According to the 2018 ESC/ESH Guidelines for the Management of Arterial Hypertension, 'hypertension is defined as the level of BP at which the benefits of treatment (either with lifestyle interventions or drugs) unequivocally outweigh the risks of treatment, as documented by clinical trials [1]. Hypertension is one of the main risk factors for cardiovascular diseases and mortality [2].

Between 2019 and 2020, the European Health Interview Survey was conducted in Bulgaria. Following an analysis of the data, it is clear that the most common chronic disease is hypertension, occurring in 29.7% of the sample, and the percentage is lower in men (26.5%) than in women (32.8%). [3] Studies conducted in the USA found that the incidence rate of hypertension is higher in men below 50 and in women over 64. [4]

According to data from the Bulgarian Hypertension League, every third hypertensive patient in Bulgaria between 35 and 44 is not aware of it, and nearly half of the diagnosed patients have not been treated adequately. [5]

Essential to achieving clinical results in patients with chronic diseases is their acceptance of the treatment and adherence to the pharmacotherapy regimen. Non-adherence is a global issue gaining epidemic proportions in recent years. According to reports of the WHO, therapy adherence for chronic diseases averages 50%. In developing countries adherence is even lower [6].

The reasons for patients' non-adherence to the prescribed treatment regimen are various. Therefore, approaches towards patients differ depending on the specific leading factors for non-adherence [7, 9].

Adherence is a dynamic process influenced by many factors including social, economic and medicine-related such as the dosage form and dosage regimen, the treatment duration, the impact of treatment on daily ac-

tivities and patient's lifestyle, the time between visits to the doctor, age, gender, marital status etc. [6,7, 8, 9]

One of the principal causes of poor adherence, highlighted in scientific publications, is that patients with chronic illnesses are not aware enough of the disease specifics and that leads to poor disease control [10].

Hypertension treatment is aimed at lowering the arterial pressure to optimal values and maintaining control of the condition. Figure 1 presents the treatment approach according to ESC/ESH Guidelines for the Management of Arterial Hypertension depending on the grade.

Fig 1. Initiation of blood pressure-lowering treatment (lifestyle changes and medication) at different initial office blood pressure levels BP = blood pressure; CAD = coronary artery disease; CVD = cardiovascular disease; HMOD = hypertension-mediated organ damage [1]

Good control of AH leads to a considerable reduction of stroke morbidity (35–40%), myocardial infarction (20–25%), and heart failure (> 50%) [1].

Specialised pharmaceutical care is needed in community pharmacies in order to achieve the treatment goals and prevent complications. They have a leading role in maintaining control and obtaining an optimal therapeutic result. [11] A number of studies prove the essential role of pharmacists in the treatment outcome [12, 13].

A meta-analysis of 2246 patients who participated in studies shows that involving pharmacists considerably reduces systolic blood pressure (10.7 ± 11.6 mm Hg; $p = 0.002$), while controls remain unchanged (3.2 ± 12.1 mm Hg; $p = 0.361$) [14].

Pharmacists are part of a multidisciplinary team, and their role as a link between doctor and patient is “to correct misconceptions and attitudes regarding treatment, to make patients more informed and responsible for their

health “[10]. As part of PC a treatment plan that integrates non-pharmacological methods is developed, based on the doctor's prescription and involving the patient. The goal is to manage the condition by focusing on the individual characteristics of each patient [15].

OBJECTIVE

To study the level of adherence to pharmacotherapy among hypertensive patients after the provision of specialised pharmaceutical care.

MATERIALS AND METHODS

The algorithm of pharmaceutical care (PC) used during consultations with hypertensive patients was designed by the authors considering the fundamentals for providing PC and the guidelines for treating AH [1, 11, 16, 17, 18] (Fig.2).

Fig. 2. Algorithm for the provision of pharmaceutical care to hypertensive patients

In December 2020 the pharmacists involved in the study had a training course to acquire specific knowledge and skills for providing pharmaceutical care to hypertensive patients. The purpose of the training sessions was to build their competence in consulting patients about medi-

cal devices and proper techniques for BP measurement, adherence to a healthy lifestyle, communication skills and building a relationship with the patient and providing pharmacotherapy consultations. An algorithm for providing PC was created for the needs of the pharmacists.

Staff training sessions were held in the pharmacy on how to provide PC services to hypertensive patients using the custom-made algorithm. Screening and training programmes were also delivered to patients with hypertension.

For an asix-month period from 01. 01. 21 to 01. 07. 2021 specialised pharmaceutical care was provided to 53 patients. In order to follow up on respondents' blood pressure control, resulting from the provided PC, three BP measurements were made at 3-month intervals. The first was made in January 2021 before providing specialised pharmaceutical care to the patient, the second blood pressure measurement was in March 2021 and the third one was conducted in June 2021. Following the six-month period of pharmaceutical care, an anonymous questionnaire survey was conducted in the community pharmacy to monitor adherence to the treatment plan. Initially, 50 patients diagnosed with hypertension and treated in an outpatient setting were included in the study. Three of the patients dropped out at different stages for different reasons. The respondents were regular visitors and patients of the pharmacy who received specialised PC according to the predefined algorithm Inclusion criteria were: patients diagnosed with arterial hypertension irrespective of the stage, regular clients of the pharmacy. Exclusion criteria: hypertensive patients who refused to participate in the survey and occasional visitors to the pharmacy;

The survey cards consist of two parts: a questionnaire, gathering information about the patient and a questionnaire to define the degree of adherence to the treatment. The first part covers demographic details (age, gender), self-control of hypertension and lifestyle. The second part of the survey is a validated tool, the Morisky test[19], presented in Table 1.

Table 1.The Morisky Scale

1. Do you sometimes forget to take your medicine?	Yes	No
2. Are you careless at times about taking your medicine?	Yes	No
3. When you feel better, do you sometimes stop taking your medicine?	Yes	No
4. If you feel worse after taking your medicine, do you sometimes stop taking your medicine?	Yes	No

Each answer 'No' receives 1 point, and the total score is from 0 to 4. Patients with a higher score are assessed as showing better adherence to the treatment, while those with a lower score have a higher risk of non-adherence.

Data were processed using SPSS v.23.0; descriptive statistics and t-test were applied.

RESULTS

The respondents' distribution by age and gender was relatively even. The largest share was that of patients aged 61-70 (29%), followed by the age group 51-60 (23%).

The smallest share was that of hypertensive patients below 50 and those over 80 years of age. The main characteristics of surveyed patients regarding demographic information and duration of treatment are presented in Table 2.

Table 2.Demographic information about patients and duration of treatment(n=50)

Category	Sub-group	N (number)	Distribution in %
Age	<50	7	14
	51-60	12	23
	61-70	14	29
	71-80	11	22
	>80	6	12
Gender	Male	24	47
	Female	26	53
Duration of treatment	<5 years	15	29
	5-10 years	23	47
	10-20 years	8	16
	20-30 years	4	8

The largest share (47%) was that of diagnosed persons who had been treating hypertension for 5-10 years.

After the pharmaceutical care services were provided, 90% of patients shared that they were informed about the specifics and treatment of the condition from the training provided by the pharmacist. The results indicated that 41% of the surveyed patients had been prescribed a monotherapy to control their blood pressure, 33% were on two medicines, and 26% of patients used three antihypertensive products. The need for a combination therapy increases with an increase in the severity of the condition. Among the studied patients - 51% had comorbidities which made intake and adherence to the prescribed therapeutic scheme challenging. After pharmaceutical care was provided through the established algorithm, 84% of the surveyed patients reported having no difficulties in the use of the prescribed medicinal products, and only 16% reported difficulties. Among the patients- 51% had everyday physical activities. As a result of the consultations and training, 71% of respondents started measuring their blood pressure regularly while in 29% blood pressure was not monitored.

During the first measurements, before providing pharmaceutical care, 80% of the examined patients had average values of systolic pressure >140 mm Hg and diastolic >90 mm Hg which was indicative of bad control of their condition. In accordance with the established algorithm the patients received advice on healthy lifestyles; participated in training sessions on the specifics of their disease and how to measure their blood pressure correctly; discussed the therapeutic regimen. After 3 months, during the second round of BP measurements, we found that 45% of the subjects had values above 140 mm Hg/ 90 mm Hg. Those who showed poor control of their blood pressure were given ad-

ditional training using the established algorithm.

According to the questionnaire survey, at the time of the last measurement, 73% of the studied patients reported achieving good control of their blood pressure, while 27% responded that control was not satisfactory.

The treatment adherence test performed by the sample showed adherence which was close to the maximal – the Morisky coefficient of the studied group was 3.74 on a four-point scale.

The gender distribution of the results from the Morisky test was the following: Morisky coefficient score for men – 3.75; Morisky coefficient score for women – 3.72. A minor difference between men and women was identified – 0.03 in favour of men.

The results of the surveyed hypertensive patients showed a high degree of adherence, and the gender differences were minimal in favour of men.

We attempted to study the impact of various factors on the degree of adherence using the independent samples t-test. The analysis of the link between gender and the level of adherence showed that there was no statistically significant difference in the degree of adherence in men and women ($\delta=0,864$). The degree of adherence to pharmacotherapy in the surveyed respondents was not influenced by gender.

DISCUSSION

A series of surveys prove that the majority of hypertensive patients do not comply with the prescribed treatment [12, 20, 21]. According to some authors, the main reasons for patients to refuse following the treatment are adverse drug reactions in 42% of patients and lack of efficacy in 39% [13]. A research performed in Bulgaria studying the impact of the therapeutic regimen on the compliance of patients with chronic diseases indicates that the patients' age, patient-medical professional communication, patient training sessions, the number of medicines and the complexity of the treatment have a significant effect on adherence [22]. A longitudinal study, examining the impact of gender differences on adherence in patients with hypertension, found that men adhere more effectively to pharmacotherapy than women [8]. A combination pharmacotherapy accompanied by medicines for concomitant diseases complicates adherence to the therapeutic scheme. The pharmacist plays a primary role here by training the patient, following up on the treatment and achieving disease control. The study reports a satisfying control of blood pressure in the majority of the respondents (73%), which we link to the pharmaceutical care, provided using the algorithm. In another study, however, conducted without consultations and PC, covering 5846 patients, in 3508, blood pressure was uncontrolled (BP $\geq 140/90$), while 2338 had controlled blood pressure ($<140/90$ mm Hg) [23].

Literature data show that only approximately 50% of patients with hypertension achieve blood pressure control. A basic factor for the poor control of blood pressure is a lack of good adherence to the treatment [24]. In the course of treatment, during assessment and follow-up of patients with poor control, doctors and medical professionals should consider non-adherence [10, 24]. Patient compliance, which involves adherence as well as following a diet, physical activity and

lifestyle changes, is particularly important for achieving an optimal therapeutic outcome in the treatment of hypertension [24].

The created algorithm for pharmaceutical care navigates patients through an entirely new approach for blood pressure control. This is not a quick process that can happen with one consultation only so the patients, not able to achieve BP levels relevant for their target group, have been given the opportunity to repeat the training stages until obtaining better control. As a result of that, we observed an increased percentage of patients who succeeded in improving their control of blood pressure: at the start of the study, only 20% of the studied persons had good control while at the end their share was 73%. The subjects were not referred to a doctor for a change in the therapy during the study period. This eliminates the chance that their improved condition results from a change in the therapy. Following the provided PC, the possible reasons for the high rate of patients with good BP management are: improved adherence, which corresponds to the results of the Morisky test, regular BP measurement, reported by 71% of the respondents, and promotion of daily physical activities, reported by 51% of patients.

In accordance with the algorithm that has been applied, patients who do not adhere to the advice for lifestyle changes, do not follow the pharmacotherapy or find it difficult to adhere to it are defined as challenging. Therefore they are advised to have additional consultations with a pharmacist. In those cases where patients adhere but still BP control is not good or when there is neither adherence nor control, such a patient is referred to a doctor to monitor the condition and, if necessary, to change the therapeutic regimen.

According to literature sources, a precondition for enhancing pharmaceutical care, supporting disease management and adherence to the therapy is to keep personal medical records in the pharmacy to be able to monitor the condition of hypertensive patients [18].

The present study has the potential for further development of a healthcare list with instructions based on the suggested patient-centred algorithm to facilitate adherence and later to serve for developing a patient's medical record in aid of providing pharmaceutical care.

CONCLUSIONS

The surveyed group of hypertensive patients shows a very good degree of adherence to the prescribed treatment, which is equal to an above-average value on the Morisky scale. It can be assumed that the high level of adherence and good blood pressure control identified in the studied sample of hypertensive patients are due to the provided specialised pharmaceutical care.

Particularly important for the degree of adherence and the outcome of the treatment is pharmaceutical care that is aimed at therapeutic training of patients. This specialised training follows our algorithm for provision of pharmaceutical care, which includes: advice on proper blood pressure measurement, introduction to the specifics of the disease and self-management; explanations about the prescribed medicinal products, mechanism of action, possible adverse reac-

tions and interactions, adherence to the therapeutic regimen and recommendations for lifestyle changes such as: physical activity, avoiding bad habits (smoking, alcohol abuse), weight control and a healthy diet.

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