

**UNIVERSITY OF MEDICINE AND PHARMACY TÂRGU-MUREȘ
FACULTY OF MEDICINE**

Abstract

**CLINICAL IMPLEMENTATION OF AN AMBULATORY SYSTEM FOR THE
ASSISTANCE OF HYPERTENSIVE PATIENTS - RESULTS FROM A NINE YEAR'S
PERSPECTIVE**

PhD student: Preg Zoltán

Scientific coordinator: Prof. Univ. Dr. Kikeli Pál István

Introduction:

Awareness, treatment and control rates of hypertensive patients is low in Romania as showed in the SEPHAR studies which assessed the prevalence, treatment, and control rate at national level. Hypertension control has to be achieved in order to prevent target organ damage, and major cardiovascular complications of hypertension. Target values mean that complication rate (cardiovascular morbidity and mortality) is the lowest if these values are obtained.

Hypertensive patients have to be actively detected at the level of the primary care providers. Primary care providers need a good collaboration with the ambulatory cardiology setting in order to complete paraclinical workup and in order to treat high risk patients, or to manage resistant hypertension cases. This collaboration has the major scope to obtain target values in all hypertensive patients. It is clearly shown in the literature that target values are obtained in daily clinical practice only in approximately one third of patients even in countries with a well established medical care system with substantial material resources. Target achievement is influenced by multiple factors. These are related to the hypertensive patient (awareness, education level, social status, material resources), to the healthcare provider (awareness of current guidelines, current treatment recommendations, time constraints, practice management), to the patient-physician relationship (partner patient/non partner patient) and to the healthcare system (availability and affordability of drugs, compensation of prices, accessibility of healthcare providers at different levels, primary prevention messages). Any change in these complex influencing factors may lead to changes in target achievement levels.

The primary aim of the study was to analyze the yearly changes in blood pressure control rates caused by the implementation of a multifactorial intervention, and to analyze the influencing factors of target blood pressure value achievement in clinical practice.

Secondary aims were: to analyze the trends in the control of associated cardiovascular risk factors, comparison of our data with representative national and international data, and formulation of practical interventions for the organization of a follow up system applicable at local and national level

Material and Method

The study included 7854 hypertensive patients examined between 2003-2012 at the Procardia preventive ambulatory center in Târgu Mureș, Romania. The sex distribution of the studied patients was 44.9% male average age 58,2 years, and 55.1% female average age 61,8 years.

The multifactorial intervention implemented consisted of: 1. implementation of an electronic health record (Medprax), 2. encouraging self measurement of blood pressure values, and noting them in a simple patient agenda, 3. organized patient follow up by pre-established dates for specialist's follow up visits, and long term follow up by the institution's primary healthcare provider, 4. the use of fixed dose combination therapy whenever possible 5. nighttime administration of the antihypertensive medication 6. telemetric measurement of blood pressure values in the first two weeks after initiation/adjustment of antihypertensive therapy 7. Periodical assessment of the achieved target values.

We studied the yearly achievement of target blood pressure levels. We used the clinical blood pressure values measured during the consultation. Target values were considered under 140/90 mmHg in non-diabetic patients respectively under 130/80 mmHg in diabetic patients. For patients with multiple visits in our clinic we considered the blood pressure value of the chronologically latest consultation.

Results

Target blood pressure values were reached in 30.8% of the hypertensive patients assisted. As a result of the implemented multifactorial interventions, the percentage of patients treated to target increased progressively from 20.7% in 2003 to 41.4% in 2012. Positive predictors for target blood pressure achievement were: urban residence OR 1,13 (1,03-1,25), age >65 years OR 1,14 (1,04-1,26), stroke history OR 1,18 (1,02-1,38), associated anxiety OR 1,56 (1,24-1,97), follow-up in the institution's own family medicine setting OR 2,99 (2,42-3,70), telemetric monitoring in the first two weeks after initiation/adjustment of blood pressure values 1,49 (1,16-1,93). Negative predictors were: obesity OR 0.71 (0.64-0.79), dyslipidaemia OR 0.60 (0.54-0.66), type 2 diabetes mellitus OR 0.44 (0.38-0.51). Ambulatory blood pressure monitoring parameters which predicted a low target blood pressure achievement were High daytime and nighttime and daytime blood pressure values, morning surge, and high pulse pressure. Hypercholesterolaemia was the most frequent associated risk factor. As a result of the implemented interventions its frequency decreased from 66,9% in 2003 to 56,3% in 2012. The frequency of obesity increased in the follow up period as the influence of the international trends of low level physical activity and high calory diet, this trend could not be influenced by the lifestyle interventions applied. The implementation of the electronic health record system centered on the medical problems of the patient made possible data analysis and follow up of multiple parameters defining the global cardiovascular risk of hypertensive patients. There was no comparable implementation study performed in Romania. We compared our data to the representative cross sectional SEPHAR studies at national level and the EUROASPIRE studies at European level.

Conclusions

Conclusions related to the primary objective: The implementation of the multifactorial interventions at the institutional level and the changes at the level of the healthcare system caused the gradual increase of the achievement of target blood pressure values. The highest blood pressure control rate was achieved in patients followed frequently by the general practitioner of the institution.

Conclusions related to the secondary objectives: Associated obesity, hypercholesterolaemia, and diabetes predicted a lower blood pressure control rate, these patients need a closer follow up of their multiple risks. Associated hypercholesterolaemia showed a decreasing trend as a result of the applied statin therapy and lifestyle interventions. The intentional trend of the increase in body mass index could not be stopped by institutional interventions. The simple interventions applied in our study can be applied in other ambulatory systems in order to increase target blood pressure achievement in the clinical practice. For a higher efficiency these institutional efforts need to be supported by the healthcare system.

Key words: hypertension, target blood pressure, control rate, implementation