Frequency and Risk Profiles Associated with Antenatal Anxiety and Depression in Middle Socioeconomic Women

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Abstract

Objective: To determine the frequency of antenatal anxiety and depression and its risk profile including demographic, psychosocial and obstetric risk factors, in middle socioeconomic women.

Methods: A cross-sectional study was carried out at two private hospital centres of Karachi, over a period of five months from October 2016 to March 2017. A questionnaire (age, education, parity, socioeconomic status, employment) and the Hospital Anxiety and Depression Scale (HADS) were the tools used to gather required information from pregnant women. Data collected was entered in SPSS 16 software. Descriptive statistics were used to calculate frequency and mean values. Logistic regression both binary and multinomial was performed to identify significant predictors of anxiety and depression.

Results: Our study showed that out of 520 pregnant women, 130 (25%) women had anxiety, whereas 220 (42.3%) had depression. The mean age of women was 26.9 ± 4.198 years. The range being from 18 years to 35 years. Significant risk factors among anxiety group were: working woman; 30.8% (p-value=0.000, OR=0.286), domestic violence; 84.6% (p-value=0.000, OR=2.8), difficult relationship with in-laws; 84.6% (p-value=0.000, OR=12.375), sleep disturbance; 76.9% (p-value=0.000, OR=9.667), primigravida; 23% (p-value=0.000, OR=2.576) and unplanned pregnancy; 23.1% (p-value=0.029, OR=0.511).

Significant risk factors among women with depression were: working woman; 31.8% (p-value=0.000,OR=0.286), domestic violence; 68.2% (p-value=0.000, OR=3.571), difficult relationship with in-laws; 22.7% (p-value=0.000, OR=4.8), sleep disturbance; 54.5% (p-value=0.008, OR=2.0), primigravida; 45.5% (p-value=0.000, OR=17.246) and unplanned pregnancy; 18.2% (p-value=0.000, OR=3.0). Other factors that were found to be significant in the depression group only were: unsatisfactory relationship with husband; 22.7% (p-value=0.000, OR=4.118), stressful life event in previous year; 45.5% (p-value=0.000, OR=2.167), and tertiary education; 68.2% (p-value=0.002, OR=0.916).

Conclusion: Psychosocial and demographic factors such as working woman, domestic violence, and difficult relationship with in-laws and sleep disturbance had a significant association with antenatal anxiety and depression. Obstetric risk factors were primigravida and unplanned pregnancy. Significant association with depression was unsatisfactory relationship with husband, stressful life event in a previous year and tertiary education.

Keywords: Prenatal care, anxiety, depression, mental health, pregnancy.

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Introduction

Impaired mental health of a woman during pregnancy is among the strongest risk factors for adverse obstetric outcome[1]. Anxiety and depression during pregnancy are recognised as important public health issues globally being more severe in developing countries as compared to developed countries[2].

Most research has been done on postnatal depression as compared to antenatal anxiety and depression probably due to misconception that pregnancy has some protective effect against psy-

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chological symptoms. On the contrary stress, anxiety and depression were found to be more common in some studies during the antenatal period as compared to postnatal period[3].

Psychological symptoms are difficult to identify prenatally because of physiological symptoms of pregnancy such as altered appetite and easy fatigue. However, it is important to screen women for anxiety and depression as these are detrimental, both to mother and child. The pregnancy may be at risk of preterm delivery and may end up in low birth weight. In the child, it may be associated with retarded growth in the first year of life, impaired behaviour, emotional imbalance, and socio-emotional maladjustment. The prenatal anxiety and depression are also important predictors of postnatal psychiatric problems such as depression and suicidal tendencies in the mother[4]. These demand interventional strategies for anxiety and depression to be initiated before delivery rather than post-delivery.

The prevalence of antenatal depression varies globally between 7% to 20%[5] and antenatal anxiety between 5% to 54%[6]. A study from Hyderabad[7] reported 20% of pregnant women of urban Pakistan met the criteria for anxiety and depression.

Wide variation in prevalence of anxiety and depression is due to different criteria used for screening, characteristics of target population and methodology used[8]. Less work has been done to study anxiety as compared to depression during pregnancy.

Demographic, psychosocial and obstetrics factors are considered important predictors of developing psychological symptoms during pregnancy. Study of these risk factors is important to initiate preventive and interventional strategies for mental health problems during pregnancy.

The anxiety and depression during prenatal period remain a neglected and less studied health issue in developing countries, whereas the importance of mental health is well-recognised in developing countries and its assessment is a part of the antenatal program.

Local studies in Hyderabad[7] and Lahore[9] included women mostly of low income and with no or primary education. A study from Karachi, published in 2012[10], but carried out in the year 2005 and 2006, almost ten years ago, revealed 70% of women were either anxious, depressed or both. The city of Karachi is different from Lahore and Hyderabad as it has been facing political unrest and terrorism more than other cities of Sindh and Punjab. We can expect a rise in the magnitude of psychological problems in Karachi over a decade. Therefore, we conducted the study to determine the frequency of antenatal anxiety and depression and its risk profile including demographic, psychosocial and obstetric risk factors. Our study shows the latest data and will demand from health authorities the need to take necessary actions for improvement in the standard of antenatal care.

Subjects and Methods

We conducted a hospital-based cross-sectional study at Mamji Hospital and Saifi Hospital, Karachi, over a period of five months from October 2016 to March 2017. Both are private tertiary health care centres, well-equipped with intensive care unit (ICU) and neonatal intensive care unit (NICU) and with twenty-four hour availability of multidisciplinary care. However, majority of the data was from Mamji Hospital. Pregnant women are booked in first trimester in the outpatient clinic of the hospital under care of a consultant gynaecologist who sees the woman on every antenatal visit. They are given advice regarding diet, exercise, major and minor physiological symptoms of pregnancy, breast feeding and contraception. Routine laboratory tests and ultrasounds are advised. High-risk pregnancies receive multidisciplinary care. Twenty-four hour emergency care is available and consultant is informed if women report in the emergency care unit. Screening for mental health of every pregnant woman us-

ing standard screening tool is not a part of antenatal care in our hospital.

The study was approved by the ethical review board of Mamji Hospital, Karachi. Using open EPI with 95% confidence interval, frequency of anxiety and depression of 49% and 24.6%, respectively, sample size was calculated to be 384[9].

Data was collected by a trained resident medical officer and authors in a face-to-face interview with a pregnant woman, after taking informed written consent from the participants. The convenience non-probability sampling technique was used to collect the data.

A questionnaire was used to collect demographic, social and obstetric data. Anxiety and depression were assessed by Hospital Anxiety and Depression Scale (HADS). HADS was translated in the Urdu language for local people. HADS[11,12] is a simple and reliable tool for screening of anxiety and depression in hospital settings but it has also been used in epidemiological studies. The scale has sensitivity and specificity of 93% and 90%, respectively, for antenatal anxiety and 90% and 91%, respectively, for antenatal depression. Scores 0-7 indicate no anxiety or depression, 8-10 indicate borderline and 11-20 indicate abnormal results.

Inclusion criteria were all pregnant women who gave consent to take part in this research with no medical disorders. Pregnant women with a past history of treated and cured medical disorder were included. Exclusion criteria were women with existing medical disorders such as diabetes, hypertension etc. during pregnancy or those who refused to participate in the study.

The outcome variables were anxiety and depression. Pregnant women group having anxiety included women with both borderline and abnormal levels of anxiety. Similarly, depression group included both, women with borderline and abnormal levels of anxiety. A total score of >8 on the anxiety or depression scale is taken as positive for anxiety or depression.

Demographic factors studied included age, parity, education, socioeconomic and employment status. Parity includes two groups; primigravida and multigravida. Education status was divided into primary education up to class five; secondary up to intermediate and tertiary include graduation. Employment status included housewife and working women.

Social factors studied were marital status, smoking, alcohol and substance abuse. Marital status included married, divorced and widowed women. Domestic violence included physical and psychological or both against women.

Other factors included a history of sexual abuse, relationship with partner and in-laws, nutrition status, sleeps disturbances, past history of treated psychiatric illness and stressful life event during the previous year. Stressful life events included physical illness, financial difficulties and loss of confidence or self-esteem.

Among obstetric risk factors, variables asked were planned or wanted pregnancy, trimester of pregnancy, antenatal care and previous poor pregnancy outcome such as miscarriage, difficult delivery, cesarian section, stillbirth or neonatal death or obstetric complications.

Data collected was entered in SPSS 16 software. Descriptive statistics were used for demographic factors of the sample to calculate frequency and mean values. Logistic regression, both binary and multinomial, was performed to identify significant predictors of anxiety and depression.

Results

A total of 520 women were interviewed for the study. Almost all of them belonged to the middle class with good nutritional status.

Our study revealed, as shown in Table 1, that 130 (25%) women had anxiety, whereas 220 (42.3%) had depression. Frequency of anxiety included group of women with both anxiety and de-

Table 1. Frequency of anxiety and depression in pregnant women of middle socio-economic class.

	Frequency	Percentage (%)
Normal	270	51.9
Both anxiety and depression	100	19.2
Anxiety only	30	5.7
Depression only	120	23.07
Anxiety (both anxiety and depression + anxiety only)	130	25
Depression (both anxiety and depression + depression only)	220	42.3

Table 2. Socio-demographic risk factors

Risk Factors									
Age	Mean 26.9 ± 4.198	Anxiety				Depression			
		n = 130				n = 220			
		No.	%	OR	p-value	No.	%	OR	p-value
Education									
	Primary	30	23.1			20	9.1	-0.916	0.227
	Secondary	0	0			50	22.7	-0.693	0.332
	Tertiary	100	76.9	-0.405	0.134	150	68.2	0.916	0.002
Employment	Housewife	90	69.2			150	68.2		
	Working	40	30.8	3	0	70	31.8	0.286	0
Domestic violence		110	84.6	2.8	0	150	68.2	3.571	0
Unsatisfactory relationship with partner		70	53.8	0	0.996	50	22.7	4.118	0
Difficult relationship with in-laws		110	84.6	12.375	0	170	22.7	4.8	0
Sleep disturbance		100	76.9	9.667	0	120	54.5	2	0.008

Normal Values (0-6) group taken as reference category

Table 3. Obstetric risk factors

		Anxiety				Depression			
		No.	%	OR	p-value	No.	%	OR	p-value
Marital status	Married		100				100		
Parity	Primigravida	30	23.1	2.576	0	100	45.5	-17.246	0
	Multigravida	100	76.9	0.847	0.068	120	54.5		
Gestational age	First trimester	70	53.8	-0.376	0.082	140	63.6	0.336	0.101
	Second trimester	0	0			0	0		
	Third trimester	60	46.2			80	36.4		
Inadequate prenatal care		10	7.7	-7.8	0.029	40	18.2	2	0.008
Unplanned pregnancy		30	23.1	-0.511	0.029	40	18.2	3	0

Normal levels (0-6) group taken as reference category not shown in table

pression and group of women with anxiety only. Similarly frequency of depression was calculated from group of anxiety and depression both and women with depression only. Pregnant women with normal mental health were 270 (51.9%). The mean age of pregnant women in the study was 26.9 ± 4.198, the range being from 18 to 35 years.

Variables like single parent, sex abuse, smoking and substance abuse were excluded since no woman had experienced these.

Significant risk factors among anxiety group, as shown in Table 1 and 2, were working woman; 30.8% (p-value=0.000, OR=0.286), domestic violence; 84.6% (p-value=0.000, OR=2.8), difficult relationship with in-laws; 84.6% (p-value=0.000, OR=12.375), sleep disturbance; 76.9% (p-value=0.000, OR=9.667), primigravida; 23% (p-value=0.000, OR=2.576) and unplanned pregnancy; 23.1% (p-value=0.029, OR=0.511).

Significant risk factors among women with depression were: working woman; 31.8% (p-value=0.000, OR=0.286), domestic violence; 68.2% (p-value=0.000, OR=3.571), difficult relationship with in-laws; 22.7% (p-value=0.000, OR=4.8), sleep disturbance; 54.5% (p-value=0.008. OR=2.0), primigravida; 45.5% (p-value=0.000, OR=17.246) and unplanned pregnancy; 18.2% (p-value=0.000, OR=3.0).

Other factors that were found to be significant in the depression group only were: unsatisfactory relationship with husband; 22.7% (p-value=0.000, OR=4.118), stressful life event in previous year; 45.5% (p-value=0.000, OR=2.167.) and tertiary education; 68.2% (p-value=0.002, OR=0.916).

Other factors, which gave inconclusive result on regression analysis, were trimesters of pregnancy and history of previous mental illness. There was no case with the history of previous mental illness in the group of women with depression, whereas 20 cases (15.4%) were found which were unable to show significant association on logistic regression (p-value=0.998, OR=0.000). Significance level was taken as p-value<0.05.

Women with normal levels of mental health on HADS were taken as reference category on regression scale and are not shown in table 2 and 3. Factors, which appear to be protective, were housewife, multigravida and adequate antenatal care.

Discussion

Frequency of antenatal anxiety and depression is much less appreciated as compared to postnatal psychological problems. Our study showed a high frequency of anxiety and depression in pregnant women. Depression (42.3%) was comparatively high as compared to anxiety (25%). This was in contrast to a study by Lee AM et al. which showed increased frequency of anxiety as compared to depression[13]. Frequency of anxiety is comparable to other studies[6,8,10,14], which showed results between 23.4% and 20.4%.

Frequency of depression was even higher than in a study conducted in Karachi in 2012[15]. The data of that study was of the year 2005 till 2006. The rise in frequency of depression over a period of ten years could be due to law and order situation of the city in which our study was conducted along with other social predictors studied in our research study. Studies in rural Sindh, Lahore and northern areas have much lower prevalence of antenatal anxiety and depression as compared to our study[7,9,16-20]. However these studies recruited participant of lower income social group. They were also low in education status. However political and law and order situation is much better in these areas of Pakistan, similar results are revealed in studies from rural areas and lower income class of neighbouring countries like India and other counties[15,21].

All the women in the study group belonged to the middle class, as far as social class is concerned. Similarly, all the participants in our study group were young pregnant women, no one above the age of 35 years (mean age 26.9 ± 4.198 years). Young age was found to be an important risk factor in other studies also[13], even though these young women in our study group did not have unhealthy practices of smoking alcohol and substance abuse and had all the basic needs of life with good nutritional status. Still they were facing mental impairments like anxiety and depression, which are known to be adverse factors for maternal and perinatal morbidity and long-term child outcome[2,14].

Women who were highly qualified were found to be at risk of depression in our study. This is in contrast to the study by Melo EF et al. which found low educational status as a significant risk factor (OR=2.38; 95% CI: 1.38-4.12) for depression[22]. Women with low education attainment in our society usually accept all injustices and try to adjust in the joint family as they are unaware of their rights and need for women empowerment.

Our study revealed that working women, as compared to housewives, were at a significant risk of both anxiety and depression, indicating that our society is still not giving due privilege and social support to working and qualified women who are supporting their families financially in addition to their set household responsibilities.

Stressful life event in previous one year, including loss of self-esteem, was not found to be a significant risk factor in pregnant women with anxiety; however, it turned out to be a significant predictor for the occurrence of antenatal depression in our study. Loss of self-esteem is consistently identified in some studies as a risk factor affecting women's ability to withstand stress, leading to mental illness[10]. Interventional measures to improve self-esteem should be a part of antenatal health programs for prevention of impaired mental health[13].

Unsatisfactory relationship with a partner put our study group women at a significant risk of depression, whereas a difficult relationship with in-laws was a significant risk factor for both anxiety and depression. This indicates that if the life partner in our society is caring, women can easily tolerate the problems faced in a joint family.

Satisfactory relationships with in-laws, particularly mother in law and partner, were found to be protective in many studies[23,24], emphasising the importance of family support of women during this important phase of life. Since we have a culture of

joint family system, counselling of the head of the family, particularly the mother-in-law, should be considered in parent craft classes during the antenatal period.

Another important factor, which is consistently reported in various studies as a strong predictor of anxiety and depression, is a history of previous mental illness[25]. Our study showed an inconclusive result for this variable as there was no such history in women with depression, whereas the anxiety group showed a small percentage of women with such a history.

Unplanned pregnancies are accepted with difficulty and put women under stress and are found to be an important risk factor for both anxiety (23%) and depression (18%). General awareness and easy accessibility of public to different family planning measures should be the targets of public health programs. Emphasis should be given on the discussion of birth spacing and planning of future pregnancies with the couple during the antenatal and postpartum period.

Whether planned or unplanned, the pregnancies remain wanted pregnancies, since no one asked for its termination in the study group. First pregnancy, as also shown in other studies, remains a high risk for mental impairment (23% and 45.5% respectively for anxiety and depression).

Our studies did not show any significant difference in the frequency of anxiety and depression between the three trimesters of pregnancy, in contrast to other studies which showed a U-shaped pattern of frequency from the first to the third trimester of pregnancy[18]. This could be due to the fact that we have not followed pregnant woman across each trimester, as the study was not longitudinally designed.

Inadequate prenatal care remains a significant predictor of antenatal anxiety and depression in the study group, highlighting the importance of adequate antenatal care for the physical and mental health of pregnant women and their babies.

Demographic, along with psychosocial characteristic of a woman, should be carefully evaluated to assess the risk status of anxiety and depression. In this way, efforts could be made to improve resources as far as possible.

There are a few limitations in our study. Only a screening instrument, rather than a diagnostic one for identifying antenatal anxiety and depression, was used. However, Hospital Anxiety and Depression Scale has high sensitivity and specificity and was found to be a useful tool in many studies. The study design was cross-sectional in our study, whereas longitudinal study could have given some meaningful result as far as a pattern of frequency of anxiety and depression across the three trimesters is concerned. However, our study does give important relevant information regarding middle-class social group with different living culture as compared to upper and lower class.

Prevention and screening of mental impairment should be a part of comprehensive antenatal health care program as it will decrease postpartum psychiatric illnesses and improve maternal, foetal and child outcome

Conclusion

Frequency of antenatal anxiety and depression was fairly high, 25% and 42.3%, respectively, in women of upper middle class. Significant risk factors associated with anxiety and depressions were: working woman, domestic violence, difficult relationship with in-laws, sleep disturbance, primigravida and unplanned pregnancy. While significant association with depression was unsatisfactory relationship with husband, stressful life event in a previous year and tertiary education.

Conflict of Interest

Authors have no conflict of interests and no grant/funding from any organization.

References

1. Ajinkya S, Jadhav PR, Srivastava NN. Depression during pregnancy: Prevalence and obstetric risk factors among pregnant women attending a tertiary care hospital in Navi Mumbai. Ind Psychiatry J 2013;22:37-40. [DOI: 10.4103/0972-6748.123615].
2. Sawyer A, Ayers S, Smith H. Pre- and postnatal psychological wellbeing in Africa: a systematic review. J Affect Disord 2010;123:17-29. [DOI: 10.1016/j.jad.2009.06.027].
3. Heron J, O'Connor TG, Evans J, Golding J, Glover V; ALSPAC Study Team. The course of anxiety and depression through pregnancy and the postpartum in a community sample. J Affect Disord 2004;80:65-73. [DOI: 10.1016/j.jad.2003.08.004].
4. Larsson C, Sydsjö G, Josefsson A. Health, sociodemographic data, and pregnancy outcome in women with antepartum depressive symptoms. Obstet Gynecol 2004;104:459-66. [DOI: 10.1097/01.AOG.0000136087.46864.e4].
5. Gavin NI, Gaynes BN, Lohr KN, Meltzer-Brody S, Gartlehner G, Swinson T. Perinatal depression: a systematic review of prevalence and incidence. Obstet Gynecol 2005;106:1071-83. [DOI: 10.1097/01.AOG.0000183597.31630.db].
6. Faisal-Cury A, Rossi Menezes P. Prevalence of anxiety and depression during pregnancy in a private setting sample. Arch Womens Ment Health 2007;10:25-32. [DOI: 10.1007/s00737-006-0164-6].
7. Karmaliani R, Asad N, Bann CM, Moss N, Mcclure EM, Pasha O, et al. Prevalence of anxiety, depression and associated factors among pregnant women of Hyderabad, Pakistan. Int J Soc Psychiatry 2009;55:414-24. [DOI: 10.1177/0020764008094645].
8. Fadzil A, Balakrishnan K, Razali R, Sidi H, Malapan T, Japaraj RP, et al. Risk factors for depression and anxiety among pregnant women in Hospital Tuanku Bainun, Ipoh, Malaysia. Asia Pac Psychiatry 2013;5:7-13. [DOI: 10.1111/appy.12036].
9. Waqas A, Raza N, Lodhi HW, Muhammad Z, Jamal M, Rehman A. Psychosocial Factors of Antenatal Anxiety and Depression in Pakistan: Is Social Support a Mediator? PLoS One 2015;10: e0116510. [DOI: 10.1371/journal. pone.0116510].
10. Ali NS, Azam IS, Ali BS, Tabbusum G, Moin SS. Frequency and associated factors for anxiety and depression in pregnant women: a hospital-based cross-sectional study. Scientific World Journal 2012;2012:653098. [DOI: 10.1100/2012/653098].
11. Mumford DB, Tareen IA, Bajwa MA, Bhatti MR, Karim R. The translation and evaluation of an Urdu version of the Hospital Anxiety and Depression Scale. Acta Psychiatr Scand 1991;83:81-85.
12. Snaith RP. The Hospital Anxiety And Depression Scale. Health Qual Life Outcomes 2003;1:29. [DOI: 10.1186/1477-7525-1-29].
13. Lee AM, Lam SK, SzeMun Lau SM, Chong CS, Chui HW, Fong DY. Prevalence, course, and risk factors for antenatal anxiety and depression. Obstet Gynecol 2007;110:1102-12. [DOI: 10.1097/01.AOG.0000287065.59491.70].
14. Littleton HL, Breitkopf CR, Berenson AB. Correlates of anxiety symptoms during pregnancy and association with perinatal outcomes: a meta-analysis. Am J Obstet Gynecol 2007;196:424-32. [DOI: 10.1016/j.ajog.2007.03.042].
15. Herba CM, Glover V, Ramchandani PG, Rondon MB. Maternal depression and mental health in early childhood: an examination of underlying mechanisms in low-income and middle-income countries. Lancet Psychiatry 2016;3:983-92. [DOI: 10.1016/S2215-0366(16)30148-1].
16. Niaz S, Izhar N, Bhatti MR. Anxiety and depression in pregnant women presenting in the OPD of a teaching hospital [Online]. Pakistan Journal of Medical Sciences 2004;20:117-9. Available from: http://www.popline.org/node/262698. Accessed on May 18, 2017.
17. Hamirani MM, Sultana A, Ibrahim Z, Iqbal H, Sultana S. Frequency of prenatal depression in second and third trimesters of pregnancy in Karachi: a hospital based study [Online]. Journal of the Liaquat University of Medical and Health Sciences 2006;5:106-9. Available from: http://www.lumhs.edu.pk/jlumhs/Vol05No03/pdfs/v5n3oa03.pdf. Accessed on May 18, 2017.
18. Zahidie A, Kazi A, Fatmi Z, Bhatti MT, Dureshahwar S. Social environment and depression among pregnant women in rural areas of Sind, Pakistan. J Pak Med Assoc 2011;61:1183-9.
19. Niaz U. Women's mental health in Pakistan. World Psychiatry 2004;3:60-2.
20. Rahman A, Iqbal Z, Harrington R. Life events, social support and depression in childbirth: perspectives from a rural community in the developing world. Psychol Med 2003;33:1161-7.
21. Chandran M, Tharyan P, Muliyil J, Abraham S. Post-partum depression in a cohort of women from a rural area of Tamil Nadu, India. Incidence and risk factors. Br J Psychiatry 2002;181:499-504.

22. Melo EF Jr, Cecatti JG, Pacagnella RC, Leite DF, Vulcani DE, Makuch MY. The prevalence of perinatal depression and its associated factors in two different setting in Brazil. J Affect Disord 2012;136:1204-8. [DOI: 10.1016/j.jad.2011.11.023].

23. Kaaya SF, Mbwambo JK, Kilonzo GP, Van Den Borne H, Leshabari MT, Fawzi MC, et al. Socioeconomic and partner relationship factors associated with antenatal depressive morbidity among pregnant women in Dares Salaam, Tanzania. Tanzan J Health Res 2010;12:23-35.

24. Mohammad KI, Gamble J, Creedy DK. Prevalence and factors associated with the development of antenatal and postnatal depression among Jordanian women. Midwifery 2011;27:e238-45. [DOI: 10.1016/j.midw.2010.10.008].

25. Fadzil A, Balakrishnan K, Razali R, Sidi H, Malapan T, Japaraj RP, et al. Risk factors for depression and anxiety among pregnant women in Hospital Tuanku Bainun, Ipoh, Malaysia. Asia Pac Psychiatry 2013;5:7-13. [DOI: 10.1111/appy.12036].