



Benefits of a Nominalized Health Care Model for Socially Vulnerable Patients with High Blood Hypertension

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Abstract

Introduction: Hypertension is responsible for most deaths or disabilities in the adult population of Argentina. The need for daily therapy reduces treatment's adherence. In order to demonstrate whether if a model of nominal and customized health care control and personalized dispensing of anti-hypertensive drugs can increase adherence to treatment and reduce disease consequences, we proposed the present study.

Materials and Methods: This is an observational cohort study, with a stage of intervention to one of the groups. Hypertensive patients treated in the public sector were randomly divided into 2 groups: Group A that continued receiving free health care controls and medication from health institutions (on "demand" way), and group B that received a nominal periodical home visits for health care controls and customized dispensing of drugs. Variables studied were age, sex, type of medication received, degree of compliance, cardiovascular events and hospitalizations occurred in both groups during the study period (2 years follow up).

Results: 1,790 patients were enrolled and randomized in group A (912) or in group B (878). Both groups were balanced in age, sex, type of medication and other main variables. Periodical health controls were performed in 94.3% of patients belonging to group B and only 18.5% of group A ($p < 0.001$). Treatment adherence was demonstrated in 96.5% of group B and 56.4% of group A. Cardiovascular events and hospitalizations over the period study they were 9.9 and 11.4% in group B and 3.7 and 4.3% in group A respectively ($p < 0.01$).

Conclusion: Comparing two different models access to health care and medicine dispensing, this study demonstrated that nominal and personalized care and drug dispensing for hypertensive patients increased more than 70% of health controls and 30% of treatment adherence and significant reduced cardiovascular consequences and hospitalizations associated with hypertension.

Keywords: Hypertension; Health care; Dispense; Nominal; Customized

Introduction

Hypertension is a prevalent chronic disease all over the world [1-3]. In Argentina is one of the most responsible causes of the deaths or disabilities observed in our adult population. Stroke, myocardial infarctions, peripheral vascular diseases are causes hospitalizations and disabilities suffered by the inhabitants of our country [4].

Although there are preventive actions, 25% of the La Plata population is already hypertensive and requires continuous monthly treatments in order to avoid a sequela or an irreparable impact on their health.

Interrupting therapy is synonymous with death or disability [3]. Drugs such as Atenolol, Enalapril and thiazide diuretics, reduced mortality and complications by 35% to 47%. In other words, there is evidence that intensive and continuous treatment of hypertension reduces deaths and the dire consequences of this disease [4]. Knowing this, the Argentine health authorities started a free drug distribution program (Remediar) in 2003 to socially vulnerable population [5,6]. However, these percentages of injuries or deaths have not changed in the last decade. We have carried out previous studies that show that adherence to treatment is low. The reason for the abandonment of treatments is related to multiple causes such as economic (transfer to the health center to obtain the drug), cultural and social issues. All of them threaten the continuity of the required therapy, so a specific strategy is needed to overcome these drawbacks.

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For this reason, the hypothesis proposed in the present work is that it is not enough just to offer free medication to the population to avoid the consequences of hypertension. It is necessary to seek strategies to ensure the continuity of treatments.

The objective of this study is to demonstrate whether a nominal and personalized dispensing is capable of reducing hospitalizations associated with complications of hypertension.

Materials and Methods

Selection of the target population

Patients that had a recent (less than 24 months) diagnostic of arterial hypertension, who were regularly users of the health system (Region XI) were randomly and stratified (according to their sex and age) to two study groups. One of them (A) continued to receive their free care & medication on a regular way ("on demand" when the patients go to the Local Health Institutions, to receive health controls and access to free anti-hypertensive drugs), the other group (B) received a nominal and personalized dispensing of the drugs by regular home visits. The period of study was August 1st, 2017 to July 30th, 2019.

Inclusion criteria

Patients between 18 and 70 years old, with hypertension and who were cared for in the public system (R.S.XI) 4.3.

Exclusion criteria

Those patients with a concomitant pathology, who had already kidney, myocardial or retinal disease involvement, were excluded from the study.

Variables

Age, sex, type of medication received, degree of compliance, clinical examination controls; cardiovascular events, and hospitalizations that occurred in both groups during the study period were analyzed as study variables.

Data registration tool

A data base registration tool was used to register data extracted from both groups. Information about hospitalization was collected from all hospitals in the Region XI regarding admissions and discharges, duration and reason for admission from the list of patients from both groups, using their ID to detect these types of events.

Ethical considerations

Although the project did not include modifying the treatments prescribed to the patients included in the study, an informed consent prepared by the Research Scientific Commission of the Province of Buenos Aires was requested for their incorporation.

Results

1,790 users of the municipal health system who were affected by hypertension were enrolled in the study (Table 1).

Table 1: Data of patients enrolled in the study.

Group	Patients	Age	Sex	PHCE (%)	Treatment adherence (%)	Hospitalization (%)	CVE (%)
A	912	65.8 (± 5.3)	F:502	94.3	96.5	11.4	9.9
			M:410				
B	878	67.2 (± 6.1)	F:465	18.5	56.4	4.3	3.7
			M:414				

Group A: Control group; Group B: Intervention group; F: female; M: male; PHCE: Periodical Health Control Examination; BAT: Blood Arterial Tension; CVE: Cardiovascular Events

Patients were randomized in two groups

912 of them received (as usual) free health care from public health service (including free medicines) just by spontaneously attending to the Health Local Institutions (Group A); while 878 of them were periodically contacted by the members of the project (students, teachers, municipal health personnel and members of NGOs) in a personalized follow up program (group B). Both groups were provided with free medicines either through the Remediar program or through the Community Pharmacy program runs by the Municipality of La Plata, in conjunction with the University of La Plata.

All patients were initially submitted to a general survey and basal clinical examination. After this point, all 912 patients belonging to group A received health care "on demand" by public health system as usual during the next 2 years (the follow up was passive, since their health files were check by researchers each year); while 878 patients of group B received nominal and personalized follow-up (though regular home visits performed by our interdisciplinary team) during the study period (Table 1). Only 9 patients from group A and 7 patients from group B were lost in the follow up procedure of either drop out the study.

For patients enrolled in group B, the nominalized dispensing model was made effective by name and surname of the beneficiary on the dispensed drug box; which was provided in a personalized way (dispensed and delivered personally by a member of the pharmaceutical team). Group A patients withdrew their medication on demand from the APS Health Centers free of charge.

Continuity of periodical (monthly) blood pressure and clinical examination controls was accomplished in 94.3% of the nominalized health care (group B) and 18.5% of the patients belonging to group A ($p < 0.0001$) (Table 1).

Adherence to treatment was demonstrated to be 96.5% for group B and in 56.4% in group A ($p < 0.001$).

Regarding hospital admissions for cardiovascular events throughout the two years of study follow-up, they were 11.4% in group A and 5.3% in group B ($p < 0.01$).

Cardiovascular events confirmed by health professional (myocardial infarcts, strokes, renal failure after the period of study) was 9.9% in group A and 3.7% in group B ($p < 0.01$).

Discussion

The present study was performed in patients exclusively attending to public health system, with socio economical vulnerable situation and without special health coverage. However, health services are completely free of charge in Argentina, which means that health medical consultation, studies, treatments and hospitalizations are provide free by the State.

Even though, local population only use the health system when

the feel ill or when disease gave clinical symptoms [7-9]. Concerning treatment for chronic disease it exists a National Program called Remediari that offers free medicines (for hypertension: Enalapril, losartan, hydrochlorothiazide, amlodipine, atenolol) from any of the more than 7000 Primary Healthcare Center (PHCC) located around the country. It could be said that everyone has a PHCC near their home. However, this fact does not guarantee treatment adherence as our team demonstrated in other work [10,11].

That is why, our group focus on new health care models. We demonstrated in diabetes, that a personalized health care program was able to increase treatment adherence [12].

In the present research with enrolled recent diagnosed hypertensive patients with same features that were users of public health system. One group continues with their same routine which consisted in attend to local health institutions to received clinical controls and treatment; while the other patients were periodically (each 15 or 30 days according to their needs) visited in their own homes by our team in order to be provided by health controls or medicines. Both groups had the possibility to use public hospital services if they need special care. In this alternative nominal and personalized health care model interacted several systems: The local health public service, the University (though their Faculty of Health sciences); and the community members. All of these sectors weekly planned their action in community territories, and results obtained were periodically analyzed in open workshops.

This proposal intended to modify the way of health care with the same amount of health employees that the public system already has, adding the help of the educational system (which also benefits itself since their students acquires professional practices during medical and nursing careers) and with the active collaboration of the population which participate in their own planning of their health controls and treatments.

Conclusion

The present study, this study demonstrated that a nominal and personalized care and drug dispensing for patients with high blood pressure disease, was able to increased more than 70% of their health controls compliance; 30% of treatment adherence and significant reduced cardiovascular consequences and hospitalizations associated with hypertension.

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