

**RELATIONSHIP BETWEEN OBSTETRIC RISK
FACTORS AND POSTNATAL DEPRESSION
AMONG WOMEN WHO DELIVER AT HOSPITAL
UNIVERSITI SAINS MALAYSIA**

by

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ABBREVIATIONS

| | | |
|---------------|---|--|
| EPDS | - | Edinburgh Postnatal Depression Scale |
| PND | - | Postnatal Depression |
| LCU | - | Life Change Units |
| BPHQ-9 | - | Brief Patient Health Questionnaire-9 |
| GHQ | - | General Health Questionnaire |
| HDRS | - | Hamilton Depression Rating Scale |
| HADS | - | Hospital Anxiety and Depression Scale |
| BDI | - | Back Depression Inventory (BDI), |
| MADRS | - | Montgomery and Asberg Depression Rating Scale |
| PSE | - | Present State Examination |

ABSTRACT

RELATIONSHIP BETWEEN OBSTETRIC RISK FACTORS AND POSTNATAL DEPRESSION (PND) AMONG WOMEN WHO DELIVERS AT HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM).

Objective To determine the prevalence of postnatal depression (PND) and its relationship with obstetric risk factors in Hospital Universiti Sains Malaysia (HUSM), Kota Bharu, Kelantan between March and August 2005.

Material and Methodology This is a cross sectional study involving 293 women from postnatal ward HUSM. They were screened for depression at day 1 to day 5 postpartum and 4 to 6 weeks postpartum using the Edinburgh Postnatal Depression Scale (EPDS). At the first visit, the women completed questionnaires on socio-demography and obstetric risk factors, Brief Patient Health Questionnaire (BPHQ-9) and Life Event Scale questionnaire. At the second visit which is 4-6 weeks postpartum, they only completed EPDS.

Results Two hundred and ninety-three women successfully completed the study (100% response rates). The prevalence of PND at 4-6 weeks postpartum using the EPDS score of 12 or more was 27.3% (80 out of 293 women). The prevalence of depression at early postpartum period based on EPDS was 22.5%. Women with the history of abortion ($p < 0.05$) and early postnatal depression ($p < 0.05$) was significantly associated with PND.

Conclusion Postnatal depression among women in Hospital USM was more common compared to previously reported series in Malaysia. Women with the history of abortion and early postnatal depression was significantly associated with PND. Early identification of potential risk for postnatal depression should include assessment of socio-demography,

personality, psychiatric history and recent life events, as well as past and present obstetric factors.

ABSTRAK

KAJIAN PERKAITAN DI ANTARA FAKTOR OBSTETRIK DAN PENYAKIT KEMURUNGAN KE ATAS WANITA BARU BERSALIN DI HOSPITAL UNIVERSITI SAINS MALAYSIA.

Objektif Mengenalpasti prevalens penyakit kemurungan wanita baru bersalin dan perkaitan di antara faktor obstetrik dan penyakit kemurungan wanita baru bersalin di Hospital Universiti Sains Malaysia (HUSM) di antara bulan Mac dan bulan Ogos 2005.

Metodologi Kajian ini melibatkan seramai 293 wanita baru bersalin di wad pascanatal HUSM. Mereka dinilai samada mendapat penyakit kemurungan wanita baru bersalin dengan diberikan soalan Edinburgh Postnatal Depression Scale (EPDS) pada hari pertama dan hari kelima pascanatal serta 4 hingga 6 minggu selepas bersalin. Pada peringkat lawatan pertama, mereka dikehendaki menjawab soalan-soalan berikut: Sosio-demografi and faktor risiko obstetrik, Brief Patient Health Questionnaire (BPHQ-9) dan Life event Scale. Mereka dikehendaki datang semula selepas di antara 4 hingga 6 minggu kemudian, di mana mereka hanya perlu menjawab soalan EPDS sahaja.

Keputusan Seramai dua ratus sembilan puluh tiga wanita (dengan kadar respons kajian sebanyak 100%) berjaya melibatkan diri di dalam kajian ini. Prevalens penyakit kemurungan wanita baru bersalin di antara 4 hingga 6 minggu pascanatal ialah 27.3% (80 orang daripada 293 subjek) dengan menggunakan skor EPDS sebanyak 12 atau lebih ke atas. Prevalens penyakit kemurungan wanita baru bersalin di dalam jangka masa hari pertama ke hari kelima pasca-natal ialah 22.5%. Wanita yang mempunyai sejarah keguguran ($p < 0.05$) dan kemurungan pada awal jangka masa pasca-natal ($p < 0.05$) sangat berkait dengan penyakit kemurungan wanita baru bersalin.

Kesimpulan Penyakit kemurungan wanita baru bersalin di HUSM adalah lebih tinggi berbanding dengan beberapa kajian awal di seluruh Malaysia. Wanita yang mempunyai sejarah keguguran dan mendapat gejala kemurungan pada awal jangka masa pasca-natal ($p < 0.05$) sangat berkait dengan penyakit kemurungan wanita baru bersalin. Pengesanan awal mereka yang berpotensi untuk mendapat penyakit kemurungan wanita baru bersalin mestilah mengambil kira faktor sosio-demografi, sejarah penyakit mental dan faktor obstetrik.

CHAPTER 1 INTRODUCTION

1.1 Introduction:

Having a baby is a major event in any woman's life and this is particularly so in the case of a first baby. Motherhood is an exciting and wonderful experience. But for some women, the period following childbirth may be a time of emotional turmoil.

Emotional distress following delivery ranges from the very common, mild and short lived 'baby blues', through postnatal depression, to the more serious but rare condition, puerperal psychosis.

Fewer people are aware that roughly as many as 10% of all recently delivered women develop postnatal depression (Rachel *et al.* 1996). In a proportion of these mothers, depression may be of such severity that they need out-patient psychiatric help and may need drug therapy.

Postnatal depression (PND) is a significant health problem affecting 10-15% of mothers (Cox *et al.* 1987). In state of Kelantan, east coast of Malaysia, the prevalence of PND was found to be 20.7% (Kadir *et al.* 2004).

It is increasingly being recognized that PND has important consequences not only for mother and her function in the family, but also for her child. Impaired mother infant interactions have been noted among women with PND (Murray *et al.* 1996), and their infants have exhibited significant cognitive and behavioural disturbance in the preschool years (Wrate *et al.* 1985, Cogill *et al.* 1986).

1.2 Classification

Postpartum depressive disorders are typically divided into 3 categories:

Postpartum blues

Puerperal psychosis

Postnatal depression

1.2.1 Postpartum blues

Postpartum blues is considered a relatively mild self-limiting mood state that occurs within 2 weeks postpartum with an incidence of 50-80% (Stowe *et al.* 1995). They are common in primigravida and those with previous history of premenstrual syndrome. The peak onset is between the third and the sixth day following childbirth, at which, lability of mood, irritability, feelings of depersonalization, insomnia and headache may be evident. Short lived negative feelings towards the baby can also occur.

Most women will experience them for just 1 or 2 days. Even when it is more severe, the 'Blues' usually resolved within 10 days of delivery. This condition needs support, reassurance and encouragement, including from the mother's family and friends.

1.2.2 Puerperal psychosis

Puerperal psychosis is considered as a serious and obvious psychiatric disorder during postnatal period. The incidence is low with only 1 or 2 women affected in every 1000 deliveries (Cox *et al.* 1986). It is commoner amongst those having their first baby. Most patients present within 2 weeks of delivery (normally at day 3 to day 14 after delivery) some as early as 48 hours postpartum.

The women may experience delusion or hallucination with the initial features include sleep disturbance, restlessness and irritability. Women with a history of puerperal psychosis, psychiatric problems, or with a family history of mental disorder, are at risk of developing psychosis and may do so in the subsequent pregnancies.

1.2.3 Postnatal depression

The diagnosis of PND may be missed easily as maternal blues which are very common and they, being considered a normal reaction to the responsibilities of motherhood and they often evolve insidiously. Further more, anxiety and irritability are frequently prominent and may mask the true picture of the condition.

PND is defined in the DSM-IV as major depressive episodes that occur within 4 weeks of delivery with criteria for a major depressive episode includes a period of at least 2 weeks of depressed mood or loss of interest in almost all activities and include at least 4 other stated symptoms as below:

Changes in appetite or weight or sleep.

Psychomotor activities.

Decreased energy.

Feeling of worthlessness or guilt.

Difficulty in thinking, concentration or decisions.

Recurrent thought of death or suicidal ideations, plans or attempts.

Some women who develop PND will have experienced and got over the blues, while, for some the blues does not remit and develops into depression. Timing is variable. But Cox (1993) showed that, the peak time is five weeks after delivery.

1.3 Normal Emotional Changes After Childbirth:

For the first three days or so after giving birth, most women, although feeling exhausted period, they experience a 'high condition', that is they feel happy, excited, thrilled with the baby and themselves, and they may experience difficulties sleeping. This period is sometimes referred to as the 'Pinks'. Generally, all these feelings pass in a matter of days.

As times goes on, mothers are exposed to a major emotional and physical stress in coping with a new life. They have to take care of their babies as well as their own wellbeing. Above all, in the early weeks, it is very common to feel overwhelming exhaustion and many of the symptoms described probably arise out of fatigue.

A new mother can feel very possessive about her baby and dislike anyone else handling it, even her own husband or mother. Difficulties in concentration are common around this time and because of this, forgetfulness is also a striking feature. Once a normal night's sleep pattern returns, all of these symptoms fade.

During the six to eight weeks after childbirth, new mothers will return to normal, both physically and emotionally. However during this adjustment period mother are at risk for mood disorder ranging from a minor post partum blues to a serious condition of post natal depression and puerperal psychosis.

One of the major challenges in dealing with PND is early recognition and many mothers go without much treatment because postpartum mood changes are often not diagnosed especially in cases with insidious onset, and the treatment is often delayed, if it is ever sought. In untreated cases, PND may resolve within several months but can linger into the second year postpartum. After the initial episode, women who have had PND are at high risk for both non puerperal and puerperal relapses (Cooper *et al.* 1995).

The detection of PND is often complicated by several factors. First, most women do not recognize that what they are experiencing is, not within the norm. Second they frequently think they are going crazy and worry that, if they share these thoughts with health care professionals, they will be locked up or someone will take their baby away from them. Physicians may contribute to delayed detection of PND by minimizing a woman's distress in an effort to be reassuring.

If postnatal depression is to be prevented by clinical or public health intervention, its risk factors need to be reliably identified. Recent meta-analyses suggest that the primary risk factors for PND include past history of psychopathology, psychological disturbance (mainly depression and anxiety) during pregnancy, poor marital relationship, poor social support, stressful life events prior to birth, low social status, child care stress and birth complications (O'Hara *et al.* 1996, Wilson *et al.* 1996, Beck *et al.* 1996). However, risk factors are not necessarily consistently identified across studies. Obstetric complications (including mode of delivery) were identified as a risk factor in four studies, but not in nine separate studies (O'Hara and Zekoski 1998).

Some studies have demonstrated that the mode of delivery affects maternal mood and depression; Caesarean section being a higher risk for depression (Fisher *et al.* 1997). One study showed an emergency caesarean had more than six times the risk of developing postnatal depression when compared to vaginal and instrumental deliveries (Boyce and Todd 1992). One study using several obstetric variables (multiparous women, antepartum haemorrhage, forceps and caesarean section deliveries) showed a marginally significant increased risk for postnatal depression (Stuart *et al.* 2001).

Another study has shown that four independent risk factors have been identified: unplanned pregnancy, not breast feeding, maternal unemployment and unemployment in the head of household, had significant associations for PND (Rachel *et al.* 1996). However, numerous studies have produced no consensus on reliable risk factors (Paykel *et al.* 1980, Cutrona 1983, Kumar and Robson 1984).

In Malaysia the recognized risk factors for PND were low socioeconomic status, marital problem (Wan Mohd Rushidi 2002), financial problems and less socialization (Samiah Yasmin 1998). One local study done to look possible associations between demographic, obstetric, neonatal and psychological risk factors and PND showed no association between obstetric risk factors and PND (Azidah *et al.* 2006). However, there was no studies specifically looking at the relationship between obstetric risk factors (including mode of delivery) per se and postnatal depression.

1.4 Clinical Course of PND

An earlier study had suggested that most women with postpartum depression recover within 6 months (Kumar *et al.* 1984). But recent research suggests otherwise, namely that 20% of women will have chronic depression lasting more than 2 years (Ballard *et al.* 1994). Long term follow-up indicates substantial recurrence: over the next 4 years, 50% of women with postpartum depression either felt the need to continue or again sought treatment (Kumar *et al.* 1984, Phillips *et al.* 1991). Women whose first bout with depression occurs after childbirth are more likely to have subsequent postpartum episode, whereas women with an index episode prior to delivery have more recurrences (Copper *et al.* 1995, Garvey *et al.* 1983). While limited, these data on course suggest a substantial risk for chronic depression and lifetime recurrence whether the postpartum episode was the first depressive event or a recurrence.

1.5 Obstetric Risk factors for PND

The evidence suggests that risk factors for PND are no different to the risk factors for non-postnatal depression. Three systemic reviews identified the following risk factors as having moderate to strong associations with PND (Beck *et al.* 1996).

Past history of psychopathology and psychological disturbance during pregnancy.

Low social support.

Poor marital relationship.

Recent life events.

Maternity blues.

Regarding obstetric risk factors, some studies have found that they increases the risk of PND (Hannah *et al.* 1992,) whereas others have found the opposite association (Paykel *et al.* 1980, O Hara *et al.* 1983), or no association (Cox *et al.* 1982, Abbot 2006). However all this studies did not specifically looked at the association between obstetric risk factors per se and PND as they also include the non obstetric risk factors. As there are no firm conclusion made between obstetric risk factors and the development of PND, this study aim to see whether, there are any association between obstetric risk factors and postnatal depression.

Most of the studies include mode of deliveries (vaginal delivery, instrumental delivery or caesarian delivery), antenatal complications, delivery complications and puerperal complications (Stuart *et al.* 2001, Nielson *et al.* 2000) as the parameters to be measured in obstetric risk factors.

CHAPTER 2 OBJECTIVES

2.1 General Objective

To determine the relationship between obstetric risk factors and Postnatal Depression (PND) among women who delivers at Hospital Universiti Sains Malaysia.

2.2 Specific Objectives

1. To determine prevalence of postnatal depression among women based on Edinburgh Postnatal Depression Scale (EPDS) score.

2. To determine the relationship between obstetrics risk factors and postnatal depression ;
 - i. Parity
 - ii. History of abortion
 - iii. Type of delivery
 - iv. Complication during pregnancy
 - v. Complication during early postpartum

3. To determine demographic determinants ;
 - i. Maternal age
 - ii. Maternal education level
 - iii. Type of marriage
 - iv. Marital status
 - v. Number of children
 - vi. Employment status (women and their spouse)
 - vii. Total household income

4. To determine the relationship between Brief Patient Health Questionnaire-9 (BPHQ-9) and EPDS.

5. To determine the relationship between Life Event Scale and Postnatal depression based on EPDS.

CHAPTER 3 METHODOLOGY

3.1 Study Area/ Background

Hospital USM is one of the tertiary referral centre in the state of Kelantan. The average number of deliveries in HUSM was 6589 (year 2003). Vaginal deliveries was 5273, Caesarean deliveries was 1052 and instrumental deliveries was 264. The Hospital USM labour room received almost all the referral cases from districts hospital in Kelantan and Hospital Besut, Terengganu.

The outpatient clinic facilities, developed since the establishment of Hospital USM. Now it evolved and expanded over times to fulfill the population need. Also known as Klinik Rawatan Keluarga (KRK) is one of the research centre especially for the primary care research.

3.2 Study Design and sampling

This is a cross-sectional study. Based on the local prevalence of 21% the calculated sample size of PND was 293 (including a possible 10% drop-out). The calculation was based on a single proportion, with a confidence interval of 95% and power of 80% for the objectives number 1 and 3 and by using two proportions calculations for the objective number 2 with a sample size of 293.

Objective No 1 and 3

-Using single proportion

$$n = \left[\frac{Z}{\Delta} \right]^2 \times P (1 - P)$$

n = the required sample size

P = prevalence of PND in Kelantan general population (Azidah *et al.* 2006)

Level of confidence = 95% (therefore $Z_{\alpha/2} = 1.96$)

Δ = precision = 0.05

$$n = (z/\Delta)^2 P(1-P)$$

$$= (1.96/0.05)^2(0.21) (1-0.21)$$

$$= (39.5)^2 (0.21) (0.79)$$

$$= 258 + 26 (10\% \text{ drop out rate})$$

$$n = \underline{\underline{284}}$$

Objective No 2

-Using two proportion using PS software-two proportion

Calculation was done for all the risk factors and the final sample size should be selected based on the largest number among the all risk factors (shown below)

| | | |
|----------|---|---|
| α | = | 0.05 |
| power | = | 80% (Power of study) |
| p_0 | = | 0.21 Approximated from prevalence of PND in Kelantan general population (Azidah <i>et al.</i> 2006) |
| m | = | 4 {ratio case to control (ratio PND and Non PND 1:4)} |
| OR | = | 2.5 (expert opinion) |
| n | = | 245 |
| Total | = | 245 + 10% non response rate + 10% drop out rate |
| | = | 293 |

However, due to the time constraint and logistic limitation, a bigger sample size could not be taken and the total sample of **293** was chosen for this study.

The study samples were recruited from postnatal ward Hospital USM Kota Bharu, Kelantan, from March 2005 to August 2005. Women were approached prior to discharge in which the list of delivered mother of that day was traced through the labour room. Patients were requested to participate in the study, subsequently were asked to sign for the informed consent after they had understood and agreed to participate in the study.

They were also required to come for follow up after four week to six week of delivery (in which they were given follow up card) to come to hospital USM outpatient clinic (Klinik Rawatan Keluarga) or Postnatal clinic HUSM for further assessment. For those who failed to come for follow up, they were traced through phone or nearest healthcare clinic personnel.

3.3 Instruments

Questionnaires consisting of:

1. EPDS Questionnaire.
2. Sociodemographic and Obstetrics Risk Factors Questionnaire.
3. Life Event Scale Questionnaire.
4. Brief Patient Health Questionnaire 9 (BPHQ-9).

3.3.1 Edinburgh Postnatal Depression Scale Questionnaire (EPDS)

The Edinburgh Postnatal Depression Scale (EPDS) was developed in 1987 to act as a specific measurement tool to identify depression in new mothers. The scale has since been validated, and evidence from a number of research studies has confirmed the tool to both reliable and sensitive in detecting depression (Appleby *et al.* 1994). Individual items are totalled to give an overall score. A score of 12 and above indicates the likelihood of depression (Warner *et al.* 1996). The EPDS may be used at 4-6 weeks to screen postnatal women (Cox *et al.* 1987).

The Malay version of EPDS questionnaire was developed by Azidah *et al* (2006), through the study of postnatal depression and validation of EPDS in Kota Bharu Kelantan. The best cut-off score of Malay version of EPDS was 11.5 with the sensitivity of 72.7% and specificity of 92.6% (Azidah *et al* 2006).

The item EPDS was chosen because it is relatively simple, short and takes less than 10 minutes to be filled by respondents, making it practical for use in busy postnatal wards and outpatient clinics. Primarily, it has been developed to assist primary health care professionals to detect PND.

The ten symptoms of depression included in the EPDS are the following:

Inability to laugh.

Inability to look forward to things with enjoyment.

Unnecessary blaming of oneself.

Anxious or worried feeling.

Scared or panicky feeling.

A feeling that things have been getting on top of me.

Difficulty sleeping because of unhappiness.

Sad or miserable feeling.

Crying.

Thought of harming oneself.

3.3.2 Life Event Skill Questionnaire

Life Events Skill questionnaire is a self administered questionnaire containing a list of 43 events to which subjects responds by checking those events that they have experienced during the recent past (previous 6 month or 1 year).

To determine the scoring weight for specific events, Holmes and Raphe 1967, had a large group of subjects rate, each of 43 items with regard to the amount of social readjustment that the various events that required. The value termed life change units (LCU), when summed yield a total life score.

The LCU score of more than 300 were highly associated with psychological distress and health problems (Holmes and Raphe 1967).

| LCU score | Chances of health changes |
|-----------|--|
| <150 | Chance of 1:3 of serious health changes |
| 150-300 | Chance of 50:50 of experiencing a serious health change within 2 years |
| >300 | High risk of developing health problems. |

3.3.3 Brief Patient Health Questionnaire (PHQ-9)

It is a self-administered screening tools to detect depression among adult in primary care setting. It was validated to a Malay version in 2004 and cut-off point of 5 and above give a reasonable sensitivity of 69.0% and specificity of 60.5% and (Azah *et al.* 2005).

| Score | Severity of depression |
|-------|------------------------|
| 5-9 | Mild depression |
| 10-14 | Moderate |
| 15-19 | Moderate Severe |
| >20 | Severe Severe |

The PHQ-9 has demonstrated usefulness as an assessment tool for the diagnosis of depression in primary care with acceptable reliability, validity, sensitivity, and specificity. (Kroenke and Spitzer 2002). The nine items of the PHQ-9 come directly from the nine DSM-IV signs and symptoms of major depression. Patients should not be diagnosed solely on the basis of a PHQ-9 score. The clinician should corroborate the score with clinical determination that a significant depressive syndrome is present. After making a provisional diagnosis with the PHQ-9, there are additional clinical considerations that may affect decisions about management and treatment.

3.4 Data collection

The respondents were given questionnaires on two occasions. On the first occasion at between day 1 to day 5 after deliveries which would be done at postnatal ward. They were asked to fill the Malay version of EPDS questionnaire, Sociodemographic and Obstetric Risk Factors Questionnaire, Malay version of Life Event Scale Questionnaire and Malay version of Brief Patient Health Questionnaire-9 (BPHQ-9).

The second occasion took place about 4 to 6 weeks post deliveries, during this occasion they were given another Malay version of EPDS questionnaire for the comparisons.

3.5 Exclusion Criteria:

Women with the following conditions were excluded from the study:

1. Presence of Organic brain syndrome.
2. Mental retarded patient.
3. Unable to understand Bahasa Malaysia language.
4. Refuse to cooperate with or without reasons.
5. Patient with mental disorder.
6. Those who cannot be contacted by mail or phone and refuse to come for follow up at six weeks postpartum

3.6 Statistical Analysis:

Data entry and analysis were done using SPSS for windows, version 12.0 and STATA version 7.0. All data collection forms were given numbers and were checked twice for completeness. Data were entered, checked for data-entry error, explored and cleaned. The distributions and frequencies were examined. Initially, data exploration was done including descriptive statistics and graphs for each variable. For the normally distributed continuous variable were expressed as mean and standard deviation and for non normally distributed continuous variable were express as median and inter quartile range. Frequencies and percentage for categorical variables were calculated. Categories with small sample size and skewed distributions were noted. Meaningful combination of categories was done when small cell in categories noted.

Both univariate and multivariate analysis were performed. For univariate analysis, simple logistic regression was used as a screening in selection of variables for the further step in multivariate analysis. In multivariable analysis, multiple logistic regression analysis was applied to evaluate potential factors associated with post-natal depression. Method that was used for variable selection was backward manual procedure. All variables were initially included in the multivariable analysis in backward method and removed manually one at a time and tested by Log-likelihood Ratio (LR) test. At this step, the preliminary main effect model was obtained.

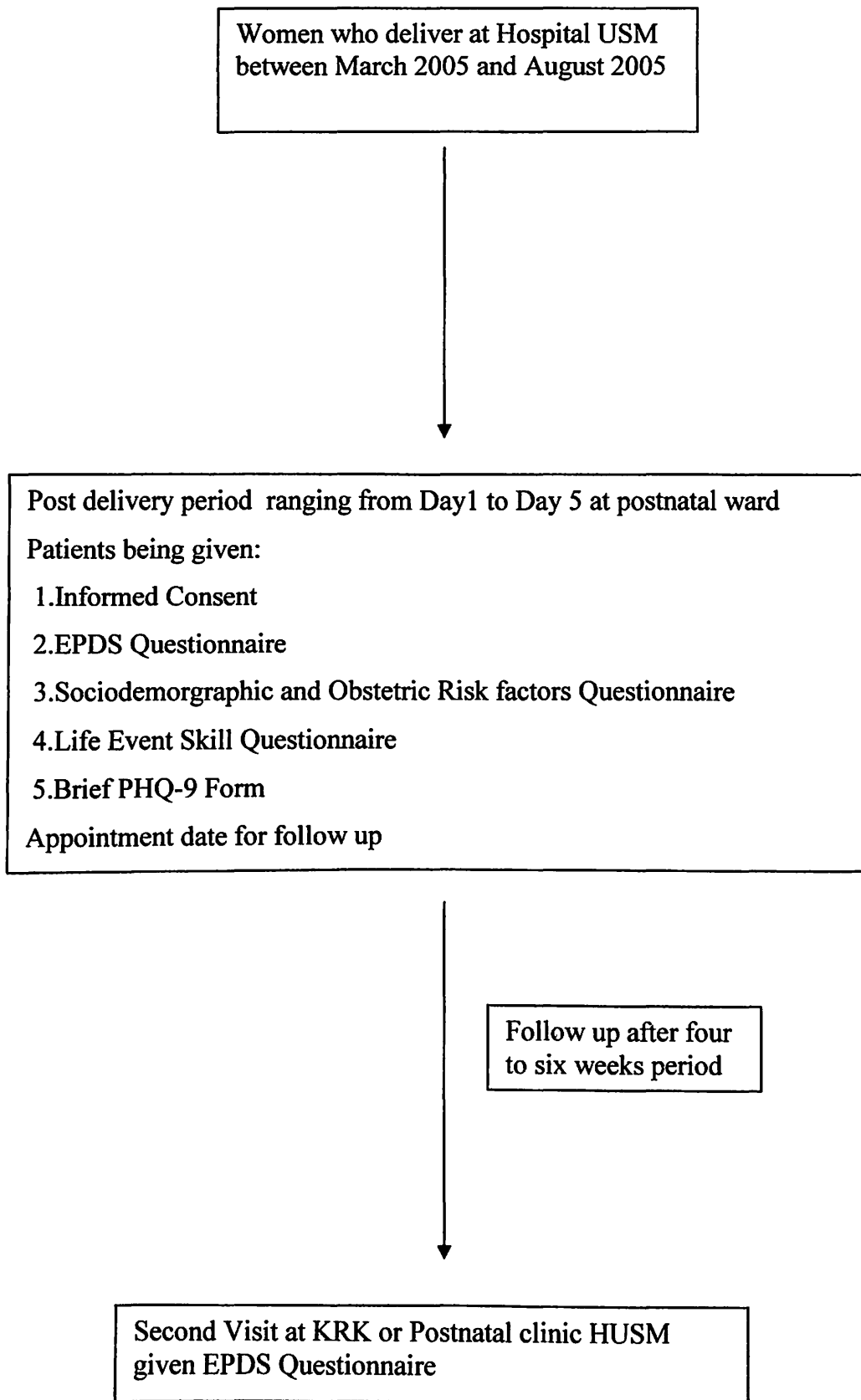
Variance inflation factors (VIF) were obtained to check for multicollinearity. VIF value of less than 10 signifies that there is no multicollinearity problem. Fitness of model was tested by Pearson χ^2 , Hosmer Lemeshow goodness of fit test (Munro, 2001). The model was perfect fit if the p value approached to one. The classification table and receiver operator characteristic (ROC) curve were also used to determine the fitness of the model. The high overall percentage in the classification table and area under the curve towards one in ROC curve showed that the model was fit. The odds ratio was estimated with 95% confidence interval. Findings were presented with odds ratio (OR), 95% confidence interval (CI) and *p*- value. Level of significant was set at 0.05 with two-tailed fashion.

Evaluation of simple correlation coefficients of EPDS at visit 1 (expressed as EPDS1) and EPDS at visit 2 (expressed as EPDS2) with Brief PHQ-9 (BPHQ-9), were done by using bivariate correlation analysis and followed by linear regression. Scatter plot graphs were then plotted and estimation calculation for an increase in 1 score of BPHQ-9 will increase in how much scoring in EPDS1 and EPDS2 were done based on that graphs.

3.7 Ethical consideration

The research has been ethically cleared by the Research and Ethics Committee of School of Medical Sciences, Universiti Sains Malaysia.

3.8 Flow chart of study



CHAPTER 4 RESULT

A total of 293 patients successfully completed this study. All of the women were married. The age of the women ranges from 19 to 46 with the mean age of 31.5 (SD = 6.18). The median number of children was 2 (Interquartile range = 3) and the total household income was RM1447.61 (SD = RM 1170.731). Sixty four point two percent (64.2%) mothers completed secondary school education, 57.3% were housewife and 46.1% of the partners were self employed.

4.1 Prevalence of Postnatal Depression among the post delivery women in HUSM

The prevalence of PND was calculated from the second visit that was taken at 4-6 weeks postpartum. Using the EPDS score of 12 and above, the prevalence of PND in hospital USM was 27.3% (80 out of 293 women) (figure1). The prevalence of depression at day1 to day 5 postpartum based on EPDS was 22.5% and based on BPHQ-9 score was 34.8% (Table 1).

Figure 1 Prevalence of Postnatal Depression in Hospital USM

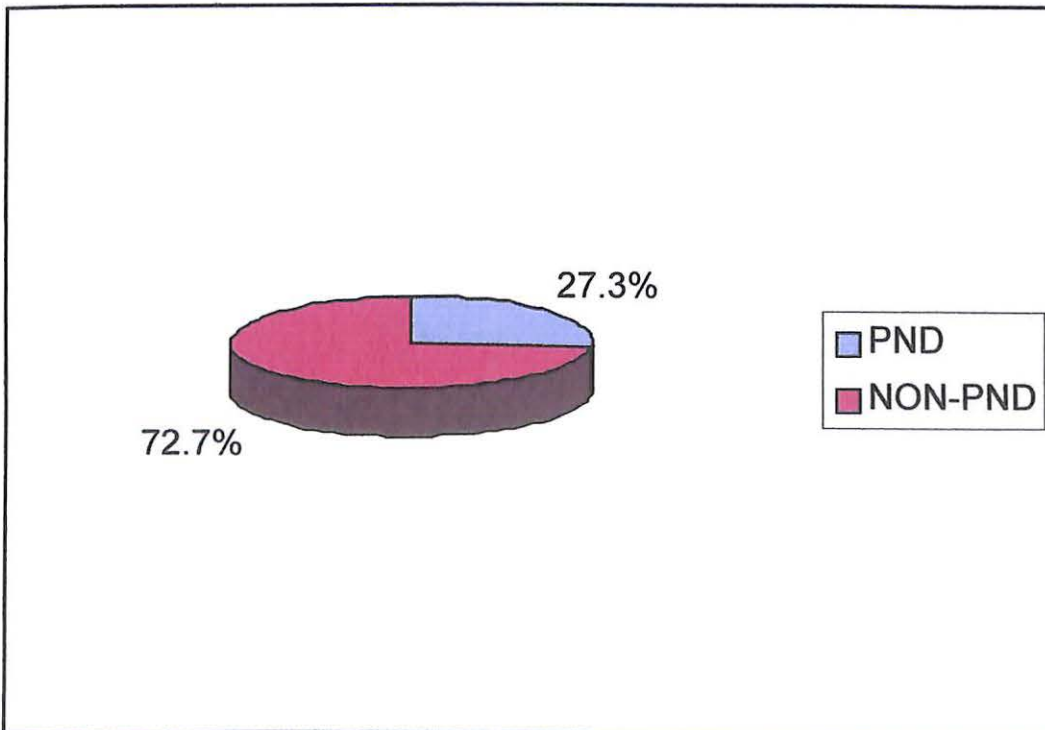


Table 1 Prevalence of PND and depression at early postpartum period day 1 to day 5 based on EPDS and brief PHQ (BPHQ-9)

| Variables | Prevalence (95% CI) |
|--|---------------------|
| Depression at Day1-5 based on EPDS ^a | 66 (22.5%) |
| Depression at Day1-5 based on BPHQ-9 ^b | 102(34.8%) |
| Postnatal Depression at 4-6 weeks postpartum | 80 (27.3%) |

^aEPDS Score ≥ 12

^bBrief PHQ-9 Score ≥ 5

4.2 Sociodemographic Characteristics

Patient baseline demographic and socioeconomic characteristics were presented in Table 2. The PND group did not differ significantly with respect to age, number of children, income, education, occupation, and husband occupation compared to non PND group

Table 2 shows the demographic characteristic of PND and non PND women

| Frequency (%) | | | |
|---------------|------------------------------------|--------------------------------|--------------------|
| Variables | PND Group (n = 80) | Non PND Group (n = 213) | P values |
| Age, year | 32.1 (6.62) ^a | 31.3 (6.02) ^a | 0.344 ^c |
| No children | 3.1 (2.15) ^a | 2.9 (2.17) ^a | 0.407 ^c |
| Income (RM) | 1281.88 (1149.029) ^a | 150.86 (1175.405) ^a | 0.138 ^c |
| Education | | | 0.27 ^b |
| Primary | 7 (8.8) | 13 (6.1) | |
| Secondary | 55 (68.8) | 133 (62.4) | |
| Diploma | 5 (6.3) | 34 (16.0) | |
| University | 12 (15.0) | 31 (14.6) | |
| Others | 3 (1.3) | 2 (0.9) | |
| Occupation | | | 0.78 ^b |
| Housewife | 49 (61.3) | 119 (55.9) | |
| Government | 19 (23.8) | 55 (25.8) | |
| Private | 4 (5.0) | 18 (8.5) | |
| Self employed | 7 (8.8) | 16 (7.5) | |
| Others | 1 (1.3) | 5 (2.3) | |

| | | | |
|--------------------|-----------|------------|-------------------|
| Husband occupation | | | 0.18 ^b |
| Self employed | 35 (43.8) | 100 (46.9) | |
| Government | 20 (25.0) | 68 (31.9) | |
| Private | 19 (23.8) | 40 (18.8) | |
| Others | 6 (7.5) | 5 (2.4) | |
| Type of marriage | | | 0.12 ^d |
| Monogamous | 74 (92.5) | 206 (96.7) | |
| Polygamous | 6 (7.5) | 7 (3.3) | |

^aMean (SD)

^bPearson Chi square

^cIndependent t test

^dFisher's Exact Test

RM = Ringgit Malaysia

P value is significant at < 0.05

Chi square test for categorical data and independent t test for numerical data