



## Dyslipidemia as an associated risk factor in hypertensive women

### *Dislipidemia como factor de riesgo asociado en mujeres hipertensas*

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#### INTRODUCTION

The current prevalence of arterial hypertension in Mexico has been estimated at 30.05%.<sup>1</sup> Its relationship with age, dyslipidemia, obesity, and carbohydrate metabolism disorders is recognized.<sup>2</sup>

An increase in total circulating cholesterol, on the other hand, represents another important marker of cardiovascular risk.<sup>3-6</sup> Cardiovascular disease (CVD) is the leading cause of death in most middle-income and developed countries and has recently increased in low-income countries. In Mexico, as worldwide, the leading cause of death is cardiovascular disease for both women and men.<sup>7</sup>

Approximately 80% of CVD are preventable. Atherosclerotic cardiovascular disease (ASCVD) prevention and risk reduction benefit individuals and society, which is why it represents a challenge. The expenditures associated with these diseases are catastrophic and capable of slowing down the social development of a country. Many patients cannot access preventive cardiology.<sup>8,9</sup>

Hypertension and dyslipidemia are important risk factors for CVD. The coexistence of hypertension and dyslipidemia is often observed in daily clinical practice. Epidemiological studies have also reported that gradual increases in blood pressure (BP) or the prevalence of hypertension are associated with increases in circulating lipid levels. One possible explanation for this relationship is that

hypertension and dyslipidemia share common pathophysiological mechanisms, such as obesity and the resulting dysregulation of adipokine release. Dyslipidemia, however, adversely affects functional and structural arterial characteristics and promotes atherosclerosis. These changes may affect BP regulation, which, in turn, predisposes people with dyslipidemia to the development of hypertension.<sup>10,11</sup>

From an epidemiological perspective, several cohort studies have indicated a causal relationship between dyslipidemia and future risk of developing hypertension.<sup>8</sup> However, with one exception, these studies have been conducted in non-Asian populations.<sup>8,12-15</sup>

Hypertension is a modifiable risk factor to avoid premature death. Evidence supports that effective treatment of hypertension results in a significant reduction in CVD.<sup>6</sup> The may measurement month (MMM) initiative of the International Society of Hypertension and epidemiological studies such as PURE have concluded that at least a quarter of the Latin American population suffers from hypertension. However, only 20-30% of them are within the BP control goals, according to the recommendations of the current guidelines.<sup>3,4,12</sup>

These data align with the Global Blood Pressure Screening Campaign of the International Society of Hypertension (MMM).<sup>4</sup> Of 1'508,130 subjects examined, 32% had never previously undergone BP measurement, only 58.7% of patients with hypertension

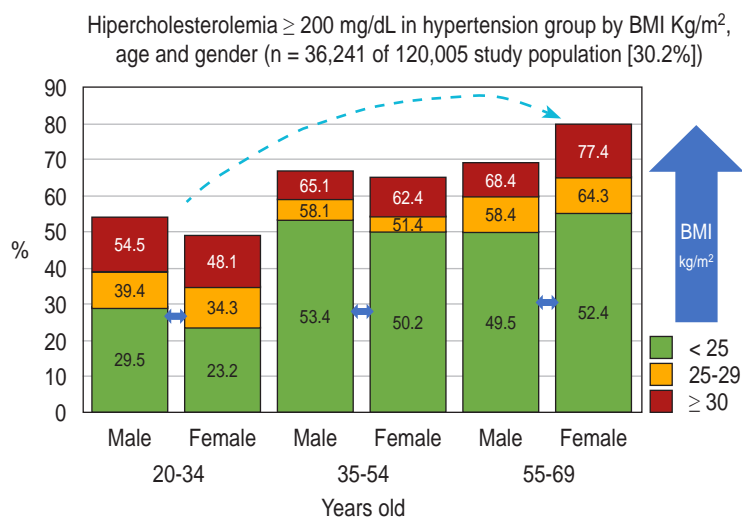
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knew their diagnosis, and 54.7% were taking antihypertensive drugs.<sup>4</sup> In patients taking antihypertensives, only 57.8% were controlled with BP < 140/90 mmHg and 28.9% with lower values. Those values mean that only 31.7% of all those with hypertension were controlled with BP < 140/90 mmHg and 23.3% of participants had untreated or inadequately treated hypertension.

The urgent need to implement innovative strategies to reverse this alarming health situation is evident in this context. In recent years, physicians have noted that an increased frequency of out-of-office BP measurements may be helpful to keep patients and physicians in touch and promote better medication adherence and BP control.<sup>11,16,17</sup> Many systematic reviews and meta-analyses confirm the validity and usefulness of home self-measurements that patients can share with physicians via telemedicine. In a study in a Mexican population that included more than 120,000 patients, the prevalence of hypertension was 30.2% in adults aged 20 or over. Interestingly, hypercholesterolemia with cholesterol levels greater than 200 mg/dL was more prevalent in the hypertensive population than the non-hypertensive population (57.8% vs 39.8%, respectively,  $p < 0.05$ ).



**Figure 1:** Distribution of total cholesterol level (mg/dL) by age group and gender. The red box corresponds to total cholesterol > 240 mg/dL, the yellow box to total cholesterol 200-240 mg/dL, and the green box to cholesterol less than < 200 mg/dL. BMI = body mass index.

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Thus, it is clear that chronic noncommunicable diseases frequently coexist, and the presence of one enhances the existence of the others.<sup>17,18</sup> The prevalence of hypercholesterolemia > 200 mg/dL in the population aged 20-34 without arterial hypertension was 27.2% vs 36.5% in the group with hypertension of the same age.<sup>16,19</sup>

Interestingly, the prevalence increases in the 35-54 age group to 44.9% in participants with normal BP and 62.3% in patients with hypertension, without significant differences between both sexes.<sup>16</sup> However, in the 55-69 age group, the prevalence increases to 47.3% in subjects with normal BP vs 68.6% in the population with hypertension. The differences by gender are notable, observing an increase of more than ten percentage points in women with hypertension (Figure 1). Of the total population of this study, 36,257 (30.2%) were hypertensive; however, 60% were unaware of it.<sup>16</sup> The prevalence of hypercholesterolemia in the population with hypertension was 52.5%; however, the prevalence was not only associated with the type of hypertension (55.6% systolic vs 53.2% diastolic) but also with the stage. Thus, the prevalence of hypercholesterolemia in stage one patients was 52.3%, while in stage 2, the prevalence was 56.1%.<sup>16</sup>

## CONCLUSIONS

Chronic noncommunicable diseases frequently coexist and enhance their prevalence among them. In this sense, there is a synergy between hypertension and hypercholesterolemia. The female gender shows a peculiar association according to age and body weight, and a higher prevalence of hypercholesterolemia is observed in women with hypertension. Dyslipidemia is a prevalent cardiovascular risk factor, and in women with hypertension, it presents a prevalence of more than 50%, particularly after age 55.

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