



## EMPHNET's Research Digest

# Hypertension and Pre-Hypertension in Middle East and North Africa (MENA): A Meta-Analysis of Prevalence, Awareness, Treatment, and Control

### Introduction

Hypertension (HTN) is a chronic medical condition and is the leading cause of preventable premature deaths worldwide. This condition can be managed effectively through timely diagnosis, and its control can be achieved at a relatively low cost with minimal adverse effects. The global community has established a target within the Sustainable Development Goals to decrease the prevalence of hypertension by 33% by the year 2030. However, as of 2021, an estimated 1.28 billion adults worldwide have HTN, with two-thirds of them living in low- and middle-income countries (LMICs).

Unfortunately, 46% are unaware that they have the condition and only 42% are diagnosed and treated (WHO data). Additionally, only 21% of individuals with HTN have their condition under control.

Despite the numerous individual studies, the exact prevalence of

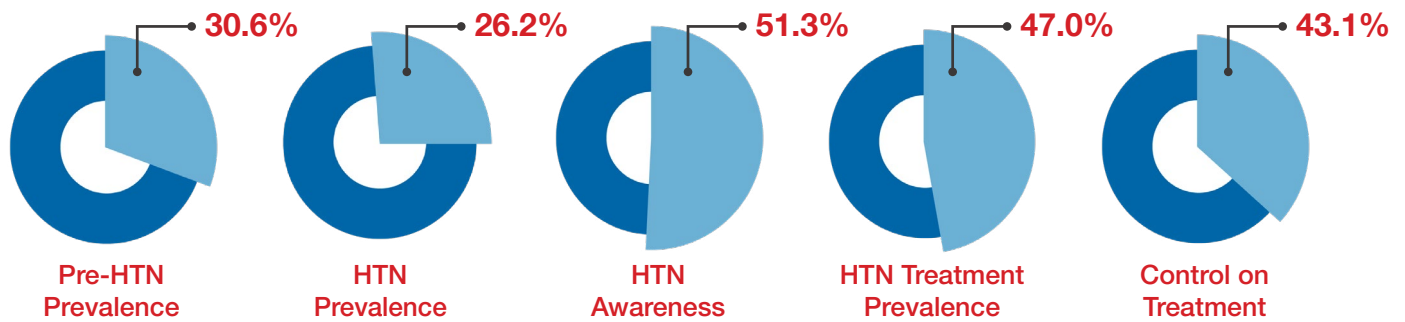
prehypertension (pre-HTN) and hypertension in the Middle East and North Africa (MENA) region remains unclear. Accordingly, the [“Hypertension and Pre-Hypertension in Middle East and North Africa \(MENA\): A Meta-Analysis of Prevalence, Awareness, Treatment, and Control”](#) study was conducted to address this information gap and provide a comprehensive evaluation of the prevalence of pre-hypertension and hypertension, as well as the prevalence of awareness of HTN and pre-HTN, treatment, and control in the MENA region. The study was published in *Current Problems in Cardiology* in June 2022.

### Study Characteristics

This systematic review and mixed methods meta-analysis was pre-registered on PROSPERO and followed the PRISMA guidelines. It utilized PubMed, Web of Science

and Scopus databases and included cross-sectional and prospective cohort studies, published from inception until 2021, from the MENA on individuals from the general population aged more than 15 years. Pre-HTN and HTN were defined based on the WHO and the Joint National Committee definition, as systolic blood pressure and diastolic blood pressure of 130-139/80-89 mm Hg and >140/90 mm Hg, respectively, taking blood pressure medication, or being diagnosed by a physician with hypertension.

The analysis included 147 studies from 17 countries, involving a collective population of over 1.3 million individuals, ranging in age from 19.9 to 72.5 years. The majority of included studies were cross-sectional studies that used multistage sampling, performed in Iran and Saudi Arabia, and published between 2001-2021. Most of the studies were considered low risk with respect to quality,



but heterogeneity among studies was high ( $I^2 > 99\%$ ) for all pooled analyses.

### Prevalence of pre-HTN

Pre-Hypertension was assessed in 48 studies, and its pooled prevalence was 30.6% (95% CI: 25.2, 36.0,  $n=474,681$ ). In a subgroup analysis based on country economic status, the pooled prevalence in upper-middle-income countries was lower compared to high-income and LMICs (26.7%, 32.6%, and 31.2%, respectively). Additionally, 34 studies reported the prevalence of pre-HTN according to sex, and subgroup analysis showed higher prevalence in men (31.7%, 95% CI: 25.6, 37.9) compared to women (23.6%, 95% CI: 18.9, 28.4).

### Prevalence of HTN

The pooled prevalence of HTN in 140 studies was 26.2% (95% CI: 24.6, 27.9,  $n=1,305,664$ ). In young adults aged 19-27, the prevalence was 9.5% (95% CI: 6.4, 12.5), while in the elderly over 60 years, the prevalence was 49.6% (95% CI: 44.8, 54.5). However, within the general population, when the data reflecting only young adults or only elderly was excluded from the analysis, the prevalence of HTN only mildly decreased to 26.4% (95% CI: 24.6, 28.1).

Sub-group analysis based on sex showed no significant difference in HTN prevalence between men 25.1% (95% CI: 23.2, 26.9) and women 25.7% (95% CI: 23.4, 28.0), which is consistent with the

results of previous studies from the United States, Europe, and Africa. However, within the different age groups the prevalence was higher in young adult men (14.0%) compared to young adult women (6.6%) and lower in elderly men (44.0%) compared to elderly women (55.1%). Sub-group analysis based on country economic status, showed that the highest prevalence was in upper-middle-income populations (35.5%, 95% CI: 29.5, 41.4), followed by lower-income (26.5%, 95% CI: 24.3, 28.7) and high-income populations (22.8%, 95% CI: 20.4, 25.2). This pattern was seen in the general population and also specifically in young adults, with the lowest prevalence in high-income countries (8.5%).

### Awareness, Treatment, and Control of HTN

37 studies assessed Hypertension awareness, and the meta-analysis showed that only half of the included population with hypertension were aware of their condition (51.3%, 95% CI: 47.7, 54.8,  $n=78,032$ ). Similarly, HTN treatment was assessed in 36 studies, and the pooled result showed that less than half of the patients with hypertension were receiving appropriate treatment (47.0%, 95% CI: 34.8, 59.2). This is in line with the global rate of patients with hypertension undergoing treatment (38%-47%). As for control on treatment, it was assessed by 41 studies, and was found to be low at 43.1% (95% CI: 38.3, 47.9), which is higher than global statistics (18%-23%). Previous studies in the region have reported non-adherence,

availability of medications, and access to medications as a main contributor to low rate of control in the region.

### Conclusion

This study highlights the high prevalence of pre-hypertension and hypertension in the MENA, as well as the low awareness of HTN and the inadequate treatment and control in the region, indicating the pressing need for attention and investment in HTN prevention and control to improve awareness on HTN, especially in countries with poorer health infrastructure. The study suggests the importance of early interventions on the risk factors, and the need for prioritizing hypertension control at both regional and national levels, with multi-sectoral, governmental, and societal support, and sustained public awareness campaigns to reduce modifiable risk factors. The findings emphasize the need for investing in health education and ensuring the availability, access, affordability, and quality of medicines, building the health workforce's capacity, and streamlining health information systems, especially in LMIC where prevalence was higher. Additionally, this meta-analysis suggests promoting wellness clinics, introducing legislation on food and drinks, and implementing physical activity toolkits to encourage healthy lifestyles. These interventions can help reduce the burden of hypertension and improve health outcomes in the MENA region.

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