



Epidemiology Unit  
Institute of Preventive Medicine  
Faculty of Medicine, University of Lisbon



# Adherence to antihypertensive treatment among African migrants and Portuguese natives: results from a primary care-based cohort study in Lisbon, Portugal

Diana Souto, Milene Fernandes, Rui Simões, Violeta Alarcão, Verónica Lopes,  
Elisa Lopes, Paulo Nicola, Evangelista Rocha

[dsouto@fm.ul.pt](mailto:dsouto@fm.ul.pt)

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# BACKGROUND

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## Hypertension is a major public health problem

- **One in three** adults worldwide has high blood pressure (BP) (who, 2012)
- Affects more than **50% of the Portuguese population** above 45 years (Macedo, 2005)
- 60-80% of medicated hypertensive patients **do not achieve normal BP levels** (Mant, 2006)
- **Nonadherence** is a significant, often unrecognized, **risk factor** that contributes to **inadequate control of BP** (Morgado, 2012)

# BACKGROUND

## Medication Adherence

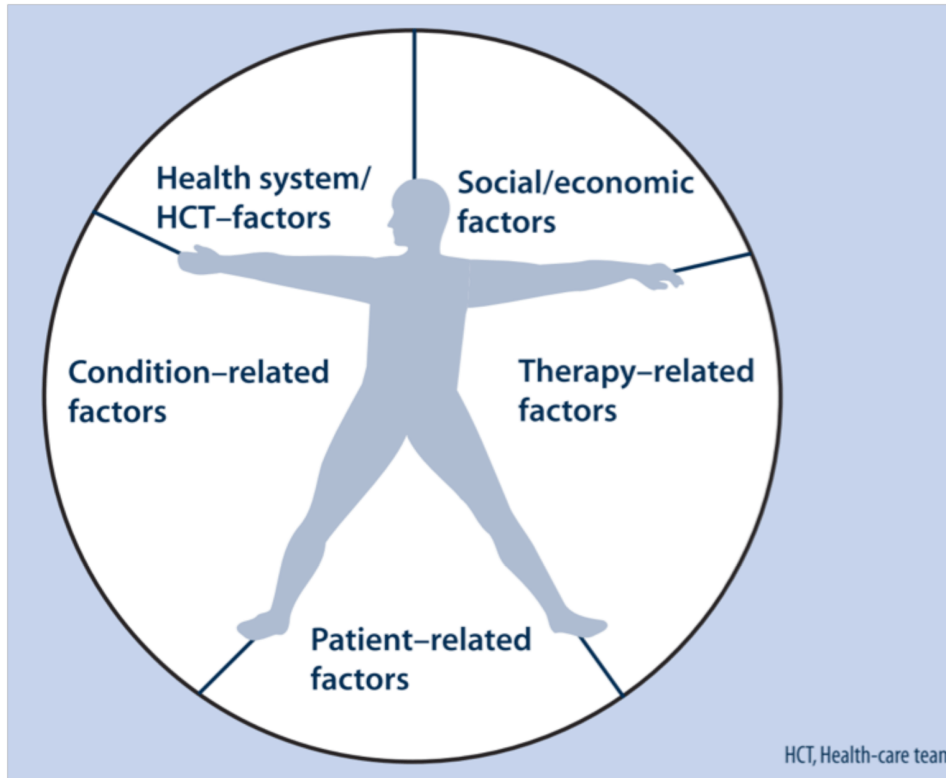


Figure 1. The five dimensions of adherence<sup>1</sup>

**HYPERTENSIVE IMMIGRANTS**  
Higher risk of non-adherence?

- Social integration
- Migration phenomenon
- Self-designated race/ethnicity

<sup>1</sup> Adherence to Long Term Therapies: Evidence For Action. Geneva: World Health Organization, 2003.

# OBJECTIVES

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**This study aims to answer the following questions:**

1. Are there differences in patient adherence to antihypertensive medication between African migrants and Portuguese natives?
2. Which are the associated factors?

# METHODS – POPULATION AND DATA COLLECTION

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- Primary Care Health Centers of Lisbon and Tagus Valley Health Region
- Medicated hypertensive patients
- Aged  $\geq 40$  years-old and  $\leq 80$  years-old
- Natives : Migrants from Portuguese speaking African countries (1:1)  
(Angola, Cape Verde, Guinea-Bissau, Mozambique and São Tomé and Príncipe)



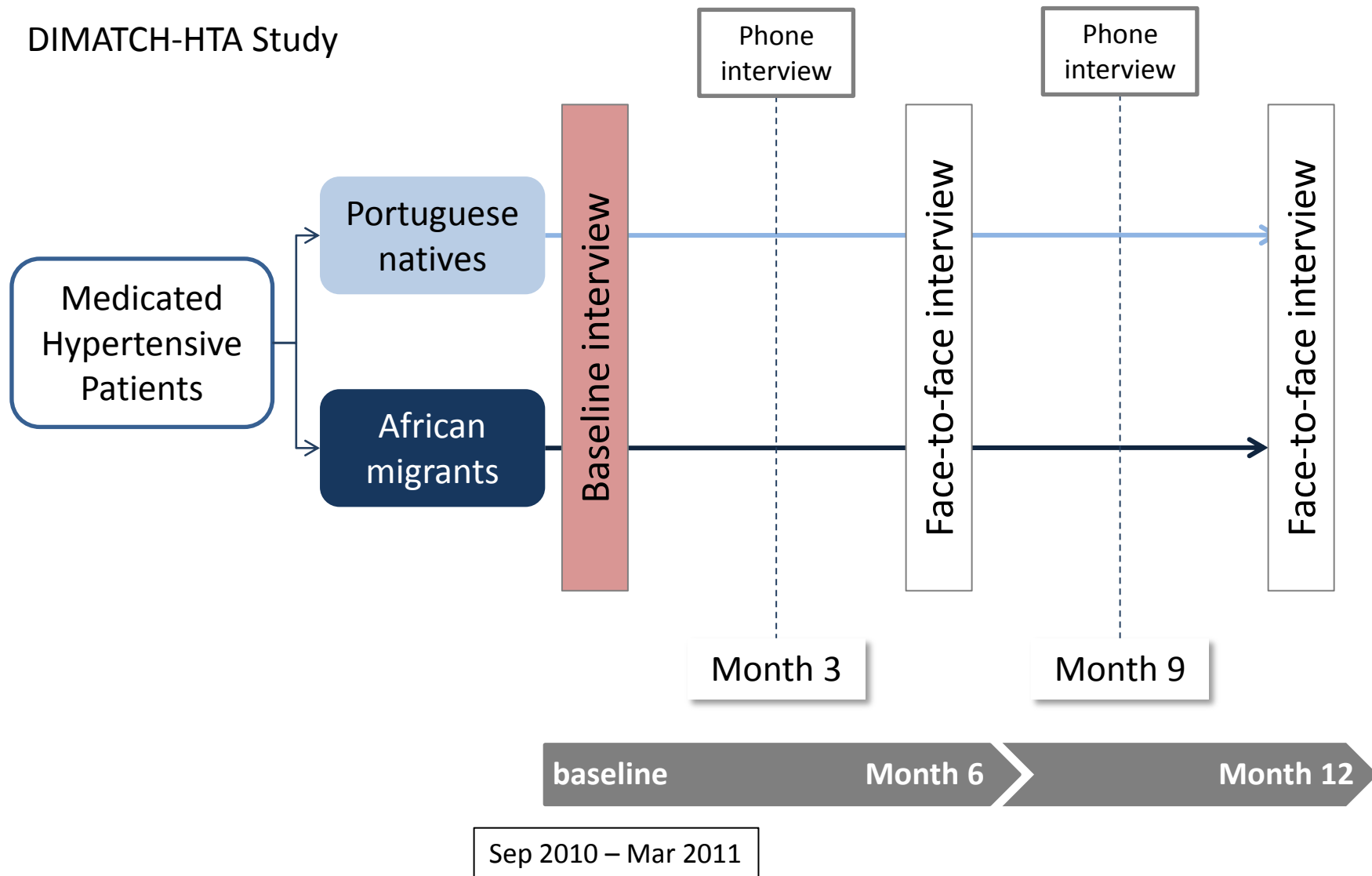
Random sample of  
**787 subjects**

## Data collection (face-to-face interviews)

- Demographic characteristics
- Disease-related variables
- Self-reported adherence to aHT drugs
- BP measurements

# STUDY DESIGN

DIMATCH-HTA Study



# ADHERENCE

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## 7-item Morisky Medication Adherence Scale (Portuguese version)

*In the last two weeks...*

1. did you ever forget to take your blood pressure medication?
2. are you careless at times about taking your medications?
3. have you ever stopped taking your high blood pressure medication by your initiative because you felt better?
4. have you ever stopped taking your high blood pressure by your initiative because you felt worse?
5. have you increased the dose of your high blood pressure medication by your initiative because you felt worse?
6. have you ever stopped taking your high blood pressure medication because you run out of blood pressure medication?
7. did you ever stop taking your high blood pressure medication for any other reason besides doctors indication?

# ADHERENCE

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**Non-adherent** - all patients who answered “yes” to at least one of the seven questions.

1. did you ever forget to take your blood pressure medication?
2. are you careless at times about taking your medications?
3. have you ever stopped taking your high blood pressure medication by your initiative because you felt better?
4. have you ever stopped taking your high blood pressure by your initiative because you felt worse?
5. have you increased the dose of your high blood pressure medication by your initiative because you felt worse?
6. have you ever stopped taking your high blood pressure medication because you run out of blood pressure medication?
7. did you ever stop taking your high blood pressure medication for any other reason besides doctors indication?



# ADHERENCE

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**Unintentional non-adherent** - all patients who answered “yes” to questions 1 or 2.

1. did you ever forget to take your blood pressure medication?
2. are you careless at times about taking your medications?
3. have you ever stopped taking your high blood pressure medication by your initiative because you felt better?
4. have you ever stopped taking your high blood pressure by your initiative because you felt worse?
5. have you increased the dose of your high blood pressure medication by your initiative because you felt worse?
6. have you ever stopped taking your high blood pressure medication because you run out of blood pressure medication?
7. did you ever stop taking your high blood pressure medication for any other reason besides doctors indication?

# ADHERENCE

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**Intentional nonadherence** - all patients who answered “yes” to at least one question from 3 to 7.

1. did you ever forget to take your blood pressure medication?
2. are you careless at times about taking your medications?
3. have you ever stopped taking your high blood pressure medication by your initiative because you felt better?
4. have you ever stopped taking your high blood pressure by your initiative because you felt worse?
5. have you increased the dose of your high blood pressure medication by your initiative because you felt worse?
6. have you ever stopped taking your high blood pressure medication because you run out of blood pressure medication?
7. did you ever stop taking your high blood pressure medication for any other reason besides doctors indication?

# STATISTICAL ANALYSIS

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1. To compare the proportion of non-adherents between the two groups, assuming adherence as a dichotomized variable ( $\alpha=0.05$ ).

→ *Bivariate Analysis*

# STATISTICAL ANALYSIS

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## 2. Binary Logistic Regression Model

→ To assess baseline factors associated with medication adherence, for each group.

### **Patients-related factors**

- Age
- Sex
- Education
- Strategies for remembering to take the medication

### **Condition-related factors**

- Hypertension duration
- Comorbidities
- BP control

### **Social/economic factors**

- Number of people with whom the patient lives
- Health insurance
- Having help to control hypertension
- Financial difficulties in buying the medication

### **Therapy related factors**

- Number of medicines at baseline
- Number of aHT medicines at baseline
- Adverse drug reaction
- Number of years under antihypertensive medication (aHT)

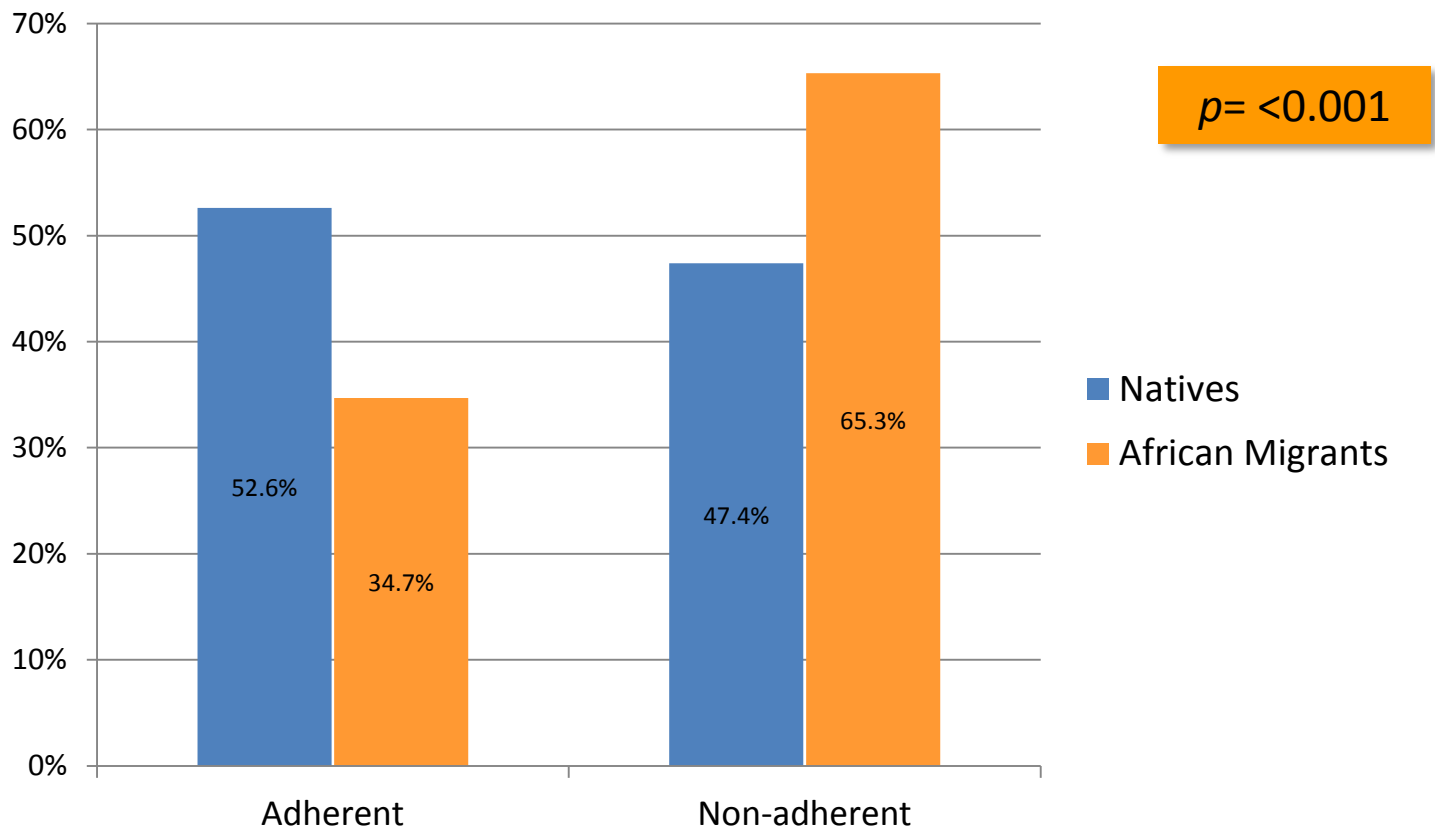
# RESULTS - PARTICIPANTS CHARACTERIZATION

Variable	Natives (n= 449)	African migrants (n= 338)	Significant differences (Compared with African migrants...)	P
<b>Age, years (mean ± SD)</b>	<b>64.1±9.1</b>	<b>56.8±10.1</b>	<i>Natives are 7.3 yrs older</i>	<b>&lt;0.001</b>
<b>Sex, % men</b>	<b>48.8</b>	<b>33.4</b>	More 15,4% of native men	<b>&lt;0.001*</b>
Education, yrs (mean±SD)	6.76±4.1	6.46±4.5	-	0.27
Hypertension duration, yrs (mean±SD)	13.91±10.9	12.49±10.9	-	0.04
Number of aHT drug classes (mean±SD)	1.71±0.9	1.79±0.9	-	0.27
<b>Number of baseline drug classes (mean±SD)</b>	<b>4.86±2.7</b>	<b>4.52±2.9</b>	More 0.34 drug classes than African migrants	<b>0.014</b>
Diabetes, %	24.7	26.4	-	0.57*
<b>Check blood pressure regularly, %</b>	<b>49.8</b>	<b>38.5</b>	More 11.3% of natives that measure BP regularly	<b>0.002*</b>
Systolic BP, mmHg (mean±SD)	141.10±20.3	141.4±23.5	-	0.76
<b>Diastolic BP, mmHg (mean ±SD)</b>	<b>83.70±11.8</b>	<b>88.34±13.15</b>	Natives have a mean diastolic BP 4.6 mmHg lower	<b>&lt;0.001</b>
BP control, %	47.1	45.4	-	0.64*

p, p-value for Mann-Whitney test, except \* for the chi-square test

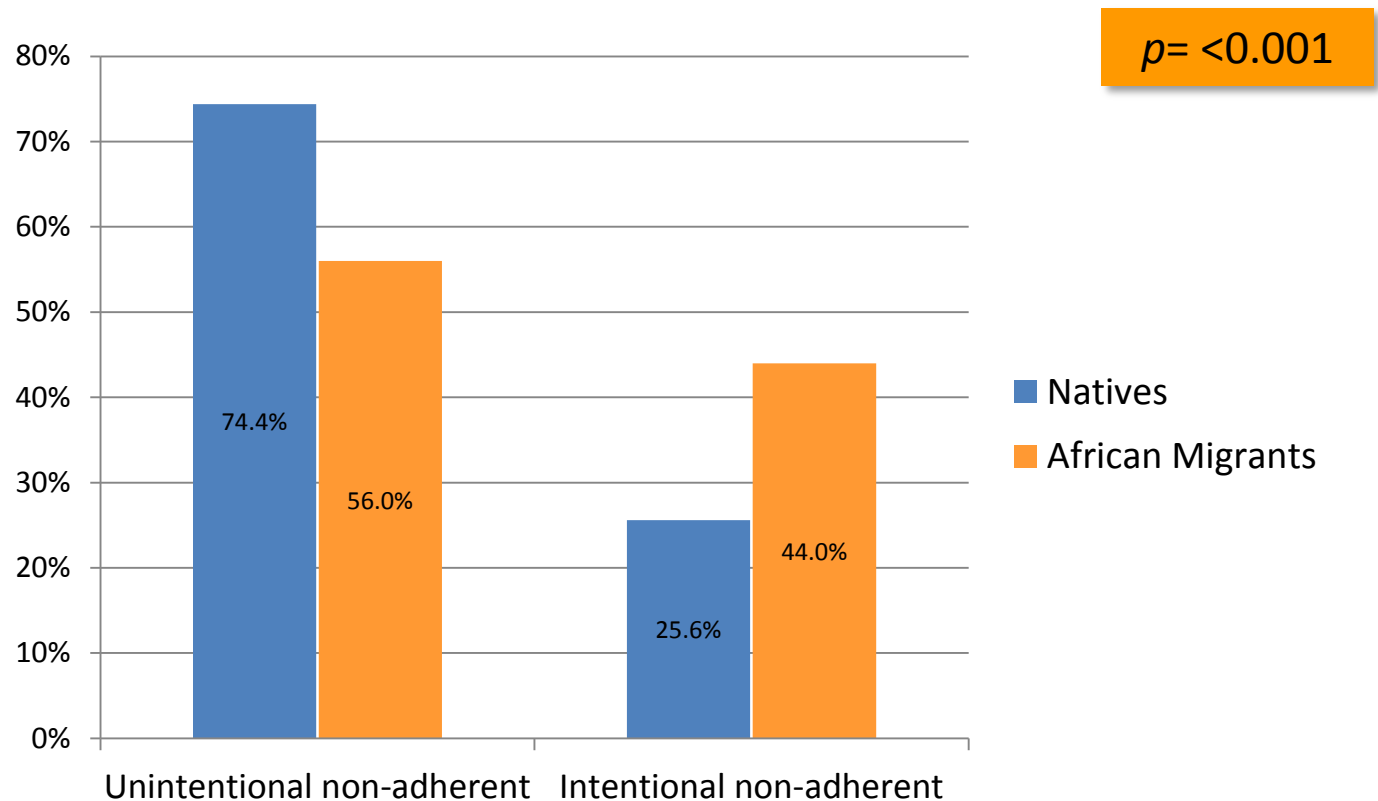
# RESULTS - ADHERENCE TO ANTIHYPERTENSIVE MEDICATION

→ Proportion of adherents and non-adherents between the two groups



# RESULTS - ADHERENCE TO ANTIHYPERTENSIVE MEDICATION

→ Proportion of unintentional and intentional non-adherents between the two groups



# RESULTS – FACTORS ASSOCIATED WITH ADHERENCE

Variable		OR	CI 95%	p
<b>Portuguese natives</b>	Female sex	1.60	(1.01-2.55)	<b>0.05</b>
	Main Occupation			
	Employed	1.00		0.03
	Unemployed	0.45	(0.18 - 1.14)	0.09
	Retired	1.36	(0.82 - 2.25)	0.23
	Other situation	0.35	(0.08 - 1.53)	0.16
	Financial difficulties in buying the medication			
	Not difficult	1.00		0.04
	Somewhat difficult	0.65	(0.33 – 1.29)	0.22
	Very difficult	0.41	(0.20 – 0.84)	<b>0.02</b>
<b>African migrants</b>	Have help of someone to control hypertension	0.18	(0.05 – 0.62)	<b>0.01</b>
	Check BP regularly	2.09	(1.22 – 3.61)	<b>0.01</b>

OR, odds ratio estimation by logistic regression analysis; CI, confidence interval



# STRENGTHS AND WEAKNESSES

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- Large and probabilistic sample study – Immigrant Cohort
- Use of validated measure to assess medication adherence
  
- Adherence was measured only by **self-report**:
  - **Overestimation** of adherence
  - **Social desirability** bias
  
- Patients who **agreed to participate** may be **more likely to be adherent** than those who **refused to participate**.
  - **Underestimation** of the true **impact of non-adherence** on outcome

# CONCLUSIONS

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- **African migrants** seemed to be less **adherent to medication** and **more intentional non-adherent** than natives.
- Factors associated with adherence were **different between the two groups**:
  - Natives**: sex and have financial difficulties in buying the medication
  - African migrants**: Have help of someone to control hypertension and check BP regularly
- In other **studies sex, race and financial difficulties** where also related to antihypertensive medication adherence.
- Future analysis should explore and elucidate these factors

# ACKNOWLEDGMENTS

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- Research team of DIMATCH-HTA study.
- To all the collaborators involved in data collection.

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**Thank you!**

**dsouto@fm.ul.pt**