UNIVERSITI PUTRA MALAYSIA

ASSOCIATION BETWEEN OCCUPATIONAL STRESS AND LIFESTYLE FACTORS WITH METABOLIC SYNDROME AMONG NURSES IN AHVAZ CITY, IRAN.

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By

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Thesis submitted to the School of Graduated Studies, Universiti Putra Malaysia, in Fulfillment of the requirement for degree of Doctor of Philosophy

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Chair: Proffesor Zalilah Mohd Shariff,PhD

Faculty: Medicine and Health Sciences

Despite the fact that metabolic syndrome is an important health concern among nurses, very little research has examined metabolic syndrome and the contributing factors to its development in Ahvaz, Iran. Therefore, this present cross-sectional study was conducted in 13 hospitals Ahvaz city. There are 3000 registered nurses in in the 13 hospitals making up the sampling frame of the study. A total of 450 of these nurses were randomly recruited based on the exclusion and inclusion criteria. Blood tests as well as anthropometric measurements were taken and all the nurses were given the study questionnaire.

Eventually, 417 out of the 450 nurses continued and completed the project (responsive rate 92.66%). The mean age of the participants was 35±7.78 year, and the mean years of job experiences were 9.58±6.98 years. About 10.8% of the participants had metabolic syndrome based on the ATPIII-definition. Meanwhile,

abdominal obesity was observed in 36.7% of the respondents (n=153). The prevalence of hypertension, high fasting blood glucose, high triglyceride and low HDL-cholesterol were 5.5%, 3.6%, 19.9%, and 22.1%, respectively. Only about one percent of the nurses had all the four metabolic syndrome components. High-level cholesterol was found in 25 % of the respondents. The prevalence of Low HDL-cholesterol concentrations and the high LDL-cholesterol were 67.9% and 47.2% respectively. The prevalence of high triglyceride level was 22%. The prevalence of high-level fasting glucose (6.10-6.93mmo/l) was 3.6%. A total of 142 (34.1%) respondents was classified in the 1sttertile occupational stress category (Score: 178-247), 134 (32.1%) were classified in the 2ndtertile category (Score: 248-270) and 141 (33.8%) were classified in the 3rdtertile category (271-354) as well.

The majority of nurses had either low (188 or 44.6%) or high (78 or 18.7%) physical activity levels. About 153 (36.7%) had moderate physical activity. Body mass index (χ^2=6.013, p=0.049) and fasting plasma glucose (F=9.452, p=0.009) were significantly related to occupational stress respectively. In addition, total cholesterol was significantly related to occupational stress (χ^2=27.886, p=0.001). Moreover the LDL cholesterol (χ^2=14.255, p=0.007), healthy diet (χ^2=52.248, p=0.001) western diet (χ^2=13.718, p=0.008; F=566.530,p=0.001), traditional diet, were significantly related to occupational stress respectively. In addition, exposure to smoking was significantly related to metabolic syndrome (χ^2=8.055, p=0.005). A significant association was found between age with occupational stress, (ß=0.266, S.E=0.278, p=0.001). A significant association was seen among nurses who was exposed to smoke with occupational stress, (ß=-0.104, S.E=0.001, p=0.034). A strong association between systolic blood pressure (ß=0.245, S.E=2.417, p=0.001), diastolic

blood pressure (ß=0.204, S.E=0.180, p=0.001) and sex; (ß=0.128, S.E=1.876, p=0.015) was seen respectively. Beside results showed association between fasting plasma glucose with age (ß=204 S.E=0.180, p=0.001and education (ß=-0.112, S.E=4.183, p=0.034) respectively. HDL cholesterol showed significant association with sex (ß=-0.075, S.E=0.055, p=0.032), and marital status (ß=0.128, S.E=0.724, p=0.015) respectively as well. Triglyceride with sex (ß=0.118, S.E=12.126, p=0.017); and marital status (ß=-0.164, S.E=6.635, p=0.001) showed significant association respectively. Similarly, triglyceride was significantly associated with education level (ß=-0.152 S.E=11.685, p=0.003), as well as physical activity moderate (ß=0.125, S.E=0.001, p=0.041) and leisure time recreation moderate (travel) (ß=0.113 S.E=0.006, p=0.042). Likewise waist circumference had significant association with age, sex, marital status, years of job experience, education, high physical activity, and healthy diet ($p<0.05$). Additionally, a structural equation modeling analysis was performed to test the proposed mediation model. The model showed no effects of occupational stress factors on metabolic syndrome through lifestyle behavior. In conclusion, lifestyle behavior did not mediate the relationships between occupational stress and metabolic syndrome.

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

PERKAITAN DI ANTARA TEKANAN KERJA, PAN FAKTOR-FAKTOR PENGAMBILAN MAKANAN DAN GAYA HIDUP DENGAN SINDROM GANGGUAN METABOLIKDI KALANGAN JURURAWAT DI BANDAR AHVAZ, IRAN.

Oleh

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Walaupun sindrom metabolik adalah satu masalah kesihatan yang penting di kalangan jururawat, penyelidikan mengenai sindrom metabolik dan faktor penyumbangannya di Ahvaz, Iran adalah. Oleh itu, kajian keratan rentas ini telah dijalankan di 13 hospital di bandar Ahvaz. Rangka persampelan kajian ini adalah 3000 orang jururawat yang berdaftar di 13 hospital tersebut. Seramai 450 orang jururawat telah direkrut secara rawak berdasarkan kriteria pengecualian dan kriteria kemasukan kajian. Ujian darah serta ukuran antropometri telah diambil dan semua jururawat telah diberi borang soal selidik kajian.

Seramai 417 orang jururawat daripada 450 orang jururawat bersetuju untuk mengambil bahagian (kadar pengamblilan jurawat adalah 92.66%). Min umur peserta adalah 35 ± 7.78 tahun, dan min pengalaman bekerja adalah 9.58 ± 6.98 tahun. Kira-kira 10.8% daripada peserta mempunyai sindrom metabolik berdasarkan definisi ATPIII. Sementara itu, 36.7% daripada keseluruhan responden mempunyai obesiti di bahagian abdomen. Prevalen hipertensi, tinggi paras glukosa dalam darah berpuasa, tinggi paras trigliserida dan rendah paras kolesterol berketumpatan tinggi masing-masing adalah 5.5%, 3.6%, 19.9%, dan 22.1%. Hanya kira-kira satu peratus daripada jururawat mempunyai kesemua empat komponen sindrom metabolik. Paras kolesterol yang tinggi didapati dalam 25% daripada responden. Prevalen kolesterol berketumpatan tinggi yang rendah dan kolesterol berketumpatan rendah yang tinggi masing-masing adalah 67.9% dan 47.2%. Prevalen paras trigliserida yang tinggi adalah 22%. Prevalen paras glukosa darah (6.10-6.93mmol/l) adalah 3.6%. Kira-kira 142 (34.1%) responden telah dikelaskan dalam kategori tertile pertama untuk tekanan pekerjaan (Skor: 178-247), 134 (32.1%) dalam kategori tertile kedua (Skor: 248-270) dan 141 (33.8%) responden dalam kategori tertile ketiga (271-354).

Majoriti jururawat mempunyai aktiviti fizikal sama ada rendah 44.6% and atau tinggi 18.7% masing-masing dengan. Seramai 153 (36.7%) jururawat mempunyai aktiviti fizikal yang sederhana. Indeks jisim tubuh(χ^2 = 6.013, p = 0.049): dan glukosa berpuasa (F = 9.452, p = 0.009) mempunyai perkaitan yang signifikan dengan tekanan pekerjaan setiapnya. Jumlah kolesterol juga mempunyai perkaitan yang signifikan dengan tekanan kerja (χ^2 = 27.886,p = 0.001). Seterusnya, kolesterol berketumpatan rendah((χ^2 = 14.255,p = 0.007), diet yang sihat (χ^2 = 52.248,p = 0.001), diet cara barat(χ^2 = 13.718,p = 0.008), diet cara tradisional mempunyai (F =

566.530, p = 0.001)perkaitan yang signifikan dengan tekanan kerja masing-masing dengan setiapnya. Pendedahan kepada rokok juga mempunyai perkaitan yang signifikan dengan sindrom metabolik (χ^2 = 8.055,p = 0.005). Perkaitan yang signifikan ditunjukkan antara umur dengan tekanan kerja(ß = 0.266, SE = 0.278, p = 0.001) Perkaitan yang signifikan dilihat di kalangan jururawat yang telah terdedah kepada rokok dengan tekanan pekerjaan,(ß = -0.104, SE = 0.001, p = 0.034). Perkaitan yang kuat dilihat antara tekanan darah sistolik(ß = 0.245, SE = 2.417,p = 0.001), tekanan darah diastolik(ß = 0.128, SE = 1.876,p = 0.015) dan jantina dengan setiapnya adalah. Selain itu, hasil kajian menunjukkan perkaitan antara glukosa berpuasa dalam plasma dengan usia (ß = 0.204, SE = 0.180,p = 0.001)dan pendidikan (ß = -0.112, SE = 4.183, p = 0.034) masing-masing dengan setiapnya. Kolesterol berketumpatan tinggi juga menunjukkan perkaitan yang signifikan dengan jantina(ß = -0.075, SE = 0.055, p = 0.032) dan status perkahwinan(ß = 0.128, SE = 0.724, p = 0.015) setiapnya. Trigliserida dengan jantina(ß = 0.118, SE = 12.126, p = 0.017) dan status perkahwinan(ß = -0.164, SE = 6.635,p = 0.001) juga menunjukkan perkaitan yang signifikan masing-masing dengansetiapnya. Begitu juga trigliserida yang menunjukkan perkaitan yang signifikan dengan tahap pendidikan(ß = -0.152 SE = 11.685,p = 0.003), serta aktiviti fizikal yang sederhana (ß = 0.125, SE = 0.001, p = 0.041)dan rekreasi masa lapang yang sederhana (perjalanan) (ß = 0.113 SE = 0.006, p = 0.042) adalah signifikan masing-masing dengan. Begitu juga dengan lilitan pinggang yang mempunyai perkaitan yang signifikan dengan umur, jantina dan status perkahwinan, tahun pengalaman bekerja, pendidikan, aktiviti fizikal yang susah, dan diet yang sihat (p <0.05). jambahan pula analisis model persamaan struktur telah dijalankan untuk menguji model pengantaraan yang dicadangkan. Model ini menunjukkan faktor tekanan kerja tiada skesan kepada sindrom metabolik melalui

tingkah laku gaya hidup. Kesimpulannya, tingkah laku gaya hidup bukan merupakan pengantara bagi perkaitan antara tekanan kerja dan sindrom metabolik.

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I certify that a Thesis Examination Committee has met on (6/2/ 2013) to conduct the final examination of Mahin Salimi on her Doctor of Philosophy of thesis entitled **"Association Between Occupational Stress And Lifestyle Factors with Metabolic Syndrome Among Nurses in Ahvaz City, Iran.."** 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 of Nutritional Sciences.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of requirement for degree of Doctor of Philosophy. The members of Supervisory Committee were as follows:

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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.

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Date: 6 February 2013

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