PDF version

Youness El Achhab,[1,2] Laila Nazek,[3] Morched Maalej,[3] Mohamed Alami [4] and Chakib Nejjari [1,5]

[1]Epidemiology, Clinical Research and Community Health, Faculty of Medicine and Pharmacy of Fez, University Sidi Mohammed Ben Abdellah, Fez, Morocco. [2]Regional Centre for Careers Education and Training of Fez-Meknes, Seffrou, Morocco.
[3]
Novartis Pharma Maroc SA, Casablanca, Morocco.
[4]
Private Medical Office, Casablanca, Morocco.
[5]
Mohammed VI University for Health Sciences, Casablanca, Morocco. (Correspondence to: Youness El Achhab: youness_elachhab@yahoo.fr).

Abstract

Background: Hypertension is a leading risk factor for mortality and morbidity.

Aims: The objective of this study was to determine the prevalence and clinical profile of hypertension in a large sample of individuals in Morocco.

Methods: This was a multicentre and cross-sectional study conducted on patients consulting primary care physicians in Morocco between 2008 and 2009. Data were collected via a medical examination and a questionnaire covering patient demographics, medical history and cardiovascular risk factors.

Results: In total, 10 714 individuals attending primary care physicians participated in this study. Mean age was 49.6 ± 16.3 years. The total prevalence of hypertension was 39.8%. When adjusted for age and sex, the overall prevalence of hypertension was 26.6% (26.3% in men and 28.0% in women). Among patients with history of hypertension, 85.9% of patients were prescribed antihypertensive medication and/or lifestyle and dietary advice. Nevertheless, only 17.1% had controlled hypertension.

Conclusions: This study suggests that the prevalence of hypertension in Morocco is high. Hypertension may also be underdiagnosed and ineffectively treated. Efforts to heighten public awareness and control of hypertension should be enhanced in the public primary care services.

Keywords: hypertension, Morocco, epidemiology, antihypertensive, controlled hypertension.

Citation: El Achhab Y; Nazek L; Maalej M; Alami M; Nejjari C. Prevalence, control and risk factors related to hypertension among Moroccan adults: a multicentre study. East Mediterr Health J. 2019;25(7):447-456 https://doi.org/10.26719/emhj.18.057

Received: 6/02/17; accepted: 05/11/17

Copyright © World Health Organization (WHO) 2019. Some rights reserved. This work is available under the CC BY-NC-SA 3.0 IGO license (https://creativecommons.org/licenses/by-nc-sa/3.0/igo).

Introduction

Most low- and middle-income countries are currently confronting a significant public health challenge due to a continued high burden of communicable diseases and noncommunicable diseases, especially hypertension (1–3). Elevated blood pressure (BP) represents the principle contributor to the global mortality of disease and burden (4). Globally, elevated BP is the leading risk factor for mortality and morbidity, accounting for 7% [CI 95%, 6.2–7.7] of global disability adjusted life years and 9.4% [CI 95%, 8.6–10.1] million deaths in 2010 (5). Also, the number of individuals with uncontrolled hypertension (defined as SBP ≥ 140 mm Hg or DBP ≥ 90 mm Hg) increased from 605 to 978 million because of population growth and aging (5). The number of adults with hypertension in 2025 was predicted to increase by about 60% to a total of 1.56 billion globally (6).

Hypertension may be present for many years before it becomes an emergency. Many patients around the world continue to have unrecognized or untreated hypertension, with variation

between countries (7). The JNC 7 report “Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure”, showed that hypertension was unrecognized in 30% of cases; in recognized patients, 54% were treated and only 34% were controlled (8).

In Morocco, the ministry of health conducted a study on the main cardiovascular risk factors in 2000 and indicated that the prevalence of hypertension in adults was 33.6% (9). In North Africa a cross-sectional study ETHNA (Epidemiological Trial of Hypertension in North Africa) was conducted in 28 500 patients consulting primary care physicians in Algeria, Tunisia and Morocco; the total prevalence of hypertension was 45.4% (10). The aim of this study was to determine the prevalence and clinical profile of hypertension in a large sample of individuals in Morocco.

Methods

Participants

This was a national, multicentre, epidemiological, cross-sectional study conducted in patients attending primary care physicians in Morocco between September 2008 and January 2009. Eligible patients were aged 18 years or older of either sex who were willing to participate in the survey. Patients who had fever (≥ 38°C) were excluded from the study (11).

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study. The study was reviewed by the Independent Ethics Committee.

The sample size was calculated based on an estimated prevalence of hypertension of 30%. With a risk of error of 0.01 (1%), a difference of imprecision of 1.0%, and a cluster effect of 2, the number to be included in the study was rounded to 11 000. A cluster was defined as a neighbourhood in an urban area and a locality in a rural area. One cluster was selected at random from each region included in the survey and one primary care centre from each commune of the cluster was selected at random. One hundred and ten physicians participated in the study, each of which recruited more than 100 participants.

Data collection and medical examination

Data were collected by participating primary care physicians using a checklist that covered demographics of the patient; personal and family medical history; risk factors for cardiovascular disease and hypertension; and whether a BP measurement had been recorded in the last year. If the patient had a history of hypertension, additional information from their medical history was collected including duration of hypertension; prescription of antihypertensive medication (including type(s), number of medications, any single-pill combinations); and history of hypertension-related complications (including left ventricular hypertrophy, angina, myocardial infarction, chronic heart failure, stroke, chronic kidney disease, retinopathy, revascularization or peripheral arterial disease).

Patients were also clinically examined and measurements were taken for weight, height, waist circumference and BP. Two BP measurements were planned: one after 5 minutes of rest and the second following a further 2-minute rest after the completion of the first measurement. When possible, BP measurements were recorded as the mean of the two measurements. Hypertension was identified according to the criteria of the European Society of Hypertension and the European Society of Cardiology (ESH/ESC) guidelines (12): grade 1 hypertension, SBP 140–159 mmHg and/or DBP 90–99 mmHg; grade 2 hypertension, SBP 160–179 mmHg and/or DBP 100–109 mmHg; grade 3 hypertension, SBP ≥ 180 mmHg and/or DBP ≥ 110 mmHg; systolic hypertension (also known as isolated systolic hypertension) was graded (1, 2 or 3) according to the SBP values in the above ranges, provided that DBP was

Current smoker was defined as a person who continued to smoke at the time of survey daily or occasionally and ex-smoker was defined as a person who had quit smoking. Abdominal obesity was defined as a waist circumference ≥ 90 cm in men and waist circumference ≥ 80 cm in women. Body mass index (BMI) was computed as weight (kg)/height (m2) and classified according to the World Health Organization criteria as overweight (BMI ≥ 25 kg/m2) and obese (BMI ≥ 30 kg/m2). Diabetes, hypercholesterolaemia, kidney failure and postmenopausal women are self-reported from patients.

Statistical methods

Initially, descriptive analyses were used to determine the crude prevalence of hypertension over the whole sample. In addition, age- and sex-adjusted rates were calculated by multiplying the age- and sex-specific rate for each age group in the study population by the appropriate weights from a standard population (13). The overall age- and sex-adjusted rates were the sum of these products.

The associations between various facets of hypertension (e.g. a history of hypertension, newly detected hypertension, hypertension severity, controlled hypertension) and patient demographics and personal medical profile (e.g. age, sex, personal and family medical history, body mass index (BMI), smoking and current treatment) were investigated. Statistical analyses

were based on conventional parametric tests ($\chi 2$ test, Student's t-test and analysis of variance). A test was considered significant when P

Results

Participants

In this study, through 110 general physicians, 10 714 patients were included. Table 1 presents the characteristics of the study population. The mean age of participants was 49.6 ± 16.3 years. Two thirds of the participants were female (66.7%) and 73.4% of participants lived in urban area. Almost 43.5% of participants were illiterate, and 12.1% were educated to university graduate level. The mean BMI of the participants was 25.9 ± 4.8 kg/m2. Only 12.4% of patients consulted primary care for cardiovascular motif.

Risk factors

Table 2 presents an overview of risk factors of hypertension in the study population. Family history of abdominal obesity, hypercholesterolaemia and type 2 diabetes were present in 35.6%, 13.5% and 13% of patients respectively. Menopause was present in 41.2% of female participants. Near half (46%) of participants had a normal BMI, and almost 52% of participants were overweight or obese. Smoking was present in 25.5% of males and 1.8% of females.

Prevalence of hypertension

Among the 10 717 participants surveyed, 4262 individuals had hypertension – an overall crude prevalence of 39.8% [95% CI 38.9–40.8]. Of these individuals, 2480 (58.2%) had a history of hypertension. Among them, 2130 (85.9%) received antihypertensive medication. When adjusted for age and sex, the overall prevalence of hypertension was 26.6% (95% CI 25.8–27.4; 26.3% in men [95% CI 24.8–27.8] and 28.0% in women [95% CI 26.9–29.1]). The duration of hypertension in patients with a history of hypertension averaged 7.6 ± 5.7 years. In near half of the patients (48.5%), the duration of hypertension was more than 5 years.

An overview of hypertension severity in patients with a history of hypertension is shown in Table 3 .
In total, 7.2% of patients had either normal or optimal BP at the time of the study visit. Around 10% of the patients had normal–high BP and around 33% of the patients had isolated systolic hypertension. Of patients who were untreated, approximately 20% and 18% had hypertension grade 1 and grade 2, respectively. More than half (51.6%) of patients had isolated systolic hypertension.

The proportions of patients with a history of hypertension according to their socio-demographic characteristics are summarized in Table 4 . The proportions of patients with hypertension

increased with age (P < 0.0001); 53.4% of participants aged 60 years or older had a history of hypertension, compared with just 1.6% of those aged 18 to < 30 years. Hypertension was more common in women than men (24.4% vs 22.2%; P = 0.01), in rural than in urban areas (26.4% vs 22.9%; P