UNIVERSITI PUTRA MALAYSIA

RELATIONSHIPS BETWEEN OSTEOPOROSIS HEALTH BELIEF, SELFEFFICACY AND KNOWLEDGE, CALCIUM INTAKE AND PHYSICAL ACTIVITY WITH BONE HEALTH STATUS AMONG UNDERGRADUATES AT UNIVERSITI PUTRA MALAYSIA

MARYAM VAHIDAFAGH

FPSK(m) 2012 2

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By

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Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Master Science

February 2012

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DEDICATION

To my late father whom I am indebted to

and

My dear mother who has devoted her life to me

as well as

My sisters, Hoda, Haideh, Samaneh because of their ever-lasting support and encouragement

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Master in Nutritional Science

RELATIONSHIP BETWEEN OSTEOPOROSIS HEALTH BELIEF, SELF-EFFICACY, KNOWLEDGE, CALCIUM INTAKE, PHYSICAL ACTIVITY AND BODY WEIGHT WITH BONE HEALTH STATUS AMONG ENGINEERING UNDERGRADUATES AT UNIVERSITI PUTRA MALAYSIA

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February 2012

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Osteoporosis is a serious public health issue, which affects men and women, young and old. The prevalence of osteoporosis in Asian countries is higher than in western countries due to the fact that the Asian population has much lower body mass index and shorter height. The objective of this cross-sectional study was to determine the relationship between osteoporosis health belief, self-efficacy and knowledge, calcium intake, physical activity and body weight with bone health status among engineering undergraduates at Universiti Putra Malaysia, as well as to determine the significant predictors of bone health status.

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Data on socio-demographic, family history of osteoporosis, OHBS, OSES and OKT were collected through a self-administered questionnaire. Milk consumption pattern and intake of calcium supplements and dietary calcium intake was assessed by using a semi-quantitative food frequency questionnaire (SFFQ) while the physical activity level was assessed by using the International Physical Activity Questionnaire (IPAQ). Weight, high, and bone health status were measured by using a weighing scale (TANITA), body meter (SECA) and ultrasound machine (QUS-2™). The OHBS, Osteoporosis Self-efficacy Scale (OSES) and Osteoporosis Knowledge Test (OKT) instruments were copyrighted and permission to use has been obtained from the authors. Data were analyzed by using the Statistical Package for Social Science (SPPS) version 16.

A total of 279 respondents (male =50.9%, female=49.1%) who fulfilled the selection criteria participated in this study. The majority of the respondents were Malays. The mean age of the respondents was 20.01 ±0.79 years. The mean weight, height, and Body Mass Index (BMI) of the respondents were 56.60±12.27 kg, 1.63 ± 0.08 m and 21.18±4.06 kg/m², respectively. Based on the BMI classification, 24.4% of them were underweight (BMI<18.5 kg/m²) and 4% of them were obese (BMI 30kg/m²). A majority (93.9%) of the respondents reported no family history of osteoporosis. The total means scores for OHBS and scores for OSES were 128.68±13.08 and 63.11±17.06, respectively. The mean score for OKT was 9.73±3.00. The mean dietary intake calcium was 683.10±339.20 mg per day. A majority (68.1%) of respondents did not achieve the FOA/WHO recommendation and only less than one-quarter (31.9%) achieved the Malaysian Recommended Nutrient Intake (RNI) for dietary intake calcium. The mean of Met-min was 2061.59±2075.87 MET-min per week. Less than half (48.2%) of the

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respondents had high level of physical activity (total MET-min per week>1500). The mean Broadband Ultrasound Attenuation (BUA) was 97.76±16.36 dB/MHz. According to the diagnostic criteria for osteoporosis by WHO (1994), 91.8% of respondents had normal bone mass, 7.9% were osteopenic and 0.4% were osteoporosis. About 37.6% of the respondents reported that they drink milk and the common type of milk consumed was low fat milk (41.6%). A total of 10.1% of the respondents were taking calcium supplement.

This study showed significant correlation between perceived seriousness toward osteoporosis and health motivation with dietary calcium intake. Also, there was a negative, significant correlation between perceived barriers to exercise($r= -0.133$, $p <0.05$). The result also revealed that OKT was not significant by related with dietary calcium intake and physical activity. The result also revealed a significant relationship between score of OSES of taking calcium with dietary calcium intake ($r=0.134$, $p<0.05$) and between score of OSES to exercise with physical activity ($r=0.279$, $p<0.05$).total score of OSES and knowledge about osteoporosis were significantly correlated ($r= 0.169$, $p<0.05$). The result revealed that there were significant correlation between BUA with calcium intake ($r=0.275$, $p<0.05$), and with physical activity ($r=0.282$, $p<0.05$) and body weight and BMI were significant with BUA. Factors contributing significantly to BUA in young adults were calcium intake, physical activity, weight and height ($R=0.442$, $R^2= 0.195$, $F=9.521$).

Based on the OHBS perceived seriousness toward osteoporosis was significant predictor for dietary calcium intake and while self-efficacy to exercise was a significant predictor

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for physical activity. Using the multivariable regression model, the factors which contribute significantly to bone health in young adults were dietary calcium intake, physical activity, weight and height.

In conclusion, these findings indicated that the majority of the respondents had below average calcium intake. They had moderate osteoporosis health beliefs and high self-efficacy as well as knowledge. Therefore, there is a need to formulate appropriate campaigns and educational programs is to create awareness about osteoporosis and the importance of dietary calcium and exercise in promoting optimal bone health among young adults and to reduce risk of osteoporosis in the later years.

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Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk Ijazah Master Sains Pemakanan

HUBUNGAN ANTARA KEPERCAYAAN KESIHATAN OSTEOPOROSIS, EFIKASI KENDIRI, PENGETAHUAN, PENGAMBILAN KALSIUM, AKTIVITI FIZIKAL, DAN BERAT BADAN DENGAN STATUS KESIHATAN TULANG DALAM KALANGAN MAHAWISWA KEJURUTERAAN DI UNIVERSITI PUTRA MALAYSIA

Oleh

MARYAM VAHIDAFAGH

Februari 2012

Pengerusi: Profesor Madya Zaitun Yassin, PhD

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Osteoporosis merupakan isu kesihatan awam yang serius,yang melibatkan lelaki dan wanita, tua dan muda. Prevalens osteoporosis di negara Asia adalah lebih tinggi daripada Negara Barat disebabkan oleh fakta bahawa populasi Asia mempunyai indeks jisim badan yang lebih rendah dan ketinggian yang lebih rendah. Objektif kajian keratan rentas ini adalah untuk menentukan perkaitan antara kepercayaan kesihatan, keyakinan diri, dan pengetahuan mengenai osteoporosis, pengambilan kalsium, aktiviti fizikal dan status berat badan kesihatan tulang dalam kalangan mahasiswa Universiti Putra Malaysia, di samping untuk menentukan prediktor yang signifikan bagi status kesihatan tulang.

Data tentang sosiodemografi, sejarah keluarga yang mengalami osteoporosis, skala kepercayaan mengenai osteoporosis (OHBS), skala keyakinan diri mengenai osteoporosis (OSES) dan pengetahuan mengenai osteoporosis (OKT) dikumpul melalui

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soal selidik dissi-sendiri. Corak penggunaan susu dan pengambilan suplemen kalsium dan kalsium diet dinilai menggunakan soal selidik kekerapan makanan semikuantitatif (SFFQ), manakala tahap aktiviti fizikal dinilai menggunakan Soal Selidik Aktiviti Fizikal Antarabangsa (IPAQ). Berat badan, ketinggian, dan status kesihatan tulang diukur menggunakan skala penimbang (TANITA), meter badan (SECA) dan alat ultrasound (QUS-2™). Instrumen OHBS, OSES dan OKT adalah berhakcipta dan kebenaran menggunakannya telah diperolehi penulis. Data dianalisis menggunakan Pakej Statistik untak Sains Sosial (SPSS) versi 16.

Sebanyak 279 responden (lelaki= 50.9%, wanita= 49.1%) yang memenuhi kriteria pemilihan mengambil bahagian dalam kajian ini. Majoriti responden ialah mahawiswa Melayu dengan min umur 20.01±0.79 tahun. Min berat badan, ketinggian dan Index Jisim Badan (IJT) responden ialah masing-masing 56.60±12.27 kg, 1.63 ± 0.08 m dan 21.18± 4.06 kg/m². Berdasarkan klasifikasi BMI, 24.4% responden kurang berat badan (BMI<18.5 kg/m²) dan 4 % responden adalah obes (BMI 30 kg/m²). Majoriti responden (93.9%) menyatakan bahawa mereka tiada sejarah keluarga berosteoporosis. Total Min Skor untuk OHBS dan skor untuk OSES ialah masing-masing 128.68± 13.08 dan 63.11±17.06.Min skor untuk OKT ialah 9.73± 3.00.Min dietari pengambilan kalsium ialah 683.10±339.20 mg sehari. Majoriti responden (68.1%) tidak mencapai cadangan FOA/WHO dan hanya kurang suku (31.9%) responden mencapai Pengambilan Nutrien Yang Dicadangkan Malaysia (RNI) bagi pengambilan kalsium dalam diet. Min akitiviti fizikal ialah 2061.59±2075.87 MET-min seminggu. Kurang separuh (48.2%) responden mempunyai tahap aktiviti fizikal yang tinggi (jumlah MET-min seminggu>1500). Min “Ultrasound Broadband Attenuation” (BUA) ialah 97.76±16.36

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dB/MHz. Berdasarkan kriteria diagnostik bagi osteoporosis oleh WHO (1994), 7.9% responden ialah osteopenik dan 0.4% ialah osteoporotik. Lebih kurang 38% responden menyatakan bahawa mereka minum susu dan susu yang biasa diambil ialah susu rendah lemak. Sejumlah 10.1 % responden mengambil suplemen kalsium.

Kajian ini menunjukkan korelasi yang signifikan antara pengambilan kalsium diet dengan tanggapan keseriusan terhadap osteoporosis dan motivasi kesihatan ($r=0.123;p<0.05$) dan korelasi signifikan yangnegatif antara aktiviti fizikal dengan keseriusan tanggapan terhadap osteoporosis dan motivasi kesihatan dengan dietari pengambilan kalsium. Tambahan pula, terdapat korelasi yang negatif secara signifikan antara rintangan tanggapan bagi senaman ($r=-0.130,p<0.05$). Disebaliknya, OKT tiada perkaitan signifikan dengan pengambilan kalsium dalam diet dan aktiviti. Terdapat juga perkaitan yang signifikan antara skor OSES pengambilan kalsium dengan pengambilan kalsium diet ($r=0.120,p<0.05$) dan antara skor OSES senaman dengan aktiviti fizikal ($r=0.271,p<0.05$). Skor total OSES OKT adalah berkorelasi secara signifikan ($r=0.177,p<0.05$). Nilai BUA juga menunjukkan korelasi yang signifikan dengan pengamblian kalsium ($r=0.279,p<0.05$), aktiviti fizikal ($r=0.234,p<0.05$) berat badan ($r=0.266$, $p<0.05$), dan IJT ($r=0.220$, $p<0.05$).

Berdasarkan OHBS, tanggapan keseriusan terhadap osteoporosis merupakan prediktor yang signifikan bagi pengambilan kalsium diet, manakala, keyakinan diri senaman merupakan prediktor yang signifikan bagi aktiviti fizikal. Dengan menggunakan model regresi berbilang pemboleh ubah, faktor yang menyumbang secara signifikan terhadap

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kesihatan tulang dalam kalangan remaja ialah dietari pengambilan kalsium, aktiviti fizikal , berat badan dan ketinggian.

Kesimpulannya, dapatan kajian ini menunjukkan bahawa majority responden memperlihatkan pengambilan kalsium yang amat rendah. Mereka mempunyai kepercayaan kesihatan osteoporosis yang sederhana dan mempunyai efikasi kendiri yang tinggi serta berpengetahuan . Oleh itu, terdapat keperluan untuk merancang kempen yang sesuai dan program pendidikan untuk menjalankan kesedaran tentang osteoporosis dan kepentingan dietari pengambilan kalsium dan senaman dalam mempromosikan kesihatan tulang yang optimal dalam kalangan remaja dan juga untuk mengurangkan risiko osteoporosis pada tahun kemudian .

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I certify that a Thesis Examination Committee has met on (3- 2-2011) to conduct the final examination of Maryam Vahid afagh on her thesis entitled, "Relationship between osteoporosis health belief, self-efficacy, knowledge, calcium intake, physical activity and body weight with bone health status among engineering undergraduates at Universiti Putra Malaysia" 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 Master Science (Nutritional Sciences).

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DECLARATION

I declare that the thesis is my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously, and is not concurrently, submitted for any other degree at Universiti Putra Malaysia or at any other institution.

MARYAM VAHID AFAGH

Date: 3 February 2012

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