

Introduction

Hypertension (HTN) is the highest attributable risk factor for cardiovascular disease and its **prevalence is very high in Portugal**¹.

Despite the availability of effective treatments, the **blood pressure (BP) control** in clinical practice **is not optimal**, with the **lack of adherence being one major cause**².

According to the Health Belief Model, patients only consider healthy behaviors if the perceived benefits compensate the perceived difficulties, especially in chronic diseases³.

Health education plays an important role to capacitate patients for right choices but primary care physicians often have inadequate time during clinical appointments to educate patients about the complexities of chronic disease management⁴. On the other hand, there is a **lack of tailored but structured interventions in primary care and an increased need to implement effective interventions, in Portugal**⁵.

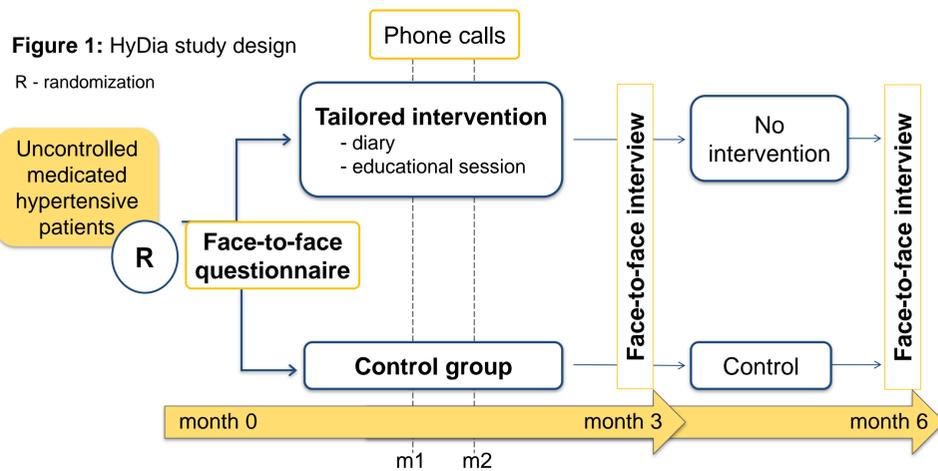
Objectives

Hydia study aims:

1. To create and evaluate a tailored intervention that combines health education and behavioral strategies;
2. To improve patient's knowledge on HTN and BP control.

Methods

A randomized controlled open trial was designed to evaluate a tailored intervention on BP control among uncontrolled medicated patients, aged 40-85 years, followed in Lisbon primary healthcare centers. Uncontrolled patients were selected using up to the last three values of BP, measured by the physician at clinical visits within the last 12 months. Those presenting mean BP $\geq 140/90$ mmHg (or $\geq 130/80$ mmHg, if diabetic) were invited to the study.



An initial questionnaire to characterize patients was created, for baseline evaluation and guidance for the face-to-face educational session, ministered by trained pharmacists.

Patients are asked to fill in a diary with registry on BP measurements and antihypertensive drug intake, for three months. Once a month, pharmacists will phone to patients, asking questions about the disease and medication, or reinforcing the patient-physician communication.

To assess the effectiveness of the intervention, changes on patients' knowledge, BP control, systolic BP and adherence to treatment will be evaluated ($\alpha=0.05$).

Preliminary Results

From July to August 2012, a total of 26 participants were included in the study. Socio-demographic characteristics from the participants, the non eligible and the subjects who refused to participate are presented in **table 1**.

Table 1: Characterization of included participants, non eligible participants and patients who refused to participate

Variables	Patients Characterization				
	Total included n = 26	Control n = 14	Intervention n = 12	Non Eligible n = 15	Refusals n = 16
Age, years (mean \pm SD)	69.4 \pm 10.0	69.9 \pm 7.6	68.7 \pm 12.6	73.4 \pm 7.5	69.3 \pm 7.1
Sex, % men	50.0	50.0	58.3	20.0	50.0
Inclusion Systolic BP (mean \pm SD)	146.9 \pm 9.0	147.7 \pm 7.8	147.5 \pm 82.6	147.1 \pm 10.5	150.9 \pm 9.3
Inclusion Diastolic BP (mean \pm SD)	80.5 \pm 9.9	78.2 \pm 7.4	82.6 \pm 11.7	77.9 \pm 9.0	76.7 \pm 10.0
Baseline Systolic BP (mean \pm SD)	137.4 \pm 15.4	134.3 \pm 12.6	136.5 \pm 18.8	-	-
Baseline Diastolic BP (mean \pm SD)	84.3 \pm 12.5	80.0 \pm 10.1	87.2 \pm 13.1	-	-

Differences between the BP values from clinical visits used to recruit participants and the ones measured at baseline interview are presented in **table 2**. Systolic BP was significantly different in the two moments, being lower at face-to-face interview.

Table 2: Differences in BP values used to recruit patients and the ones measured at baseline

Variables	Inclusion	Baseline	Mean Difference	p
Systolic BP (mean \pm SD)	146.9 \pm 9.0	137.4 \pm 15.4	+ 9.5	0.010
Diastolic BP (mean \pm SD)	80.5 \pm 9.9	84.3 \pm 12.5	- 3.8	0.053

p, p value for the Wilcoxon test (two related samples)

Characteristics of the patients who accepted to enter the study and those who refused to take part on it are compared in **table 3**.

Table 3: Differences in BP values between the included participants and patients who refused to participate

Variables	Participants n = 26	Refusals n = 16	p
Age, years (mean \pm SD)	69.4 \pm 10.0	69.3 \pm 7.1	0.650
Sex, % men	53.8	50.0	0.808*
Inclusion Systolic BP (mean \pm SD)	147.7 \pm 9.3	150.9 \pm 9.3	0.228
Inclusion Diastolic BP (mean \pm SD)	80.3 \pm 9.7	76.7 \pm 10.0	0.614

p, p value for the Mann-Whitney test, except * for Pearson Chi-Squared

Discussion and Conclusion

The BP values used to select participants seem to be different from the ones taken at face-to-face interview, with the systolic BP being significantly lower at baseline. Although this may reflect some weaknesses of the recruitment process and limit the intervention effectiveness, there are no differences between intervention and control groups.

It is expected that this tailored educational intervention may help the management of hypertension at primary care level and provide a solid foundation for further investigation in health education.

References:

- 1 – Macedo ME, et al. Prevalence, awareness, treatment and control of hypertension in Portugal: the PAP study. *J Hypertens* 2005;23(9):1661-6
- 2 – Schroeder K, Fahey T, Ebrahim S. How can we improve adherence to blood pressure-lowering medication in ambulatory care? Systematic review of randomized controlled trials. *Arch Intern Med* 2004;164(7):722-32
- 3 – Janz N, Becker M. The Health Belief Model: A decade Later. *Health Education Quarterly* 1984; 11(1): 1-47
- 4 – Loureiro I; Miranda N. Promover a Saúde – dos fundamentos à ação. Alameda. 2010
- 5 – Yaphe J. Secrets from the editorial board room: what we like, don't like and would like to see in the Revista Portuguesa de Clínica Geral. *Rev Port Clin Geral* 2011;27:419-420

Acknowledgements: The authors would like to thank to the High Commissioner of Health for the financial support. Authors are grateful to the Portuguese Foundation of Cardiology and to the Portuguese Society of Hypertension for the scientific support.