A prospective, multicenter, epidemiological study of the prevalence of cardiovascular risk factors in hypertensive patients in Greece, the WIN-HAZARD study

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Background/Introduction: Arterial hypertension (AH) is a major, common, modifiable, risk factor for cardiovascular disease. It is strongly associated with cardiovascular disease (CVD), the leading cause of death globally, according to World Health Organization. In addition to elevated blood pressure (BP), many hypertensive patients have other risk factors that increase the overall cardiovascular risk. The calculation of the total cardiovascular (CV) risk is necessary for selecting the proper treatment strategy and guide timely treatment decisions and interventions.

Purpose: This prospective, multicenter, epidemiological, non-interventional, nationwide study aimed to evaluate the type and number of total CVD risk factors in hypertensive patients in Greece, according to the 2013 guidelines of the European Society of Hypertension (ESH) and the European Society of Cardiology (ESC), applicable at the time of the study conduct.

Methods: Overall, 3 Cardiology Hospital sites and 167 private Cardiologists, Internists, Endocrinologists and General Practitioners nationwide participated in the study, enrolling consecutive adult patients with hypertension under treatment. Total CV risk was assessed by 2013 ESH/ESC criteria, and the European Systematic Coronary Risk Evaluation (SCORE) algorithm. It involved a single visit, with no screening period for the patients. The study has been conducted in compliance with ICH/GCP standards, from March 2017 to April 2019.

Results: In total 1309 patients with AH under treatment were enrolled (59% male, mean age 60.6 years, mean BMI 28.2). The median time from AH diagnosis was 3.7 years. The most common CV risk factors were dyslipidaemia (76.4%), male gender (59%), advanced age (58.1%) and abdominal obesity (46.1%). The incidence of the remaining total CV risk factors per category was asymptomatic target organ damage (20.8%), diabetes (11.3%) and established CV or renal disease (5.8%). The majority of the study patients (71.6%) had concomitantly ≥3 total CV risk factors (table 1 and table 2).

The mean (±SD) systolic arterial pressure was 143.5±14.7 mmHg and the mean (±SD) diastolic 85.5±8.6 mmHg. More than half of the patients (51.8%) received one antihypertensive drug, with angiotensin II receptor blockers (ARBs) being the most commonly reported drug class (23.9%), followed by calcium channel blockers (15.8%).

Conclusion: This real-world study with its broad geographical coverage and phycisians' specialty range, contributed significant epidemiological data pertaining to prevalence of cardiovascular risk factors in adult hypertensive patients and their current treatment status in Greece. The value of this observational study lies in supporting the proper deployment of current guidelines, as well as, the implementation of future preventive healthcare programmes.

Incidence of total CV risk factors per category

No (%)* of patients who had only AH (no other factors):	56 (4.3%)
No. (%)* of patients who, other than AH, had:	N=1309
Category A: Risk factors	1250 (95.5)
Category B: Indications of asymptomatic target organ damage	272 (20.8)
Category C: Diabetes Mellitus	148 (11.3)
Category D: Established Cardiovascular or Renal disease	76 (5.8)
No. (%)* of patients who, other than AH, had:	N=1309
<3 total CV risk factors	372 (28.4)
≥3 total CV risk factors	937 (71.6)
≥1 risk factor from Category A only (no factors from Cat. B/C/D)	883 (67.5%)
1-2 factors from Categories B-D only	280 (21.4)
≥3 factors from Categories B-D only	90 (6.9)

Table 1

Incidence of individual total CV risk factors, other than AH

CATEGORY A: RISK FACTORS	
No of risk factors per patient – no (%)*	N=1309*
Mean ± SD	3.90±2.25
Median (Min, Max)	4.0 (0.0–11.0)
0	59† (4.5)
1-3	540 (41.3)
4-6	530 (40.5)
>6	180 (13.8)
Risk factors – no (%)*	N=1309
Male gender	772 (59)
Age (male ≥55 yrs, female ≥65 yrs)	761 (58.1)
Smoking	276 (21.1)
Dislipidaemia	1000 (76.4)
Total Cholesterol >190 mg/dL	883 (67.5)
LDL>115 mg/dL	624 (47.7)
HDL in male <40 mg/dL, in female <46 mg/dL	277 (21.2)
Triglycerides >150 mg/dL	439 (33.5)
Glucose (fasting sample) 102-125 mg/dL	301 (23)
Abnormal glucose tolerance test	165 (12.6)
Obesity (BMI ≥30 kg/m²)*	358 (27.3)
Abdominal (Central) obesity	604 (46.1)
Family history of early CVD	276 (21.1)
CATEGORY B: INDICATIONS OF ASYMPTOMATIC TARGET ORGAN DAMAGE – no (%)*	
Pulse pressure (in elderly) ≥60 mm Hg	34 (2.6)
Left ventricular hypertrophy electrocardiography°	66 (5)
Left ventricular hypertrophy echocardiography°	136 (10.4)
Atheromatous plaque in the carotid arteries	106 (8.1)
Ankle-brachial index (ABI) <0.9	6 (0.5)
Chronic kidney disease with eGFR 30-60 ml / min / 1.73m²	20 (1.5)
Microalbuminuria (30-300 mg/24h) or albumin creatinine ratio (30-300 mg/g, 3.4-34 mg/mmol) (preferably morning urine sample)	47 (3.6)
CATEGORY C: DIABETES MELLITUS – no (%)*	
Fasting blood glucose ≥126 mg / dL (2 measurements)	103 (7.9)
Postprandial glucose> 198 mg / dL	51 (3.9)
HbA1c> 7%.	88 (6.7)
CATEGORY D: ESTABLISHED CARDIOVASCULAR OR RENAL DISEASE – no (%)*	
Cerebrovascular disease (ischemic or hemorrhagic stroke, transient stroke)	28 (2.1)
Heart failure (with low or normal ejection fraction)	15 (1.1)
Chronic kidney disease with eGFR <30 ml/min/1.73 m² - proteinuria (> 300 mg/24 h)	3 (0.2)
Symptomatic peripheral arterial disease	33 (2.5)
Retinopathy stage III or IV (haemorrhages, floaters, papilloedema)	4 (0.3)

Table 2