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FACTORS ASSOCIATED WITH DEPRESSIVE SYMPTOMS AMONG CHINESE ELDERLY IN KAMPUNG BARU SUNGAI CHUA, KAJANG, MALAYSIA

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By

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This cross-sectional study aimed to determine the association of socio-demographic, psychosocial, lifestyle, health, functional and nutritional factors with depressive symptoms (DS) among Chinese elderly. Respondents were recruited by convenience sampling method through house-to-house visit. Data were obtained through face-to-face interview using interviewer-administered questionnaire. Elderly Cognitive Assessment Questionnaire (ECAQ) was used to screen and exclude respondents with cognitive impairment. Geriatric Depression Scale (GDS) was used to assess DS. Social support, functional status, physical activity and dietary intake were assessed using Medical Outcomes Study-Social Support Survey (MOS-SSS), Barthel Index of Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL), Rapid Assessment of Physical Activity (RAPA) and 24-hour dietary recall, respectively. Weight, height, waist circumference, middle upper arm circumference, calf circumference were measured using standard procedures. The prevalence of DS among the respondents was 36.6%. Majority of the respondents were physically inactive (96.5%), received below-moderate social support (54.46±10.07), reporting abdominal obesity (61.6%), having at least one disease (84.8%) and taking medication (69.6%), and consuming excess selenium (81.9 ± 54.44 mcg) and inadequate calcium (309 ± 173.36 mg). Social support score ($p<0.001$) and number of pain symptom ($p<0.001$) were the predictors of GDS score. Folate (, $p<0.01$), magnesium ($p<0.01$) and iron ($p<0.01$) intake were significant predictor of GDS score only if confounding effect of dietary variables were ignored. After adjustment for gender, number of disease, current drinker, medication, functional dependent, and dietary folate and magnesium intakes, money satisfaction (OR=0.16, $p<0.01$), pain symptom (OR=0.25, $p<0.05$) and social support (OR=0.92, $p<0.01$) were significantly associated with risk reporting DS. This study suggested that folate, magnesium and iron play crucial roles in production of serotonin. To certain extent, these nutrients might reduce DS, but do not change the risk of reporting DS. DS could be improved through receiving frequent affection, and companionship from social environment, adequate money for living, being physically healthy and consuming foods rich in folate and magnesium, particularly among men.

Abstrak tesis yang dikemukan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Sarjana Sains

FAKTOR-FAKTOR YANG BERKAIT DENGAN GEJALA KEMURUNGAN DALAM KALANGAN WARGA TUA CINA DI KAMPUNG BARU SUNGAI CHUA, KAJANG, MALAYSIA

Oleh

CHOONG HORNG TATT

Jun 2015

Pengerusi : Siti Nur'Asyura bt Adznam, PhD
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Kajian keratan rentas ini bertujuan untuk menentukan perkaitan antara faktor-faktor sosio-demografi, psikososial, gaya hidup, kesihatan, berfungsi dan pemakanan dengan gejala kemurungan dalam kalangan warga tua berbangsa Cina. Responden telah diambil melalui persampelan mudah dan dilakukan secara lawatan dari rumah ke rumah. Data telah diperolehi secara temubual dengan menemuduga responden dengan menggunakan borang selidik. Soal Selidik Penilaian Kognitif Warga Tua (ECAQ) telah digunakan untuk menguji dan mengasingkan responden mempunyai kelemahan kognitif. Skala Kemurungan Geriatrik (GDS) telah digunakan untuk menilai simptom kemurungan. Sokongan sosial, status fungsian, aktiviti fizikal dan pengambilan makanan masing-masing telah dinilai dengan menggunakan *Medical Outcomes Study-Social Support Survey* (MOS-SSS), Indek Barthel bagi Aktiviti Kehidupan Harian (ADL) dan Aktiviti Kehidupan Harian Berinstrumental (IADL), Penilaian Rapid Aktiviti Fizikal (RAPA) dan kaedah Ingatan Diet 24 jam. Berat badan, ketinggian, ukurlilit pinggang, ukurlilit tengah bahagian atas lengan dan ukurlilit betis telah diperoleh dengan menggunakan kaedah piawai. Prevalen gejala kemurungan dalam kalangan responden adalah 36.6%. Majoriti daripada responden tidak aktif melakukan fizikal aktiviti (96.5%), mempunyai sokongan sosial di bawah tahap sederhana (54.46±10.07), mengalami obesiti abdominal (61.6%), mempunyai sekurang-kurangnya satu penyakit (84.8%) dan mengambil ubat (69.6%) serta mempunyai pengambilan selenium yang lebih (81.9±54.44 mcg) dan pengambilan kalsium yang kurang (309±173.36 mg). Skor sokongan sosial ($p<0.001$) dan bilangan simptom kesakitan ($p<0.001$) merupakan prediktor bagi skor GDS. Pengambilan folat ($p<0.01$), magnesium ($p<0.01$) dan zat besi ($p<0.01$) adalah prediktor signifikan bagi skor GDS hanya sekiranya kesan konfounding bagi variabel-variabel pemakanan lain telah diabaikan. Selepas diselaraskan dengan jantina, bilangan penyakit, peminum semasa, pengambilan ubat-ubatan, kebergantungan fungsian, dan pengambilan folat dan magnesium, hanya terdapat kepuasan wang (OR=0.16, $p<0.01$), sokongan sosial (OR=0.92, $p<0.01$) dan simptom kesakitan (OR=0.25, $p<0.05$) menunjukkan perkaitan yang signifikan

dengan risiko melaporkan gejala kemurungan. Kajian ini mencadangkan folat, magnesium dan zat besi memainkan peranan penting dalam produksi *serotonin*. Untuk tahap tertentu, nutrient tersebut mungkin boleh mengurangkan simptom-simptom tetapi tiada perubahan bagi risiko melaporkan gejala kemurungan. Gejala kemurungan mungkin boleh dikurangkan melalui mendapatkan kasih sayang dan persahabatan yang kerap daripada persekitaran sosial, mempunyai wang yang cukup untuk sara hidup, menjadi sihat secara fizikal, dan mengambil makanan kaya dengan folat dan magnesium, terutamanya di kalangan lelaki.

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Choong Horng Tatt
February 2015

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

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LIST OF ABBREVIATIONS

AD	Alcohol dependence
ADL	Activities of Daily Living
ANOVA	Analysis of variance
AOR	Adjusted odd ratio
AS	Arm span
ATP	Adenosine triphosphate
	Standardised beta coefficient
B	Unstandardised beta coefficient
BDI	Beck Depression Inventory
BMI	Body mass index
BRFSS	The behavioral risk factor surveillance system
CC	Calf circumference
CES-D	Center for Epidemiological Studies Depression Scale
CI	Confident interval
cm	Centimeter
CRP	C-reactive protein
df	Degree of freedom
DHA	Docosahexaenoic acid
DOS	Department of Statistics
DS	Depressive symptoms
DSM-IVTR	Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision
DV	Dependent variable
ECAQ	Elderly Cognitive Assessment Questionnaire
EPA	Eicosapentaenoic acid
EDA	Exploratory data analysis
ES	Effect size
F	F-statistic in ANOVA
FA	Fatty acids
FAO	Food and Agriculture Organisation
g	Gram
GDS	Geriatric Depression Scale
GIDS	Gender Inclusive Depression Scale
HPA	Hypothalamic-pituitary-adrenal
IADL	Instrumental Activities of Daily Living
IBM	International Business Machines
IL	Interleukin
IPH	Institute for Public Health
IV	Independent variable
Kg	Kilogram
µg/ mcg	Microgram
mg	Milligram
MDD	Major depressive disorder
MDE	Major depressive episode
MLR	Multiple linear regression
MSS	Male Symptoms Scale

MUAC/ MAC	Middle upper arm circumference/ Mid-arm circumference
MUFA	Monounsaturated fatty acids
MOH	Ministry of Health
MOS-SSS	Medical Outcomes Study-Social Support Survey
n	Frequency in a sample population
N	Frequency in a population
NESARC	National Epidemiologic Survey on Alcohol and Related Conditions
NHMS III	The Third National Health and Morbidity Survey
NHMS IV	The Fourth National Health and Morbidity Survey
OR	Odd ratio
p	Significance value
^{2}!	Squared population multiple correlation coefficients
PA	Physical activity
PACE	Patient-centered Assessment and Counseling for Exercise
PR	Prevalence Ratio
PUFA	Polyunsaturated fatty acids
r	Pearson correlation coefficient
r_s	Spearman correlation coefficient
R^2	R-squared statistic in regression test
RAPA	Rapid Assessment of Physical Activity
Ref	Reference
RNI	Recommended nutrient intake
t	T-test statistic
SD	Standard deviation
Se	Selenium
SE	Standard error
SLR	Simple linear regression
SPSS	Statistical Package for the Social Sciences
SR	Sex ratio
USDA	U.S. Department of Agriculture
Vitamin B1	Thiamine
Vitamin B6	Pyridoxine
Vitamin B12	Cobalamin
Vitamin D	Calcidiol ó Cholecalciferol or ergocalciferol)
Vitamin E	Tocopherol
WC	Waist circumference
WHO	World Health Organization
WHO-5	WHO-5 Well-being Index
WHR	Waist-hip ratio
$\hat{u}^{2}$;	Standard regression coefficient
^{2}$	Chi-square statistic
%	Percentage

CHAPTER 1

INTRODUCTION

1.1 Study background

Depression, as a clinical term, is a common mood disorder characterised by negative mood, hopelessness, and despair (Linton & Bergbom, 2011), including feelings of sadness, frustration, discouragement, loss of interest, anxiety, and possibly suicidal thoughts, that interferes with daily life for a long duration. In contrast, depressive symptoms (DS) is generally defined as mild depression, minor depression or subclinical depression that causes significant disruptions in functioning among people who are affected (Centre for Substance Abuse Treatment, 2008). The major differences are that depression is described with specified duration of symptoms, co-morbid psychiatric disorders and impairment degrees but not addressed for DS (Sharp & Lipsky, 2002).

According to World Health Organization (WHO), depression is the major cause of disability among people (2008) that lowers an individual's ability to function in daily psychosocial and cognitive functioning tasks (World Health Organization, 2001). In early or middle adulthood, this impaired role functioning subsequently leads to poor educational attainment, low marital quality, low job performance, teen child-bearing problem (Kessler, 2012). In worst circumstances, depression ultimately increases mortality risk attributable to poorer physical health and suicide. In contrast to early or middle-life depression, the implications of late-life depression are stronger by decreasing illness remission, whereas increasing disease relapse risk and mortality risk (Payne, 2010). Eventually, depression negatively alters an individual's life quality through attenuating emotional and socio-economic wellbeing, such as social isolation, low family income and high medical treatment costs.

In addition to the burdens of depression and increasing population worldwide, individuals with depression usually have more than one episode in their lifetime (World Federation for Mental Health, 2012). Therefore, these phenomena make the prevalence studies for depression become important. However, the assessment for depression becomes difficult when both depression and other medical diseases share the identical somatic symptoms, such as fatigue and loss of appetite. Furthermore, the assessment accuracy might be influenced by polypharmacy effects and concurrent sadness events (Payne, 2010). Subsequently, several assessment tools, focused less on somatic symptoms, are used in many prevalence studies to reduce misdiagnosis for depression (Simon, 2001).

Based on studies conducted in Malaysia, the prevalence for depression or DS among elderly ranged from 6.3% (Sherina, Rampal, Aini & Norhidayati, 2005) up to 71.8% (Suzana et al., 2011). The subjects in these studies were elderly and lived in care homes, public funded or institutionalised shelter homes, clinics, hospitals or free-living residential areas. In overseas, the prevalence of depression varied from 3.5% to 42%. For instance, Lam et. al. (2004) found that nearly 7% Chinese elderly had DS in Hong Kong Elderly Health Centres, while Chrysohoou et al. (2011) found that 37% and 4% elderly had moderate and severe depression respectively.

1.2 Problem statement

Evidences remain inconsistent in relation to factors associated with DS across previous studies. Besides, Chinese elderly were less studied in previous local scientific researches regarding factors associated with DS. For example, the sample size for Chinese elderly subjects was relatively inadequate in several local studies (Imran et al., 2009; Sherina et al., 2004, 2005; Suzana et al., 2011) to address the factors associated with DS. Therefore, this study will provide several new results and fill the information gaps regarding factors associated with DS among Chinese elderly.

1.3 Significance of the study

This study will provide new data about prevalence of DS among Chinese elderly. The findings from this study will contribute to the body of knowledge in the field of public health and community nutrition, particularly on nutrition-related and other factors that contribute to DS among Chinese Malaysian elderly. The findings can be used as a reference data for future research. This valuable information might inform and facilitate respective government department, healthcare providers involve in planning and developing interventions programmes for elderly.

1.4 Objectives

1.4.1 General objective

To determine the factors associated with DS among Chinese elderly living in Kampung Baru Sungai Chua, Kajang.

1.4.2 Specific objectives

1. To determine the sociodemographic, psychosocial, lifestyle practice, health, functional and nutritional status among the subjects according to gender and age group.

2. To determine the association between sociodemographic, psychosocial, lifestyle practice, health, functional and nutritional status factors with Geriatric Depression Scale (GDS) score and risk reporting DS among the subjects.

3. To determine the contributing predictors of GDS score and risk reporting DS, among the subjects.

1.5 Null hypotheses

H_0: There are no significant differences in sociodemographic psychosocial, lifestyle, health, functional and nutritional status between genders and age groups.

H_0: There are no significant associations between sociodemographic psychosocial, lifestyle, health, functional and nutritional factors with GDS score or risk reporting DS among elder subjects.

1.6 Conceptual framework

The conceptual framework of this study in Figure 1.1 illustrates the relationships between factors and DS. DS was hypothesised as psychological outcome among Chinese elderly in this study. A total of five aspects of factors were hypothesised to have contributions to DS in this study. They were sociodemographic, psychosocial, lifestyle practice, health, functional and nutritional factors. In this study, gender, social support, smoking, alcohol-drinking, physical activity, disease, pain symptom, functional ability, waist circumference (WC) and dietary folate intake were hypothesised as contributing factors of DS. All the relationships between contributing factors and DS were hypothesised as unidirectional. For instance, Grav, Hellzèn, Romild and Stordal (2012) showed significant negative association between emotional and tangible support with depression. Besides that, Kessler (2012) stated that chronic diseases, such as arthritis, diabetes, hypertension, have been significantly associated with major depressive disorder (MDD). Furthermore, depression was associated with stronger pain intensity in some previous literatures (Linton, & Bergbom, 2011). Moreover, as to dietary nutrient intake, Kaplan, Crawford, Field, and Simpson (2007) reported that low levels of some minerals and vitamin had been linked to depression.

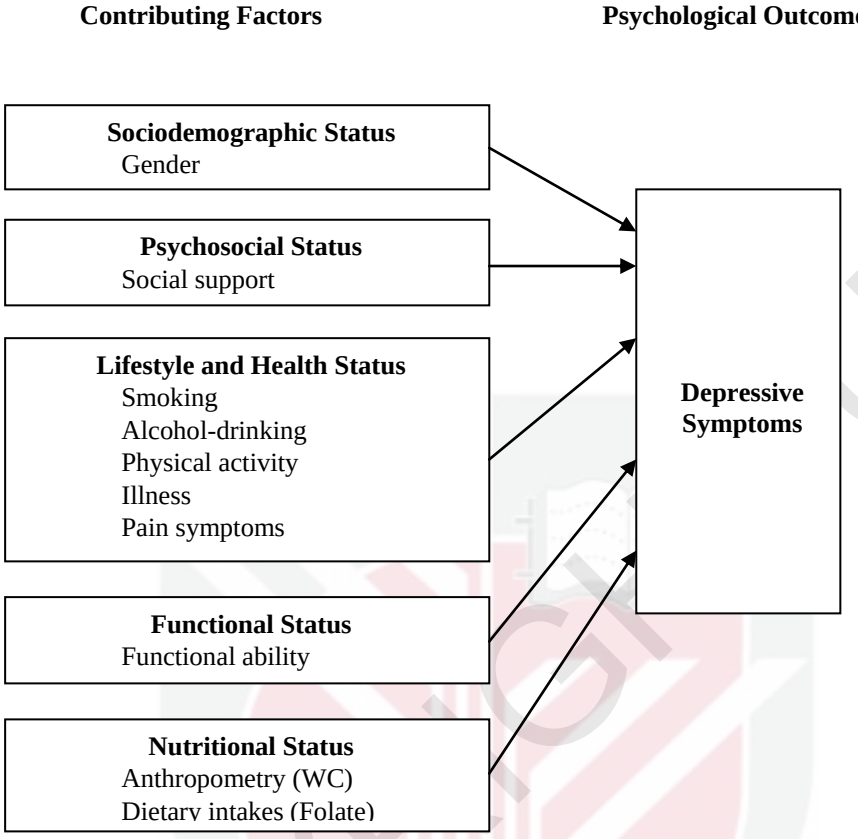

Figure 1.1 Conceptual framework of the study

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