

PREVALENCE OF METABOLIC SYNDROME AMONG POSTMENOPAUSAL  
WOMEN AND ITS ASSOCIATED FACTORS AT GYNAECOLOGY CLINIC  
HUSM

BY  
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## ABBREVIATIONS

AACE	The American Association of Clinical Endocrinologists
AC	Abdominal circumference
AGE	Advanced glycosylation end products
AHA	American Health Association
ATP III	Adult treatment panel III
BMI	Body mass index
CI	Confidence interval
cm	centimeter
CHD	Coronary heart disease
CNS	Central nervous system
CVD	Cardiovascular disease
DBP	Diastolic blood pressure
DM	Diabetes Mellitus
EGIR	The European Group for study of Insulin Resistance
FBS	Fasting blood sugar
FFA	Free fatty acid
FSH	Follicular stimulating hormone
HDL	High density lipoprotein
HERS	Heart and Estrogen/Progestin Replacement Study
HMG-coA	Hydroxy-methylglutaryl-coenzyme A
HPL	Hyperlipidemia
HPT	Hypertension
Hr	hour

HRT	Hormonal replacement therapy
HUSM	Hospital Universiti Sains Malaysia
IDF	International Diabetes Federation
IFG	Impaired fasting glucose
IGT	Impaired glucose tolerance
kg/m <sup>2</sup>	kilogram per meter square
LDL	Low density lipoprotein
LH	Luteinizing hormone
mg/dl	milligram per deciliter
ml	milliliter
mmHg	millimeter mercury
mmol/l	millimol per liter
MS	Metabolic syndrome
NCEP-ATP III	The National Cholesterol Education Program's Adult Treatment Panel III
NHANES III	Third National Health and Nutrition Examination Survey
OCP	Oral contraceptive pill
OR	Odd ratio
PCOS	Polycystic ovarian syndrome
SBP	Systolic blood pressure
SD	Standard deviation
SPSS	Statistical Package for Social Science
TC	Total cholesterol
TG	Triglyceride
T2DM	Type 2 Diabetes Mellitus

USA	United State of America
VLDL	Very low-density lipoprotein
WHI	Women's Health Initiatives
WHR	Waist Hip Ratio
WHO	World Health Organization
$\geq$	More or equal
$\leq$	Less or equal
$>$	more
$<$	less

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## **ABSTRAK (VERSI BAHASA MELAYU)**

### **PREVALENS SINDROM METABOLIK DAN FAKTOR-FAKTOR RISIKO YANG BERKAITAN DENGANNYA DI KALANGAN WANITA MENOPOS DI HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM)**

#### **PENGENALAN:**

Sindrom metabolik adalah koleksi faktor-faktor risiko yang terdiri daripada masalah seperti penyakit darah tinggi, diabetes dan dislipidimia. Sesiapa yang mengalaminya berisiko tinggi untuk menghadapi penyakit kardiovaskular. Sindrom metabolik didapati meningkat di kalangan wanita menopause.

#### **KAEDAH KAJIAN:**

Satu kajian prospektif telah dilaksanakan di kalangan wanita menopause yang telah hadir di Klinik Ginekologi, Hospital Universiti Sains Malaysia. Ia melibatkan 411 wanita telah menopause yang berumur melebihi 45 tahun. Di dalam kajian ini, pengukuran indeks jisim badan, ukur lilit pinggang dan juga tekanan darah diambil. Pengambilan sampel darah semasa berpuasa untuk mengetahui paras glukosa dan profil lipid juga dijalankan disamping soal selidik menggunakan borang kajiselidik sosiodemografi. Wanita yang mengalami masalah akan diberi kaunseling dan diberi rawatan yang sepatutnya. Definisi sindrom metabolik yang digunakan dalam kajian ini adalah berdasarkan kriteria International Diabetic Federation (IDF).

## KEPUTUSAN:

Purata umur wanita di dalam kajian ini adalah  $57.2 \pm 6.9$  tahun. Secara keseluruhannya, kadar keseluruhan prevalens sindrom metabolik mengikut kriteria IDF ialah 36.7%.

Prevalens untuk setiap komponen bagi sindrom metabolic adalah seperti berikut; abdomen obesity (100%), hipertensi (78.8%), rendah kandungan lipoprotein densiti tinggi (67.5%), hipertrigliserida (58.3%) dan diabetes (53%). Dalam kajian ini, didapati prevalens sekurang-kurangnya satu, dua, tiga, empat atau lima adalah seperti berikut: 92.2%, 71%, 42%, 19.4%, and 4.6%. Sindrom metabolik secara signifikannya dipengaruhi oleh sejarah hipertensi kandungan lalu (Nisbah Ganjil 2.64, konfiden interval 95%: 1.25-5.62), sejarah keluarga yang mengalami hipertensi (Nisbah Ganjil 1.71, konfiden interval 95%: 1.13-2.59) dan obesiti (Nisbah Ganjil 2.59, konfiden interval 95%: 1.08-6.23) dan juga sejarah penggunaan kontraseptif (Nisbah Ganjil 1.56, konfiden interval 95%: 1.02-4.42) ( $p < 0.05$ ). Manakala hanya satu faktor risiko utama iaitu sejarah keluarga yang menghadapi penyakit hipertensi yang signifikan melalui penggunaan analisis multilogistik regresi.

## KESIMPULANNYA:

Prevalens sindrom metabolik di kalangan wanita menopause yang hadir di Klinik Obstetrik dan Ginekologi, HUSM adalah 36.7%. Faktor risiko yang berkait rapat dengannya ialah sejarah hipertensi semasa kandungan lalu, sejarah keluarga yang mengalami hipertensi dan obesiti dan juga sejarah penggunaan kontraseptif. Adalah disarankan supaya pendidikan dan kaunseling diberikan kepada masyarakat umum berkaitan dengan sindrom metabolik bagi meningkatkan tahap kesedaran mereka dan menggalakkan mereka mendapatkan ujian penyaringan awal dan berkala. Rawatan yang sewajarnya patut diberikan ke atas wanita yang telah didiagnosa mengalami

sindrom metabolik. Ini adalah penting untuk meningkatkan kualiti hidup dan juga mengurangkan risiko penyakit kardiovaskular.

## **ABSTRACT (ENGLISH VERSION)**

### **PREVALENCE OF METABOLIC SYNDROME (MS) AMONG POSTMENOPAUSAL WOMEN AND ITS ASSOCIATED FACTORS AT GYNAECOLOGY CLINIC, HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM)**

**Introduction:** The metabolic syndrome has been defined as a constellation of lipid and non-lipid risk factors that increase subjects' risk to develop cardiovascular disease (CVD). The prevalence of the metabolic syndrome increases with age and after the onset of menopause, and may explain in part the apparent acceleration of cardiovascular disease in postmenopausal women

**Objective:** To determine the prevalence of metabolic syndrome among postmenopausal women and its associated factors at Gynaecology clinic HUSM.

**Methods:** A cross-sectional study of all postmenopausal women that was conducted in Hospital Universiti Sains Malaysia. It involved all 411 patients who were postmenopausal and their age more than 45 years old, attending the Gynaecology clinic HUSM. Sociodemographic data, waist circumference, weight, height and blood pressure were recorded and a fasting blood sample obtained for serum glucose and lipid profile determinations. Women were counseled and managed according to the results. Metabolic syndrome was defined in accordance with criteria of International Diabetic Federation (IDF).

**Results:** The mean age of participants was  $57.2 \pm 6.9$  years. The prevalence of metabolic syndrome, according to IDF criteria, was 36.7%. Using the same criteria, 100%, 78.8%, 67.5%, 58.3% and 53% of women presented with abdominal obesity, hypertension, low high density lipoprotein (HDL) cholesterol, hypertriglyceridemia and diabetes, respectively. In this study we found that 92.2%, 71%, 42%, 19.4%, and 4.6% of all the participants had at least one, two, three, four, or five components, respectively. The risk of MS detection (univariate analysis) increased with presence of obstetric history of HPT (odds ratio (OR) 2.64, 95% (CI) 1.25-5.62), family history of HPT (odds ratio (OR) 1.71 , 95% (CI) 1.13-2.59) and obesity (odds ratio (OR) 2.59, 95% (CI) 1.08-6.23 ), and the usage of contraception (odds ratio (OR) 1.56, 95% (CI)1.02-2.42). However, only family history of Hypertension (HPT) which accounts 45.4% is the most important associated risk factor to develop metabolic syndrome (MS) by using multiple logistic regression analysis.

**Conclusion:** There is a high prevalence of the metabolic syndrome in postmenopausal Kelantan women seeking gynaecologic health care. The determinant factors of metabolic syndrome related to previous obstetric HPT history, family history of HPT and obesity, and contraception consumption. Therefore more effort should be encouraged toward the implementation of lipid screening and educational programs focused on high-risk populations to prevent cardiovascular morbidity and mortality