Original article

# Differences in prevalence, treatment and control rates of hypertension between male and female in the area of Blida (Algeria)

## Différences de prévalence, de traitement et de contrôle de l'hypertension entre hommes et femmes dans la région de Blida (Algérie)

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## Abstract

*Purpose.* – To compare differences in prevalence rates, treatment and control of hypertension (AHT) between males and females in general medicine consultation in the area of Blida (Algeria).

*Methods.* – We included 3622 patients in the study (42% males and 58% females), with a mean age of $48.14 \pm 10.11$ years, examined between January 2014 and June 2016 in general medicine consultation in the area of Blida (Algeria). Data was collected with individual questionnaires. Measurement of blood pressure was made using validated semi-automatic devices (OMRON HEM model 705CP). Individuals using antihypertensive drugs and/or blood pressure (BP) greater than or equal to 140/90 mmHg were considered as hypertensives. The knowledge about the disease was identified among those who claimed to be aware of the diagnosis before the measurements. The treatment rate was calculated with those who reported using antihypertensive drugs. Controlled blood pressure was considered in individuals with values lower than 140/90 mmHg. Lipid profile (total cholesterol, triglycerides, HDL and LDL cholesterol), and fasting blood sugar were measured. All calculations and statistical analyses are processed by the SPSS 20.0.

*Results.* – The prevalence of hypertension was higher among men (46.2%) than women (31.6%) ($P < 0.001$), and among aged over 55 years ($P < 0.05$) and those that have referred hypertensive parents ($P < 0.05$). Among hypertensive men, 55.7% knew the diagnosis, 63.6% of them were under treatment, and 22% had controlled BP. Among the hypertensive women 69.8% knew the diagnosis, 85.1% were under treatment and 35.6% were with controlled BP ($P < 0.001$ for the three variables). The most frequent associated risk factors were diabetes mellitus in 36.8% of the patients, obesity in 35.7% of the patients, microalbuminuria in 23.6% of the patients, hypercholesterolemia > 2 g/L in 11.6% of the patients, smoking in 7.7% of them. Presence of controlled AHT was not found to be associated with presence of other risk factors. The likelihood of having AHT was higher among men, diabetics, older subjects and higher BMI.

*Conclusion.* – Our study confirmed the high prevalence of AHT in general medicine consultation in Blida, which is a representative city in the north of Algeria. Although women are better treated, much remains to be done to reach BP goal, much in our countries which have the least financial resources to combat cardiovascular disabilities.
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*Keywords:* Hypertension; Sex; Prevalence; Treatment; Control; Risk factors; Blida

## Résumé

*Objectif.* – Comparer les différences entre les taux de prévalence, de traitement et de contrôle de l'hypertension (HTA) chez les hommes et les femmes dans une consultation de médecine générale dans la région de Blida (Algérie).

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*Méthodes.* – Nous avons inclus 3622 patients (42 % hommes), avec un âge moyen de 48,14 ± 10,11 ans, examinés entre janvier 2014 et juin 2016 en consultation de médecine générale dans la région de Blida (Algérie). Les données ont été recueillies sur un questionnaire individuel. La mesure de la pression artérielle a été réalisée à l'aide de tensiomètres électroniques validés (OMRON HEM modèle 705CP). Les personnes prenant des médicaments antihypertenseurs et/ou ayant une pression artérielle (PA) supérieure ou égale à 140/90 mmHg étaient considérées comme hypertendues. Le taux de traitement a été calculé avec ceux qui ont déclaré prendre des médicaments antihypertenseurs. La PA était considéré comme contrôlée lorsqu'elle était inférieure à 140/90 mmHg. Bilan lipidique (cholestérol total, triglycérides, cholestérol HDL et LDL) et mesure de la glycémie à jeun ont été effectués. Tous les calculs et analyses statistiques sont traités par le logiciel SPSS 20.0.

*Résultats.* – La prévalence de l'hypertension était plus élevée chez les hommes (46,2 %) que chez les femmes (31,6 %) ($p < 0,001$), et les plus de 55 ans ($p < 0,05$). Parmi les hommes hypertendus, 55,7 % connaissaient le diagnostic, 63,6 % étaient sous traitement, et la PA était contrôlée chez 22 % d'entre eux. Parmi les femmes hypertendues, 69,8 % connaissaient le diagnostic, 85,1 % étaient sous traitement et 35,6 % étaient contrôlées ($p < 0,001$ pour les trois variables). Les facteurs de risque associés les plus fréquents étaient le diabète sucré chez 36,8 % des patients, l'obésité chez 35,7 %, micro-albuminurie chez 23,6 %, l'hypercholestérolémie > 2 g/L chez 11,6 %, le tabagisme chez 7,7 % d'entre eux. L'HTA contrôlée n'était associée à la présence ou non de facteurs de risque associés. La probabilité d'avoir une HTA était plus élevée chez les hommes, les diabétiques, les sujets âgés et lorsque l'IMC était élevé.

*Conclusion.* – Notre étude a confirmé la forte prévalence de l'HTA en consultation de médecine générale à Blida, ville représentative du nord de l'Algérie. Bien que les femmes soient mieux traitées, il reste beaucoup à faire pour atteindre l'objectif thérapeutique, surtout dans nos pays qui ont le moins de ressources financières pour lutter contre les complications cardio-vasculaires.

## 1. Introduction

With over one billion people affected, high blood pressure (hypertension) is a global public health problem. Uncontrolled, it causes serious cardiovascular events such as stroke, heart failure and coronary insufficiency, for which it multiplies the risk by nine, five and three, respectively [1]. Three-quarters of hypertensive patients in the world will be in developing countries in 2025, according to epidemiological forecasts [2]. The emergence of many environmental risk factors in the general population due to globalisation, urbanization and rapid change of lifestyle explains this evolution [3].

In the area of Blida (city at 30 km far from the capital Algiers), there is no data on the characteristics of arterial hypertension (AHT), its control, as well as associated cardiovascular risk factors (RFs). It seemed useful to study the profile of our hypertensive subjects.

## 2. Objective

To compare the prevalence rate of arterial hypertension between men and women in general medicine consultations. To evaluate the control rate of hypertensive patients under antihypertensive drugs therapy. And to research the frequency of associated cardiovascular risk factors in the hypertensive population in Blida.

## 3. Materials and methods

It is a retrospective study over two years (between January 2014 and June 2016), on a population followed in general medicine consultations in the department of internal medicine and cardiology of the university hospital centre of Blida (Algeria); having included 3622 subjects aged 18 years and more, of both sexes.

The control consisted of completing a questionnaire which included anthropometric characteristics, life habits, personal and family medical history, supplemented by a clinical examination including:

- epidemiological parameters (age, occupation, sex, home, tobacco consuming);
- weight, height, waist and hip circumferences were also measured at the same day. The body mass index (BMI) was calculated by the equation: weight (kg)/height$^2$ (m$^2$). We define obese subjects (BMI $\geq$ 30 kg/m$^2$), overweight (BMI between 25 and 29.99 kg/m$^2$), normal weight (BMI between 18.5 and 24.99 kg/m$^2$);
- blood pressure (BP) was measured three times at two minutes intervals after five minutes of rest in the sitting position, using a validated electronic tensiometer (Omron705 CP) [4]. The average of the last two measurements was used for the statistical analysis [5].

AHT was defined as systolic BP (SBP) greater than or equal to 140 mm Hg or diastolic blood pressure (DBP) greater than or equal to 90 mm Hg or both, or continuous administration of antihypertensive drug therapy [6].

Blood chemistry, including fasting glucose, total cholesterol (CT), HDL cholesterol, LDL cholesterol, triglycerides, blood creatinine and microalbuminuria, was measured under fasting conditions according to standard techniques.

For the diagnosis of metabolic syndrome (MS), we used the definition of NCEP ATP III [7], according to which at least three of the following five criteria must be found: