UNIVERSITI PUTRA MALAYSIA

RELATIONSHIPS BETWEEN PHYSICAL ACTIVITY, FITNESS LEVEL, BODY COMPOSITION, AND CORONARY HEART DISEASE RISK FACTORS IN MALAYSIAN AND ARAB ADOLESCENT STUDENTS

KHALED KHALIFA K. MEHEMED

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By

KHALED KHALIFA K. MEHEMED

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March 2014

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy.

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March 2014

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The purpose of this study is to compare and further examine the relationships between lifestyle parameters (physical activity, body composition, fitness level) and coronary heart disease (CHD) risk factors of Arab and Malaysian adolescents. The study explores the differences in lifestyle parameters and CHD risk factors between Malaysian students studying in public and international schools. Participants were Malaysian students of public school and international school and Arab student of international schools in Klang Valley area, aged 14–16 years, and of both gender. Data was collated through use of questionnaires obtaining details of weekly physical activity (low, moderate, vigorous intensity). A 20m shuttle-run test was used to estimate the fitness level of participants (VO_2max). The CHD risk factors were identified through measuring levels of high-density lipoprotein, low-density lipoprotein, non-high-density lipoprotein, total cholesterol, glucose and triglycerides by taking a fasting blood sample. Percentile body mass index (BMI) and percent body fat (%fat) were also measured.Descriptive statistics were conducted on physical activity levels, CHD risk factors, body composition, fitness level, dietary habits, sleeping duration, sedentary behavior, and five questions about exercise agenda. Prior to analysis, the assumptions of normality and homogeneity of variance/covariance were assessed. Normality was assessed with the examination of values of skew and kurtosis. Values of skew and kurtosis were within the appropriate parameters and the assumption of normality was met. The assumption of homogeneity of covariance was assessed with Box's M andwas found to be significant ($p < .01$). A Pearson product moment correlation matrix was conducted among the variables of interest to assess for multicollinearity among the dependent variables. A multivariate analysis of variance (MANOVA) and Analysis of Variance (ANOVA) were also conducted to assess the difference among the study variables and between groups. Results showed Malaysian adolescents at international schools had noticeably higher levels of fitness, high-density lipoprotein, and lower total cholesterol and body mass index and percent body fat than their colleagues at the public school. There is a significant relationship between BMI, %fat and CHD risk

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factors, than comparisons between fitness and physical activity level.Malaysian adolescents had higher triglycerides levels than Arab adolescents. Malaysian students at international schools are fitter and participate more in physical activity than the Malaysian adolescents at public schools. Furthermore, it was found that body composition is more of a predictor of CHD risk factors than fitness level or physical activity. Malaysian adolescents at public schools have a greater probability of developing CHD risk factors in the future.

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Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

HUBUNGAN ANTARA AKTIVITI FIZIKAL, TAHAP KECERGASAN, KOMPOSISI BADAN, DAN FAKTOR RISIKO PENYAKIT JANTUNG DALAM KALANGAN PELAJAR REMAJA MALAYSIA DAN ARAB

Oleh

KHALED KHALIFA K. MEHEMED

Mac 2014

Pengerusi: Profesor Madya Soh Kim Geok, PhD
Fakulti: Pengajian Pendidikan

Tujuan kajian ini adalah untuk membandingkan dan selanjutnya memeriksa perhubungan antara parameter gaya hidup (aktiviti fizikal, komposisi tubuh, tahap kecergasan dan faktor risiko penyakit jantung koronari (CHD) remaja Arab dan Malaysia. Kajian ini meninjau perbezaan parameter gaya hidup dan faktor risiko CHD antara pelajar Malaysia yang belajar di sekolah awam dan antarabangsa.Responden adalah pelajar Malaysia di sekolah awam dan antarabangsa dan pelajar Arab di sekolah antarabangsa di kawasan Lembah Klang, berumur antara 14 – 16 tahun dan melibatkan kedua-dua jantina. Data dikumpulkan melalui soalselidik untuk mendapatkan aktiviti fizikal mingguan secara terperinci (intensiti rendah, sederhana, tinggi). Ujian larian ulang–alik 20m telah digunakan untuk menganggar tahap kecegasan responden (VO_2max). Faktor risiko CHD telah dikenal pasti melalui tahap pengukuran lipoprotein berkepadatan tinggi, lipoprotein berkepadatan rendah, lipoprotein tidak berkepadatan tinggi, jumlah kolesterol, glukosa dan trigliserida dengan mengambil sampel darah dalam keadaan berpuasa.Persentil indeks jisim tubuh dan peratus lemak badan juga diukur.Statistik deskriptif dijalankan ke atas tahap aktiviti fizikal, faktor risiko CHD, komposisi badan, tahap kecergasan, tabiat pemakanan, tempoh tidur, tingkah laku tidak aktif, dan lima soalan tentang agenda senaman. Sebelum analisis, andaian tentang kenormalan dan kehomogenanvarian/kovarian dinilai.Kenormalan dinilai dengan menguji nilai kepencongan dan kurtosis. Nilai kepencongan dan kurtosis adalah dalam parameter yang sesuai dan andaian tentang kenormalan dipenuhi. Andaian kehomogenan kovarian dinilai dengan Box's M dan didapati signifikan ($p<.01$). Matriks korelasiProduk MomenPearson telah dijalankan ke atas pembolehubah yang dikaji untuk menilaikolineariti pelbagaiantara pembolehubah bersandar, analisis Multivoriat menggunakan (MANOVA) dan analisis Varian menggunakan (ANOVA) juga telah dijalankan untuk mengkaji perbezaan di antara pemboleh ubah yang dikaji dan di antara kumpulan Dapatan menunjukkan remaja Malaysia di sekolah antarabangsa nyata mempunyai tahap kecergasan yang lebih tinggi, tahap lipoprotein berkepadatan tinggi dan jumlah kolesterol dan indeks jisim badan(BMI) dan peratus lemak badan yang lebih rendah daripada rakan mereka di sekolah awam.Terdapat

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perhubungan yang signifikan antara BMI, peratus lemak dan beberapa faktor risiko CHD daripada antara kecergasan dan tahap aktiviti fizikal.Remaja Malaysia mempunya tahap trigliserida yang lebih tinggi daripada remaja Arab. Pelajar Malaysia di sekolah antarabangsa adalah lebih sihat dan lebih melibatkkan diri dalam aktiviti fizikal berbanding dengan remaja Malaysia di sekolah awam. Tambahan pula, didapati komposisi badan lebih merupakan ramalan kepada faktor risiko CHD daripada tahap kecergasan atau aktiviti fizikal. Remaja Malaysia di sekolah awam mempunyai kebarangkalian yang lebih tinggi untuk membentuk faktor risiko CHD pada masa hadapan.

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I certify that a Thesis Examination Committee has met on 7 March 2014 to conduct the final examination of Khaled Khalifa Mehemed on his thesis entitled "Relationships between Physical Activity, Fitness Level, Body Composition, and Coronary Heart Disease Risk Factors in Malaysian and Arab Adolescent Students" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

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