DEPRESSION SYMPTOMS IN THE SECOND AND THIRD TRIMESTER OF GESTATION

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Abstract: Maternal mental health contributing to physiological modification during pregnancy has been shown to have significant impacts on mother, infant, future generation even on family. The aim of this study was to investigate the prevalence of antenatal depressive symptoms and factors associated among a sample of Malay pregnant women in their second and third trimester of gestation. This cross-sectional study was conducted among pregnant women who attended an Obstetrics and Gynaecology clinic during their antenatal care visits. Demographic questions and the Malay version of Edinburgh Postnatal Depression Scale (EPDS) were utilized. Among 400 pregnant women, the mean and standard deviation (SD) of some variables were as follows: gestational age 27(4.5) weeks, gravidity 3(2), parity 1(1) and age 29.7 (5.1). The findings showed that there were significant associations between levels of depression symptoms with age, gravidity, parity and monthly income. Based on the cutoff point of 11.5 and depression score of ≥12, the prevalence of Antenatal Depression Symptoms (ADS) at second and third trimester of pregnancy in Kota Bharu District was 25.7%. There was a significant negative linear relationship for monthly income β = -0.642 (95% CI: -1.055, -0.229; P= 0.002) with ADS after adjustment for other confounders. The findings of this study indicate that income status is an important factor that influences maternal depression during pregnancy. Furthermore, the prevalence of antenatal depression indicates a specific need to improve a system for reliable detection and effective intervention strategies for depression, which can be conveyed commonly within the health care services.

Keywords: Depression, Maternal mental health, Pregnancy, Women, Malaysia

INTRODUCTION

Depression has been considered as the most common emotional disorder among women [20] as well as the common problem in the general population [3]. It was predicted by the World Health Organization that depression will be one of the main health problems of the world by the year 2020 [28]. Developing countries are expected to have an increasing prevalence of female depression during their reproductive age [34]. The health status during pregnancy as a critical stage of women's life is notable due to its importance in fetus and child development [11, 10, 23]. Recent findings show that physical and psychological alterations occur during pregnancy because of normal endocrine changes [20]. Physiological manifestations related to pregnancy are displayed as headaches, gastrointestinal symptoms, stomach pain, vertigo, and pounding heart [38].

Studies have indicated prevalence of maternal depression between 14% and 23% [39]. Antenatal depression impacts significantly on maternal health status as well as fetal development, neonatal outcome, and adolescent offspring [7]. Studies found that there were significant differences between all domains of quality of life among depressed and non-depressed mothers except for the physical functioning domain [17]. Furthermore, women who experienced maternal depression during pregnancy have a higher risk of future depressive episodes [35]. Depressed mothers are in higher risk of having placenta abruption, pre-eclampcia, preterm labor and abortion, premature delivery, small for gestational age and neonates who require intensive care [14]. Moreover, studies indicated that adolescent offspring of depressed mothers are more prone to depression in future. Prenatal complications as the result of maternal depression are significant risk factors for disease in adult life including hypertension, coronary heart disease, diabetes, depression, and other cognitive and affective disorders [1]. The fact that being a probable indicator of existing and future generations' health; management for identifying maternal depression is one of the first steps in overcoming the problem. Antenatal depression needs to be detected early and effective management organized in an obstetric setting [2]. During prenatal period, because women have better contact with health services, screening for identifying depression will be an excellent time [2]. Promotion of population health can be achieved by appropriate and early detection of health problems and effectively treatment. The findings of this research will make it possible to detect depression among pregnant women attending antenatal care in the second or third trimester of pregnancy.

Figure 1: Map of Kelantan

MATERIALS AND METHOD

Calculation of sample size used the margin error of 5% and the confidence level of 95%. Fifty percent response distribution was considered for an estimation total of 357 respondents. A sample of 401 pregnant women participated; therefore the sample size requirement was fulfilled. This cross-sectional study used a descriptive design to assess depressive symptoms during pregnancy in a sample of normal Malay pregnant women in their second and third trimester of pregnancy. Sampling selection was done from a pool of pregnant women according to numbers registered on that day. Data collection was carried out at the Obstetrics and Gynecology Antenatal Clinic (O&G clinic) in Hospital Universiti Sains Malaysia at the time of routine antenatal check-up. Pregnant women were eligible for the study if they had gestational age between 20th and 34th weeks from the time of initiation of last menstrual period. Gestational age was determined as an inclusion criteria to reduce the effect of early physiological changes (i.e. nausea, vomiting) in the first trimester and those related to late pregnancy (e.g. backache, lower limb edema or breathing difficulties) [6]. Other inclusive factors were a low risk pregnancy or pregnancy free from complications, of Malay ethnicity, single fetus, and between ages 18 and 44 years old indicative of the range of typical childbearing age [27].

Exclusive criteria included diagnoses of high risk pregnancy at the time of enrollment such as: history of diabetes mellitus, a thyroid condition hyper/hypothyroidism, cervical incompetence, any gastric disorders, chronic hypertension, pre-eclampsia, placenta previa, bronchial asthma, advice from primary care members not to participate in the study, and inability to communicate with research staff. Women with multiple pregnancies, infected with blood borne diseases such as HIV or syphilis were also excluded from the study. In addition, women on any psychotropic medication and/or having a psychotic illness were excluded from the study. Data were collected through recorded information and questionnaire. Before involving in the study, the research purpose was explained to the subjects. Only pregnant women who gave their written consent participated in the study.

Instruments

Questionnaires containing demographic items (11 items) and the Malay version of Edinburgh Postnatal Depression Scale (EPDS) were utilized. This questionnaire was previously arranged as a tool for screening postnatal depression although is increasingly being used during pregnancy to screen possible antenatal depression [12, 32, 33, 37]. EPDS questionnaire composed of ten short statements of

common depressive symptoms in a self-report scale [15]. Each of the ten items consisted of a Likert type format of 4 points (0 to 3). Questions items number 1, 2, and 4 are the positive items, whereas items 3, 5, 6, 7, 8, 9, and 10 are negative oriented. After entering the raw scores and recoding all questions, the total depression score was achieved by summing the scores of the 10 items; giving a possible range from 0 to 30. Answering the EPDS took almost 5 minutes to complete [30]. It has been used in research in several countries, including Malaysia [25, 26]. For this study, the Malay version of EPDS was used as a screening measure with a cut-off score of 11.5 with 95.1% and 72.7% specificity and sensitivity respectively [2]. These figures were based on a Malaysian population study. An equal or higher score than 12 specify the likelihood of a major depressive episode [7].

Statistical Analysis

Data entry and analysis were done using SPSS version 18.0. Frequency of categorical variables as well as mean and standard deviation (SD) for continuous variables were obtained through descriptive analysis. Variables with possible association with Antenatal Depression Symptoms (ADS) were put into linear regression model. Simple linear regression was conducted to examine whether there was a relationship between antenatal depression and demographic/gestational factors. For multiple linear regression analysis stepwise method has been used as a variable selection method to choose the more significant variables. The dependent variable was EPDS score. Independent variables were demographic and obstetric variables. From the results of simple linear regression, independent variables that have the p value <0.25 were included in the multiple linear regression. The independent variables with entry criteria of p<0.25 were put into the model using forward, backward and stepwise Multiple Regression Model. The independent variables were respondents' age, occupation, total monthly income, total monthly food expenses, smoking, housing tenor, household size, educational level, weight, height, hemoglobin, blood group, gestational age, gravid, parity, and abortion. From these variables monthly income was entered for final model.

RESULTS

A total of 400 women completed the antenatal questionnaire. Table 1 demonstrates the mean and standard deviation of obstetrical characteristic of pregnant women. The current study shows that 25.7% of participants had an EPDS score >12 during pregnancy. The mean and standard deviation of depression scores was 8.7(3.8). In this study, participants had gestational age of 27(4.5), gravidity 3(2) and parity 1(1). Women who scored 12 and above were considered to be depressed. Results of this study revealed that there was no association between educational level, occupation and housing tenure with depression.

Table 2 shows participants' descriptive statistics. Participants ranged in age from 18 to 42 with mean and standard deviation of 29.7(5.1). The majority of women were married (n = 397, 99%). For most, the current pregnancy was either their first (n = 113, 28.2.7%), second child (n = 82, 20.4%) or third (n= 86, 21.4%). Monthly family income value in Ringgit Malaysia (RM) was grouped into four categories: less than or equal to RM 1000 (20%); RM 1001-3000 (43.9%); RM 3001-5000 (23.2%); and more than RM 5000 (12.5%).

There were few variables (age, gravidity, parity and monthly income) that had a significant association with ADS in the preliminary analysis of simple linear regression. Simple linear regression shows that there were significant association between levels of depression symptoms with age, gravid, parity and monthly income. These unadjusted statistics show significant differences of depressive symptoms among mothers who were younger (β= - 0.079; 95% CI: -0.155, -0.003; p=0.041), with fewer financial resources (β= -0.607; 95% CI: -1.017, -0.198; p =0.004), less number of parities (β=-0.271; 95% CI: -0.498, -0.045; p=0.019), and less number of pregnancies (β=-0.220; 95% CI: -0.407,-0.034; p=0.021). The remaining analyses focused on identifying which of these were predictor risk factors for depressive symptoms.

Table 3 shows the multiple linear regressions of simultaneous risk factors with 95% confidence intervals. After entering maternal age, gravidity, parity and monthly income from the basic model, into the final model of multiple linear regressions, only one variable was found to be a significant predictor factors for antenatal depression among pregnant women. The current study found decreasing risks of antenatal depressive symptoms with increasing monthly income.

Table 1 - Descriptive Statistics of gestational Characteristics of pregnant women

Variables	N	mean	±Sd
Age	400	29.68	5.02
Gestational age	400	26.6	4.4
Gravid	399	3	2.04
Parity	399	1.60	1.6
Abortion	399	0.4	0.9
Hemoglobin	379	11.7	1.0
Household size	399	4	2

Table 2: Participants' Descriptive Statistics

	N	n	(%)
Blood Group	389		
A		112	(27.9)
B		111	(27.7)
AB		34	(8.5)
O		132	(32.9)
Rh	389		
Rh-		6	(1.5)
Rh+		383	(95.5)
Father illness	390		
Diabetes Mellitus		37	(9.2)
Hypertension		58	(14.5)
Asthma		26	(6.5)
Heart Disease		15	(3.7)
Cancer		254	(63.3)
Mother illness	391		
Diabetes Mellitus		29	(7.2)
Hypertension		79	(19.7)
Asthma		33	(8.2)
Heart Disease		13	(3.2)
Cancer		237	(59.1)
Marital status	400		
Single		1	(.2)
Married		397	(99.0)
divorced		2	(.5)
Housing tenor	400		
Owner		172	(42.9)
Rented		111	(27.7)
With parents		117	(29.2)
Occupation	399		
Housewife		93	(23.2)
Government employee		265	(66.1)
Non government Employee		41	(10.2)
Monthly income	399		
≤1000		80	(20)
1001- 3000		176	(43.9)
3001-5000		93	(23.2)
>5000		50	(12.5)
Food expenses	399		
≤500		197	(49.1)
501-1500		180	(44.9)
>1500		22	(5.5)
Educational level	401		
No schooling		2	(.5)
Primary school		4	(1)
Secondary school		152	(37.9)
Institute of higher learning		243	(60.6)
Smoking	400		
Yes		3	(.7)
No		397	(99.0)

Table 3: Predictor factors of socio demographic and gestational characteristics of depressive symptoms among pregnant women

Variables	MLR[a]			
	Adjusted B	(95%CI)	t statistic	P value
Monthly income	-0.642	(-1.055,-0.229)	-3.056	0.002

a. Multiple linear regression

DISCUSSION

Depression involves about one in five people, with the higher incidence of two or three times in women than in men [8]. It was estimated to be the fourth principal cause of disease globally and the primary cause of disability adjusted life years (DALYs) amongst women by 2020 [7]. Depression was shown to be one of the most important reasons of disability and morbidity in developing countries [31]. Studies revealed that scores of social, functional, and psychological disabilities were twice as high in depressed subjects during the follow up period, without depending on economic status [31].

Symptoms of depression among women were most often seen between 20 to 40 years old - the age range of pregnancy for many women [24]. Depression symptoms during pregnancy were documented as one of the most common mental disorders among women [19]. It was extensively shown to be associated with several factors such as: hormonal changes [9], social support and life events [29] and demographic factors [13].

Very little was found in the literature on the antenatal depression among Malay pregnant women. The significance of antenatal depression is especially important in terms of early detection for appropriate and effective treatment and intervention before an infant's birth [2]. Studies on the impact of prenatal depression on the fetus and newborn reveal that women who experienced antenatal depression had more incidences of prenatal, prenatal and postnatal complications [38].

The current study was set out with the aim of assessing the prevalence and factors associated with antenatal depression symptoms during the second and third trimesters. This is the first study of its nature designed to investigate the prevalence and correlation of antenatal depressive symptoms among pregnant women from Kelantan in one sample group of Malay pregnant women. The prevalence of ADS in this study (25.7%) is less than that reported in previous studies [2]. A previous study carried out in the Kota Bharu district, showed the prevalence of ADS as 30.7% in late pregnancy [2]. A study conducted on Asian pregnant women in United Kingdom showed the same prevalence of antenatal depression [7].

The finding of this study showed no significant association between educational level and depression. This result seems to be in contrast to earlier findings [4, 21] that demonstrated those who had graduated high school had lower scores of depression [5]. However the results of this study are consistent with previous studies of pregnant women of similar ethnic backgrounds [2]. The findings show that, there was no significant association between gestational age and depression level. This current finding seems to confirm the findings of a study by Hobfoll et al. in this field [16], but it contrasts with other studies [36, 22] that stated the percentage of positive EPDS scores was higher in the second trimester.

No significant association was seen between EPDS scores and gestational age. Clinically, in mid and late trimester, significant depressive symptoms are detectible and common. Therefore, early recognition of depression especially for women with a history of previous depressive episodes or high risk factors can be provided through close contact with the health care team during antenatal visits. Therefore, the findings of this study support recommendations for antenatal services incorporating screening for depression in routine antenatal care [38].

There was a significant negative linear relationship for monthly income β= -0.642; 95% CI (-1.055, -0.229; p = 0.002) with ADS after adjustment for other confounder factors. Those pregnant women with one score higher in monthly income, will decrease 0.642 score in EPDS. This finding seems to be consistent with other research that demonstrated an association between the family economic status and ADS in pregnant women [18]. It is possible that low income will influence depression due to its ascription to higher levels of stress, lower levels of self-esteem and social support, and higher religiosity [23]. This finding supports the need to routinely screen for associated factors of depressive symptoms in pregnant women [18]. This study did not show any significant association between household size and

ADS. This result did not support the study conducted by Kitamura et al., in which the factor of living in a crowded flat was shown to be important for the onset of prenatal depression [21].

CONCLUSION

This study examined the association of demographic and obstetric factors with ADS among pregnant women. Data were collected from participant's medical folders as well as self- administered questionnaires completed by randomly selected pregnant women. The following conclusion can be drawn from the study. This study has shown that, from the selected demographic factors, monthly income was the only factor that was associated with ADS. In addition, the prevalence of ADS among pregnant women was 25.7%.

The findings of this study indicate that economic status is an important factor that may influence depression during gestation. These findings were obtained from a group of pregnant women in one region of Malaysia. The same study needs to be conducted in other parts of the country to see if there are any similarities regarding the factors that will influence maternal depression.

The prevalence of ADS among pregnant women requires special attention and needs strategies for early detection and effective treatment. This is due to its consequent adverse outcome on mother, fetus and the next offspring. Therefore, the healthcare team needs to be conscious of the frequency, signs and symptoms of depression among the population of pregnant women, proper techniques of screening, and probable health hazards of unnoticed and untreated depression for the mother and her fetus [24]. In addition, EPDS which is currently been using worldwide, can be used as an initial screening instrument in a preventive or interventional program by obstetricians or primary care providers in health centres.

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