

Brief Report

DO UNIVERSITY STUDENTS HAVE HIGH CARDIOVASCULAR RISK? A PILOT STUDY FROM UNIVERSITI MALAYSIA SARAWAK (UNIMAS)

PY Lee¹ *M Fam Med*; **TA Ong**² *FRCS*; **S Muna**³ *PhD*; **SAR Syed Alwi**¹ *M Fam Med*; **K Kamarudin**¹ *M Fam Med*

¹Department of Family Medicine, Faculty of Medicine & Health Sciences, University Malaysia Sarawak, Kuching, Sarawak (Lee Ping Yein, Syed Alwi Syed Abdul Rahman, Kamarudin bin Kana)

²Department of Surgery, Faculty of Medicine, University Malaya, Kuala Lumpur (Ong Teng Aik)

³Department of Basic Sciences, Faculty of Medicine & Health Sciences, University Malaysia Sarawak (Muna bt Sabri)

Address for correspondence: Dr Lee Ping Yein, Senior Lecturer, Department of Family Medicine, Faculty of Medicine & Health Sciences, University Malaysia Sarawak, Lot 77, Seksyen 22 Kuching Town Land District, Jalan Tun Ahmad Zaidi Aduce, 93150 Kuching, Sarawak, Malaysia. Tel: +6082-416 550, Fax: +6082-422 564, Email: pylee@fmhs.unimas.my

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ABSTRACT

A health screening was done in UNIMAS in August 2008 for 237 undergraduate students. Body mass index (BMI), waist circumference (WC) and blood pressure (BP) were measured for all subjects. Total cholesterol and glucose levels were checked for those who fulfilled the screening criteria. The proportion of participants with cardiovascular (CVD) risk factors was high. The strategies for health promotion should not only be targeted to the older community but also to the younger community.

Keywords: Cardiovascular risk factors, university students, undergraduate.

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INTRODUCTION AND METHODS

In Malaysia, cardiovascular diseases consistently accounts for 15-16% of all Ministry of Health (MOH) hospital deaths annually from 1995 to 2007.¹ Modifiable risk factors of cardiovascular diseases are on the rise in the world as well as in Malaysia. In August 2008, a health screening was done for 237 UNIMAS undergraduate students to screen for modifiable risk factors. Consent for reporting these data was obtained from the participants. Demographic data, body mass index (BMI), waist circumference (WC) and blood pressure (BP) were obtained. 92 students with BMI ≥ 23 kg/m² or other risk factors subsequently had total cholesterol and glucose measurement by finger prick technique using rapid measurement devices. The classification of obesity, BP, abnormal glucose and total cholesterol level is according to recommended guidelines.²⁻⁵ All data collected were analysed using SPSS version 17.0.

RESULTS AND DISCUSSION

The mean age of the participants was 23.1 years (SD \pm 2.3, range 19-29 years). There were more female (69.6%) than male (30.4%) participants.

The percentage of overweight students (37.1%) in this study is slightly higher than the reported findings of 30.1% in a study at a private medical school in West Malaysia.⁶ Another survey in Universiti Sains Malaysia using WHO criteria of 25kg/m² for overweight, found that 12% of the students were overweight.⁷ If we use similar cut-off point, the proportion of students who were overweight was higher in our study (17.3%). We found higher percentage of male students to be overweight compared to female students, which is comparable to other studies.^{6,7} WC was over the normal limit in 24.1% of the students screened (22.5% in males and 25.0% in females). NHMS III reported the prevalence of 4.5% to 11.5% for central obesity in age group 18 to 29 years.⁸

The BP was at the level of pre-hypertensive range in 42.9% of the students. This is higher than NHMS II prevalence of 37% which include older patients.⁹ The mean total cholesterol level for the participants (4.7mmol/L) was slightly higher than the mean of 4.5mmol/L in NHMS III.⁸ Above normal limit of total cholesterol was observed in 21.3% of subjects, which is higher than the reported 5% to 10.1% hypercholesterolemia for those aged 18 to 29 years old in the NHMSIII.⁸ The mean glucose levels for the participants (5.9mmol/L) were higher than recommended in the screening guideline.⁴ The finding of

Table 1: Distribution of BMI and WC among undergraduate students

	Male	Female	Total
BMI (kg/m²)			
Mean	22.9kg/m ² (SD±3.49)	22.2kg/m ² (SD±4.6)	22.4kg/m ² (SD±4.3)
	N (%)	N (%)	N (%)
Underweight	8 (11.1)	26 (15.8)	34 (14.3)
Normal range	30 (41.7)	85 (51.5)	115 (48.5)
Overweight	34 (47.2)	54 (32.7)	88 (37.1)
Pre-obese	29 (85.3)	38 (70.4)	67 (76.1)
Obese I	5 (14.7)	12 (22.2)	17 (19.3)
Obese II	0	3 (5.6)	3 (3.4)
Obese III	0	1 (1.9)	1 (1.1)
WC (cm)			
Mean	81.5cm (SD±8.6)	74.3cm (SD±10.8)	76.5cm (SD±10.7)
	N (%)	N (%)	N (%)
<90 cm for men & <80 cm for women	55 (77.5)	123 (75.0)	178 (75.7)
≥90 cm for men & ≥80 cm for women	16 (22.5)	41 (25.0)	57 (24.3)

Number of students for the parameters are different due to missing data.

Table 2: Distribution of blood pressure, glucose, and total cholesterol among undergraduate students

	Male	Female	Total
Blood pressure(mmHg)			
Mean systolic			114.6mmHg (SD±12.4)
Mean diastolic			74.3mmHg (SD±9.0)
	N (%)	N (%)	N (%)
Optimal	17 (24.3)*	83 (53.2)*	100 (44.2)
Prehypertension	38 (54.3)*	59 (37.8)*	97 (42.9)
Hypertension			29 (12.8)
Stage 1	14 (20.0)*	14 (9.0)*	28 (12.3)
Stage 2	1 (1.4)	0	1 (0.4)
Total cholesterol (mmol/L)			
Mean			4.7mmol/L (SD±0.7)
	N (%)	N (%)	N (%)
<5.2	24 (80.0)	48 (77.4)	72 (78.3)
≥5.2	6 (20.0)	14 (22.6)	20 (21.7)
Blood glucose (mmol/L)			
Mean			5.9mmol/L (SD±1.4)
	N (%)	N (%)	N (%)
<5.6	13 (43.3)	34 (54.9)	47 (51.1)
≥5.6	17 (56.7)	28 (45.1)	45 (48.9)

*Chi-square test (Fisher's exact test where appropriate) for differences between the genders were significant.

48.9% of the subjects having glucose levels above the normal limit is high. The selected samples of students with cardiovascular risk factors for the blood test may be a contributing factor for these findings. Furthermore, random capillary blood glucose and total cholesterol rather than serum fasting glucose and cholesterol were taken. This result may not be able to qualify as the diagnosis of diabetes and hypercholesterolemia among the participants.

This preliminary data showed high proportion of UNIMAS undergraduate students with modifiable cardiovascular risk factors and this problem necessitates further survey to determine the prevalence of major CVD risk factors and their trends over time among the students. This highlighted that the strategies for health promotion should not only be targeted to the older community but also to the younger community.

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Rosiglitazone increases heart failure and fracture

Home PD, Pocock SJ, Beck-Nielsen H et al. Rosiglitazone evaluated for cardiovascular outcomes in oral agent combination therapy for type 2 diabetes (RECORD): a multicentre, randomised, open-label trial. *Lancet*. 2009;373(9681):2125-35.

In a multicentre, open-label trial, 4447 patients with type 2 diabetes on metformin or sulphonylurea monotherapy with mean HbA_{1c} of 7.9% were randomly assigned to addition of rosiglitazone or to a combination of metformin and sulphonylurea. After a follow-up of 5.5 years, HbA_{1c} showed reduction in the rosiglitazone group compared to combination of metformin and sulphonylurea. Heart failure and fractures were also more common in the rosiglitazone group but acute myocardial infarction, stroke and total cardiovascular mortality were similar in both groups.