

# Researches upon Practical Implementation of the "Pharmaceutical Care" Concept in a Community Pharmacy-based in Romania

BACRIA RUXANDRA OCTAVIA, POPESCU FLORICA

*Department of Pharmacology, University of Medicine and Pharmacy, Craiova*

**ABSTRACT** This research has proposed to evaluate the effects of the pharmaceutical care program upon the blood pressure and also upon the life quality on a batch of community pharmacy-based patients with high blood pressure from Pitești town. The research was carried out on a batch of 50 patients with high blood pressure under monthly medical surveillance through the program, as compared with a witness batch of patients with high blood pressure. After 6 months of program implementation it was found a drop in systolic blood pressure within the experimental batch from  $148,72 \pm 15,2$  to  $130,24 \pm 14,68$  ( $p=0,043$ ), and in the diastolic blood pressure from  $93,09 \pm 13,67$  to  $76,16 \pm 7,42$  ( $p=0,039$ ). It could be noticed an improvement of the adherence to treatment and a life quality increase. Conclusions: A pharmaceutical care program can have beneficial effects in the case of patients with high blood pressure.

**KEY WORDS** *Pharmaceutical care program, Community pharmacy, Blood pressure, Antihypertensive therapy, Therapeutic management*

## Introduction

High blood pressure is defined as a chronic disease with constantly high arteries pressure reaching cut-offs of over 140 mmHg systolic pressure and/or over 90 mmHg diastolic pressure. Frequently high blood pressure has no symptoms, except high blood pressure emergencies when because of acute increase, blood pressure reaching very high values, body lesions can quickly and progressively occur, particularly lesions at the cerebrovascular, cardiovascular and renal levels.

The pharmacist's involvement in the therapeutic management of a patient having high blood pressure showed within some researches by relatively low population-based groups, an improvement of the blood pressure control (1).

In this research I evaluated the ability of a community-based pharmacist of positively influencing the antihypertensive therapy results on a permanently pharmacy-based batch of patients, by means of a pharmaceutical care program.

## Research Protocol

The randomised, controlled research was carried out on a batch of 50 patients with essential high blood pressure, adults, with blood pressure cut-offs of  $\geq 140/90$  mm Hg, aged between 51 and 65 years old, from the urban environment, pharmaceutical care program based. The patients were under medical surveillance for 6 months, through discussions within the pharmacy for  $\frac{1}{2}$  - 1 hour that took place on a monthly basis. The batch to which pharmaceutical care was provided was under medical surveillance on a monthly basis

aiming at the blood pressure; also, the adherence to treatment improvement was monitored, as well as prevention, detection and settlement of issues related to the respective medicine, and patients were given advice regarding the use of non-pharmacological methods, linked especially to diet for the blood pressure control. Another group of 50 patients with essential high blood pressure and under a similar antihypertensive treatment was not monitored through the pharmaceutical care program.

For the introduction into the research, I received the patients' written agreement as per the international standards of clinical researches. Initially, we interviewed each and every patient for at least 30 minutes with regard to patient's socio-demographic issues, disease number of years, comorbidities, administrated treatment, disease evolution, hospital admissions, etc. using a query which enabled me to draw up a personal research medical chart.

The criteria of exclusion from the research were: acute myocardial infarction or pectoral angina during the passed 3 months, cerebral vascular accident during the passed 12 months, patients with chronic alcoholism condition, psychosis, drug abuse.

Upon high blood pressure medical surveillance I took into consideration the following parameters, based on the recommendations made by ESC 2007:

a) age,

b) body mass index (BMI - normal between 20.8 and 24.7)

c) Hypercholesterolemia: defined as a serum concentration of cholesterol over 200mg/dl, serum concentration of LDL cholesterol over 95mg/dl.

I measured the blood pressure in pharmacies each month, for 6 months, I monitored hypercholesterolemia and glycaemia, these being the most important causes in the onset and aggravation of high blood pressure. For each patient a medical chart was drawn up including socio-demographic data, general health condition, disease anamnesis, used medication history and medication used at the moment of research beginning, change of medication, and during the research, the measured parameters cut-offs were periodically written in the medical chart.

I have instructed the patients regarding the treatment righteousness, the need for a continual administration, the risk of side effects, the proper keeping of medication administrated at home; I encouraged patients to also use non-pharmacological methods of lowering high cut-offs of blood pressure, such as the hyposodated diet, food diets depending upon the weight status, including to control blood pressure at home using a personal measuring device.

Patients' evaluation comprised their monthly basis investigation at the pharmacy, but also by collaboration with the family physician. During the research I kept a very tight relationship with the family physician who keeps the medical records in which the patients in the research are written.

The pharmaceutical care concept implementation consisted of the pharmaceutical care plan drafting, by evaluation of patient's health condition, identification of patient's issues and needs related to the disease, interrelationship with the family physician and intervention into patient's instruction or into physician's warning regarding the issues related to the prescribed medication.

Statistical data processing was performed through the *test t Student*.

### Results and discussions

In the pharmaceutical care program there were included 50 patients in two batches each, patients having essential high blood pressure, an experimental batch and a witness batch. Between the two batches there were no significant statistic differences linked to age, antihypertensive prescribed medication or comorbidities.

Patients included in the research were from the urban environment. The age of patients from the

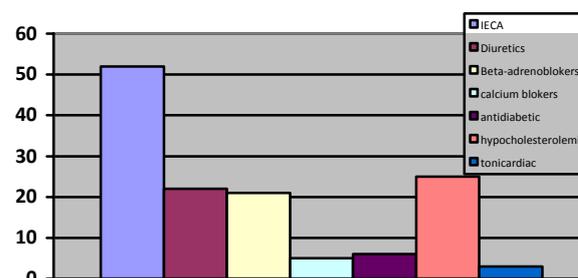
two batches varied between 51 and 65 years old. Depending upon the gender, in the control batch there were 66% women and 34% men and in the witness batch there were 59% women and 41% men.

In the control batch 49% had a medium or high level of education (high school studies, vocational studies, university studies) and 51% a low level of education, and in the witness batch 52% had a medium or high level of education and 48% a low level of education. It was noticed a low level of knowledge linked to the disease and the used medication. The number of pensioners or of domestic activity persons was high with both batches (78% in the experimental batch and 74% in the witness batch). In table no. 1 there are patients ranged also depending upon the alcohol consumption (moderate) or upon smoking.

**Table no. 1. Demographic data of patients with high blood pressure of the experimental batch and the control batch**

	Experimental batch		Witness batch			
	51-55	56-60	61-65	51-55	56-60	61-65
	42,53%	30,16%	27,31%	38,18%	32,76%	29,06%
Weight Index Kg/m <sup>2</sup> (±DS)	24,9±1,6	25,6±1,2	25,8±1,8	25,2±0,6	25,4±1,4	25,9±1,9
Smokers	8	6	5	10	9	4
Moderate Alcohol Consumption	3	2	3	4	6	2

In the experimental batch the following classes of medicines were used: angiotensin converting enzyme inhibitors 52%, diuretics 22%, beta-adrenoblockers 21%, calcium blockers 5%, antidiabetic agents 6%, hypocholesterolemic agents (statins) 25% and tonicardiac agents 3%. A relatively similar rate of antihypertensive medicines was used also for the witness batch.



**Chart no. 1 Antihypertensive and complementary medication used in the experimental batch.**

From table no. 2 there can be found significant statistic differences between the experimental batch and the witness batch regarding the drop in blood pressure, both systolic and diastolic after 6 months. Broken down by age groups, the drop was enhanced with age groups between 51 and 55 years old and 56 and 60 years old.

**Table No. 2 Variations in blood pressure average  $\pm$ DS at the beginning and at the end of the research both with the batch provided with pharmaceutical care and with the witness batch.**

Experimental batch	Blood pressure	At research start-up	After 6 months	p value
Batch provided with pharmaceutical care	systolic	148,72 $\pm$ 15,2	130,24 $\pm$ 14,68	0,043
	diastolic	93,09 $\pm$ 13,67	76,16 $\pm$ 7,42	0,039
Witness batch	systolic	150,72 $\pm$ 17,64	143,58 $\pm$ 13,27	0,058
	diastolic	95,42 $\pm$ 12,69	91,31 $\pm$ 12,48	0,067

At the beginning of the research I noticed that patients with high blood pressure are divided into two categories: patients with relatively high cardiovascular risk 34% (associated diseases: diabetes, heart failure, dyslipidemia with hypercholesterolemia) and with relatively low cardiovascular risk 66%. The first category of patients was under treatment also for the high blood pressure associated disease.

**Table No. 3. Variations in blood pressure average  $\pm$ DS before and after the pharmaceutical care program by age groups.**

Age	Blood pressure	At research start-up PS $\pm$ DS	After 6 months of pharmaceutical care PS $\pm$ DS	p Value
51 -55 -	systolic	143,16 $\pm$ 14,6	124,24 $\pm$ 10,04	0,03
	diastolic	93,17 $\pm$ 12,8	71,21 $\pm$ 7,44	0,034
56 -60 -	systolic	146,38 $\pm$ 15,2	127,34 $\pm$ 9,48	0,028
	diastolic	95,46 $\pm$ 12,4	76,48 $\pm$ 5,18	0,048
61 - 65	systolic	156,62 $\pm$ 14,25	139,14 $\pm$ 14,52	0,04
	diastolic	96,64 $\pm$ 15,82	80,92 $\pm$ 8,65	0,042

After 6 months of pharmaceutical care it could be noticed a drop both in systolic blood pressure and diastolic blood pressure. Through the intervention of the pharmaceutical care program it was found a decrease of high cut-offs of systolic blood pressure at 135 mm Hg with over 35% of the patients, and with 25% of patients the systolic blood pressure was constant namely around 135 mm Hg.

It could be noticed that systolic blood pressure with patients with dyslipidemia and sugar diabetes dropped reaching 135 mm Hg, thus the cardiovascular risk being decreased.

It could also be noticed the diastolic blood pressure from 93,09 $\pm$ 13,67 to 76,16 $\pm$ 7,42.

The body mass index decrease was insignificant. The patients also adhered to salt consumption cutting, to smoking and alcohol consumption reduction. Among subjects who participated in the research, 45% learned how to measure their own blood pressure and they purchased a measuring device, also, how to address to the physician if blood pressure cut-offs are constantly high or if it gets high after a period of normal blood pressure cut-offs. No side effects

of administrated medicines were recorded for any patient.

In the past few decades, hundreds of research articles have been published on nonadherence, and dozens of devices and programs have been developed to assess and resolve adherence-related problems (2). Pharmacists are in an ideal position to assess and treat adherence-related problems that can adversely affect patients' health outcomes (3). In our study evaluation of adherence to antihypertensive treatment showed that originally 74% used over 90% of the prescribed medication and were ranged as adherents. After 3 months from the monthly basis instruction with regard to treatment righteousness the adherence reached 86%, and after 6 months the adherence reached 95%.

I did not have the SF-36 query (the 36-item short form health survey) so as to be able to quantify life quality in relation with HRQOL(4, 5) health condition of patients (the health – related quality of life), but using my own query I could notice an improvement of the physical activity, of the psychic behaviour (unrest, irritability, insomnia, lack of active life mood), but I did not quantify these improvements. As far as the psychological health is concerned, that is issues such as positive affectivity, spirituality, thinking, learning, memory and concentration, own body image and self-esteem, no big differences were found. There were improvements of issues concerning social relationships. Seeing family physicians was more rarely and the number of high blood pressure emergencies requiring hospital admissions decreased.

In the specialty there have been surveys during the last years in different countries indicating the importance of pharmaceutical care programs implementation in the therapeutic management of chronic diseases (1, 5, 6, 7). A pharmacist's integration into the health care system has been accompanied by an improvement of the disease evolution and a costs cut for the society (8, 9, 10).

## Conclusions

Based on this survey it is emphasised a pharmacist's role in patients' pharmaceutical education and the importance of maintaining normal cut-offs of the blood pressure with hypertensive patients, by the right medicines treatment to which a balanced food diet is also added.

Pharmaceutical care programs for community pharmacy-based patients with high blood pressure might have as effect beneficial drops of high

blood pressure and might improve health-related quality of life.

Study was performed in a private community pharmacy

## References

1. Fiona Reid, Pat Murray and Marion Storrie. Implementation of a pharmacist-led clinic for hypertensive patients in primary care – a pilot study. *Pharm World Sci* (2005) 27: 202–207.
2. Costa, F.V. Compliance with antihypertensive treatment. *Clin. Exp. Hypertens.* 18, 1996. p.463–472.
3. Christensen, D.B.-Williams, B. Assessing compliance to hypertensive medication using computer-based pharmacy records. *Med. Care* 35, 1997, p. 1164–1170.
4. Ford RC, Bach SA, Fottler MD. Methods of measuring patient satisfaction in health care organization. *Health Care Manag. Rev* 1997, 22: 74–89.
5. R. Wang, Y. Zhao, X. He, X. Ma, X. Yan, Y. Sun, W. Liuc, Z. Gu, J. Zhao, J. Hea, Impact of hypertension on health-related quality of life in a population-based study in Shanghai, China. *Public Health* 123 (2009) 534–539.
6. Cletus N. Aguwa, Chinwe V. Ukwe, Obinna I. Ekwunife. Effect of pharmaceutical care programme on blood pressure and quality of life in a Nigerian pharmacy. *Pharm World Sci* (2008) 30:107–110.
7. Brian J. Isetts, Stephen W. Schondelmeyer, Alan H. Heaton, Wallace B. Wadd, Nancy A. Hardie, Margaret B. Artz. Effects of collaborative drug therapy management on patients' perceptions of care and health-related quality of life. *Research in Social and Administrative Pharmacy* 2 (2006) 129–142.
8. World Health Organisation (WHO). *Developing Pharmacy Practice: A focus on Patient Care*. WHO/PAR/2006.5.2006.
9. Djenane Ramalho de Oliveira, PhD; Amanda R. Brummel, PharmD; and David B. Miller, RPh. Medication Therapy Management: 10 Years of Experience in a Large Integrated Health Care System. *Manag Care Pharm.* 2010;16(3):185-95.
10. Rosalind Lau, Kay Stewart, Kevin P McNamara, Shane L Jackson, Evaluation of a community pharmacy-based intervention for improving patient adherence to antihypertensives: a randomised controlled trial. *BMC Health Services Research* 2010, 10:34.

---

*Correspondence Address: Bacria Ruxandra Octavia, PhD Student Department of Pharmacology, University of Medicine and Pharmacy of Craiova Str Petru Rares nr. 4, 200456, Craiova, Dolj, Romania Mail andrabacria78@yahoo.com*