

## ORIGINAL ARTICLE

# PSYCHOLOGICAL DETERMINANTS OF PRE-HYPERTENSION AMONG FIRST YEAR UNDERGRADUATE STUDENTS IN A PUBLIC UNIVERSITY IN MALAYSIA

Balami AD<sup>1</sup>, Salmiah MS<sup>1</sup>, Nor Afiah MZ<sup>1</sup>

Department of Community Health, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia

## ABSTRACT

Pre-hypertension increased the risk of morbidity and mortality from non-communicable diseases. Whereas, psychological factors such as depression, anxiety and stress have been associated with increased in blood pressure. However, previous studies more focuses on psychological determinants of hypertension than prehypertension. Thus, this study aims to determine the association between these psychological factors with pre-hypertension. A cross-sectional study was conducted in 2012 among first year students of a public Malaysian university. A random cluster sampling was used to select 5 out of 15 faculties and a total of 495 students participated in this study. The Malay version of DASS-21 was used to elicit their levels of depression, anxiety and stress. Blood pressures were measured twice using sphygmomanometer and the averages were taken. Data analyses used chi-square test and binary multiple logistic regression. The prevalence of pre-hypertension was 30.1%. The percentage of severe and extremely severe depression was 3.8% and 1.2%; both severe and extremely severe anxiety was 16.4%; and severe and extremely severe stress was 4.2% and 0.2% respectively. Severe/extremely severe depression had more than 3 times higher in getting pre-hypertension than no depression. In conclusions, almost one third of respondents had pre-hypertension and only severe/extremely depression was associated with pre-hypertension.

**Keywords:** pre-hypertension, DASS-21, university students, Malaysia

## INTRODUCTION

Pre-hypertension is defined as a systolic blood pressure of 120-139 mmHg and or a diastolic blood pressure of 80-89 mmHg<sup>1</sup>. The prevalence of pre-hypertension among undergraduate university students in a Malaysian government university was reported as 42.9%<sup>2</sup>. Whereas, the prevalence of pre-hypertension among university students in Columbia<sup>3</sup>, Kuwait<sup>4</sup>, Palestine<sup>5</sup> and Slovakia<sup>6</sup> was 40.0%, 39.5%, 27.1% and 22.1% respectively.

Individuals with pre-hypertension have higher risk of getting hypertension and also higher risk of strokes and cardiovascular diseases. In a study, the conversion rate of developing hypertension was 37% in 4 years for individuals with high normal blood pressures<sup>7</sup>. An even higher conversion rate was reported in the Trial of Preventing Hypertension (TROPHY) study in which over a period of 4 years, nearly two thirds of patients with untreated pre-hypertension developed stage 1

hypertension<sup>8</sup>. The population-attributable fractions of pre-hypertension for myocardial infarction and coronary artery disease were 47% and 20% respectively<sup>9</sup>. Adult with prehypertension were about twice more likely to have chronic kidney disease compared to normotensives<sup>10</sup>.

For psychological factors, previous study indicated that the overall prevalence (moderate, severe and extremely severe) of depression, anxiety and stress among Turkish university students was 27.1%, 47.1% and 27.0% respectively<sup>11</sup>. Whereas in Malaysia, a study among undergraduate students from 4 universities indicated that the prevalence of moderate and severe or extremely severe depression was 27.5% and 9.7% respectively; while moderate and severe or extremely severe anxiety was 34.0% and 29.0%; and moderate and severe or extremely severe stress was 18.6% and 5.1% respectively<sup>12</sup>.

Earlier studies have shown psychological factors associated with certain medical