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The Prevalence of Prehypertension and its Associated Factors among
Undergraduate Students in Malaysia

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Abstract. Prehypertension is the precursor to hypertension and these both conditions can increase the risk
of heart attack, stroke and heart failure. University students are faced with various challenges during
university life such as being away from home, adjustment to new environment and independent living and
coping with academic stress and these increase the risks of them developing prehypertension. This study
aimed to determine the prevalence of prehypertension and hypertension among university students in a
public university in Malaysia and the associated factors for prehypertension. This cross-sectional study was
conducted among 1132 undergraduate students (response rate: 90.4%). The proportion of the participants
with prehypertension and hypertension was 21.7% and 2.2%, respectively. Significant associations were
found between age, gender and living arrangement, BMI, adding salt to meals, avoid foods containing fat
and cholesterol, eating fast food once or more a week, eating red meat at least once a day, heavy drinking at
least monthly, having depressive symptoms, PTSD, self-perceived life satisfaction, and hypertension
status. This study found a considerable proportions of students with prehypertension as well as
hypertension. University authorities should pay attention particularly to the modifiable associated factors
such as living arrangement, dietary, lifestyle and psychosocial well-being to prevent prehypertension.

Keywords: prehypertension, hypertension, associated factors, undergraduate students, Malaysia

Introduction
Prehypertension is the condition of having slightly elevated blood pressure of systolic pressure from 120 to
139 millimeters of mercury (mm Hg) and a diastolic pressure from 80 to 89 mm Hg (Chobanian et al.,
2003). Prehypertension is the precursor to hypertension and these both conditions can increase the risk of
heart attack, stroke and heart failure (Egan & Stevens-Fabry, 2015; Huang et al., 2013). It affects 25-50%
adults worldwide (Egan & Stevens-Fabry, 2015; Elliott & Black, 2007; Grotto, Grossman, Huerta, &
Sharabi, 2005) and is also common among young adults and even in adolescents (Acosta, Samuels,
Portman, & Redwine, 2012; Rampal et al., 2011). The reasons for elevation of blood pressure can be due to a
number of reasons such as age, physical inactivity, overweight or obese, eating too much salt, too much of alcohol, tobacco and coffee
consumption, lack of sleep and even ethnicity (African or Caribbean descent) (NHS, 2016). University
students are faced with various challenges during university life such as being away from home, adjustment
to new environment and independent living and coping with academic stress (Hicks & Heastie, 2008) and
these challenges increase the risks of them developing prehypertension (Pengpid, Peltzer, & Ferrer, 2014).
Among the risk factors that have been identified for prehypertension among university students were
obesity/overweight (Pengpid et al., 2014), being male, living away from campus, living with parents or
guardians, and 19 years of age (Pengpid et al., 2014), with family history of hypertension (Balami,
Salmiah, & Nor Afiah, 2014a) and having severe/extremely severe depression (Balami, Salmiah, & Nor
Afiah, 2014b).

In Malaysia, the prevalence of hypertension has been on the rise since year 1996 (32.9%) to year 2006
(42.6%) and year 2011 (43.5%) (Naing et al., 2016). However, in the recent National Health and Morbidity
Survey (NHMS) 2015, the prevalence has decreased to 30.3% (Institute for Public Health, 2015).
Nevertheless, efforts are still needed to further improve the status of hypertension in Malaysia. Detection of