Original Article

DOI: 10.7860/JCDR/2015/12380.5850

Assessment of Burden of Depression During Pregnancy Among Pregnant Women Residing in Rural Setting of Chennai

Community Medicine Section

NIVETHA SRINIVASAN[1], SHRUTI MURTHY[2], AWNISH K SINGH[3], VANDANA UPADHYAY[4], SURAPANENI KRISHNA MOHAN[5], ASHISH JOSHI[6]

ABSTRACT

Introduction: Depression during perinatal period leads to adverse pregnancy outcome and of child growth. Our study aimed to examine the burden of antenatal depression and associated risk factors among pregnant women living in rural settings of Chennai, a southern state of India.

Materials and Methods: A pilot cross-sectional study was conducted in the rural settings of Chennai, one of the Southern States of India during August through September 2013. Hundred pregnant women who agreed to participate were enrolled in this study. Edinburg postnatal depression scale was used to assess the depression level of the study participants. Information was also gathered about socio-demographics, obstetric and disease history, social support and marital satisfaction was gathered. Descriptive analysis was performed using univariate statistics to report means and standard deviations for the continuous variables and frequency distribution for the categorical variables.

Results: Majority of the participants (65%) had scored 13 or higher on the Edinburg Depression Scale reflecting high likelihood of depression. Majority of the participants (66%) had been bothered due to low feeling, depressed or hopelessness during the previous month. Enriched marital satisfaction scale (p=.025) had shown significant association with Edinburg depression scale.

Conclusion: Pregnancy is very crucial period not only for mother but whole family. This study has shown very high frequency of depression among the participants. There is a need for a longitudinal study to design interventions that can address emerging burden of antenatal depression among pregnant women living in rural settings.

Keywords: Antenatal, Marital satisfaction, Pregnancy, Rural

INTRODUCTION

Mental health is increasingly recognized as a core component to be integrated with other dimensions of health to achieve the Millennium Development Goals, especially 3 of 8 goals relating to women and child health [1]. Maternal mental health is defined as "a state of wellbeing in which a mother realizes her own abilities, can cope with the normal stresses of life, can work productively and fruitfully and is able to make a contribution to her community" [1-3]. Among mental/neurological disorders, depression contributes the maximum share among women of reproductive years. Maternal depression (from conception to 12 month postpartum [1,4] forms the second leading cause of global morbidity in women [1,5]. Women are twice as likely to experience depression in developed countries. Depression affects 10-15% of pregnant women in high income countries [1]. Systematic reviews report 18.4% prevalence of antenatal depression in developing countries [6] and the average rate being 18 to 25%.

India, having the highest rate of global major depression, has evidenced a 45% increase in antenatal depression cases in the past four years [7]. Prevalence of antenatal depression has ranged from 16% to 20% [8]. Antenatal depression poses significant risk for postnatal depression which in turn affects child growth and development [9]. Factors leading to depression included low socioeconomic status, stressful events and daily hassles, previous episodes of depression, inadequate social support in crises, domestic/partner violence, unintentional pregnancies, genetic, hormonal, biological and chemical intersection [1,10].

Poor women in both developing countries and United States experience higher antenatal depression resulting in preterm birth and low birth weight [11]. Other factors attributing to antenatal depression includes presence of two or more chronic medical conditions prior to pregnancy, smoking, substance abuse, hypertension, preeclampsia, and gestational diabetes [11]. Significant association has been shown between familial support and depression during pregnancy [8]. Additionally, physical activity has been linked to better mental health and thus an effective treatment for depression [6]. Antenatal depression has been reported with dangerous practices including poor nutrition and hygiene, lack of motivation to obtain prenatal care or to follow medical recommendations all of which adversely affect pregnancy outcomes [9]. These have resulted in immediate effects including low birth weight, intra uterine growth restriction and preterm birth to long term implications like malnutrition, inadequate child growth, and impaired behavioural, emotional and cognitive abilities and poor mental health in future [1,11-13]. Suicidal tendencies, a leading cause of maternal mortality globally, due to such depression occurs in one fifth of mothers in developing countries compared to 5-14% in developed countries [1]. The implications not only affect the mother and her child but also economic challenges thus involving the entire family.

However, these practices are preventable and modifiable. Mental health during pregnancy is recently gaining importance as a public health problem in developing countries [14]. Though depression is a common medical disorder during pregnancy, it is persistently under-diagnosed and undertreated during antenatal care and is largely ignored especially in developing countries despite locally available and affordable interventions [10,13,14]. A 2002 survey pointed that nearly 60% women who scored 13 or higher on the Edinburgh Postnatal Depression Scale had not visited any professional for their mental health concerns postpartum [4].

Myths about maternal depression being a rare incidence, needing only mental health specialists for detection and care, and integration of such care into routine services need to be dispelled, especially warranting supporting evidence from middle and low income countries. Screening by trained non-mental health specialists

in resource poor setting have been proved effective [1]. Lack of supporting evidence led to removal of a postpartum depression-related sub-objective from the Healthy People 2012 framework. However lately by virtue of increasing evidence from high income countries has led to proposing increasing the target of screened and referred pregnant and postpartum women [4]. Support for antenatal depression among disadvantaged population in India at large is not available despite the emphasis that antenatal and postnatal psychological disorders be considered as one of the most important maternal and child health priorities [13]. True estimates of antenatal depression prevalence and the factors leading to such depression, can present much needed evidence to inform research and policy to develop strategies for detection and management of maternal depression. More importantly, integrating such screening into routine antenatal care can reduce untreated antenatal depression, an established marker of adverse pregnancy outcomes. The objective of this pilot study was to examine the factors impacting the burden of antenatal depression among pregnant women living in rural Chennai, a southern state of India.

MATERIALS AND METHODS

This pilot cross-sectional study was conducted from August through September 2013 among rural pregnant women living in Chennai, one of the Southern states in India. A convenient sample of 100 pregnant women during any trimester was enrolled from the OPD of Obstetrics and Gynaecology, Saveetha Medical College & Hospital, Thandalam, Chennai. Those pregnant women residing in rural area at least for a year and should agreed to give written informed consent were enrolled in the study. Pregnant women with any mental or physical challenges were excluded from the study. The study protocol (IRB#FHTS/033/2013) was approved by the IRB of the Foundation of Healthcare Technologies Society, New Delhi. Written informed consent was obtained before enrolling the participants in the study. Confidentiality was maintained using unique identification codes for each of the participants.

Data Collection Tools

A modified version of previously validated questionnaires and existing studies was used for collecting information on variables including [15-20].

Socio-Demographics

Information was gathered about age, gender, type of family (joint, nuclear, broken, extended), total number of household members, annual household income, highest educational level of participant (primary, middle, high school, intermediate, post high school diploma, some college, graduate or post graduate), occupation of participant and partner [21]. Information about individual work was also gathered and included: employment status (full-time/ part time) and permanence (permanent/contractual/ others), duration of current occupation, posture while working (Sitting, standing, both, others), Type of work (Light, Moderate, Heavy) and exposure to occupational factors (chemicals –vapours/gases/fumes, solid particles and dust, smoke, noise, extreme temperatures, nothing in particular, others).

Screening for Perinatal Depression

To ascertain the possibility of depression among the pregnant women, Edinburg Postnatal Depression Scale [15-19] was used. Participants were asked to respond to the 10 questions to assess objectively how they felt in the last seven days. The responses were then coded from 0 to 3; higher scores meaning possibility of emotional distress. Items 1, 2 and 4 were scored 0 for the top most response and 3 for the bottom most, while items 3, 5-10 were scored 3 for the top most response and 0 for the bottom most one exactly as given in the scale. Individual scores for each item were added to give a summed figure. Minimum score was 0 and maximum was 30. Based on this summed figure, the scores were interpreted as follows: 0-9: Indicated short-lived symptoms of distress which are not likely to interfere with day to day ability to function at home or work; 10-12: Indicates presence of symptoms of distress that may be discomforting and a referral to a mental health specialist or general practitioner may need to be considered; 13+: Indicates further evaluation and possible referral to a perinatal mental health specialist. Basically 10 or greater indicated “possible depression”, with item 10 indicating suicidal thoughts.

Screening for Marital Satisfaction

The Enrich Marital Satisfaction Scale (EMS) was used to assess the marital satisfaction among participants (20). This was a 15-item questionnaire consisting of 2 scales: the Ideal Distortion Scale and the Marital Satisfaction Scale. The Ideal Distortion Scale was a 5-item scale consisting of items 1,4,6,9 and 13. The remaining 10 items were considered into the Marital Satisfaction Scale. The responses were measured on a 5-point Likert Scale, with scores for responses coded as 1 (strongly disagree), 2 (moderately disagree), 3 (neither agree nor disagree), 4 (moderately agree) and 5 (strongly agree) for both the scales. This scoring for respective responses was retained for the positive items. For the negative items, the scoring was reversed for the responses. There were a total of 9 positive items and 6 negative items. After this, the individual scores were summed up separately for each of the 2 scales. The summed scores were then compared with separate matrices for both scales respectively which indicated the percentile for respective score obtained. Once the percentile score was obtained, the EMS score was calculated as per the formula: EMS=PCT-{(.40xPCT) x (IDx.01)} where PCT: Percentile score for individual Marital Satisfaction scale and ID: Percentile score for individual Idealistic Distortion scale.

Assessment of Social Support

The Duke- UNC Functional Social Support Questionnaire (FSSQ) was used to assess participants’ perception and need for a social support network, and thus the strength of the same [20]. An 8-item scale questionnaire was used with responses measured on a 5-point Likert Scale. The responses were coded from 1 to 5 as follows: 1- Much less than I would like, 2- Less than I would like, 3- Some, but would like more, 4- Almost as much as I would like and 5- As much as I would like. The individual scores were summed giving a minimum score of 8 and a maximum score of 40. The summed score was divided by 8 to get an ‘average score’. The higher the average scores the greater the perceived social support.

Disease History

Information was gathered on family and personal history of any conditions/ diseases/ infections including psychological morbidities, including the type and duration of any treatment(s) being taken. Partner’s depression history was also asked. Individual smoking alcohol Information was also gathered.

Obstetric History

Information on obstetric history included questions on gravida, parity, number of pregnancies (type and place of delivery, availability of skilled attendance, pregnancy outcome, number and gender of the off springs, perinatal complications, medications and history of depression, antenatal care utilization and history of breastfeeding). Information on planning of pregnancy was also gathered. Information on past contraception usage (type and duration) was also gathered. In addition, hormonal and menopausal history was also asked from the participants. Information about Antenatal care utilization was gathered.

Additional information was gathered on feelings of depression/ hopelessness during the last 1 month, and the help that was

perceived to be needed by individuals. Information was also gathered on decision making, including financial decisions, power of the participant in the household.

STATISTICAL ANALYSIS

Data entry and validation was done in Microsoft Excel 2007. Descriptive analysis was performed using univariate statistics to report means and standard deviations for the continuous variables and frequency distribution for the categorical variables. Correlation coefficient, t statistics and ANOVA were performed to compare differences in the continuous variables. Chi square and Fisher analyses were performed to compare the frequency of categorical variables. All analysis was performed using Microsoft Excel 2007 and SPSS v. 16.

RESULTS

A total of 100 pregnant women participated in the study. Majority of the participants were in their third trimester (86%) with an average age of 25 years (SD=3), lived in joint families (52%) and had graduate education (39%). Majority of the participants were non-working (89%). Among those who were employed worked full time (82%, n= 8), in the morning shift of 8 hours (92%, n= 10) and had a sedentary to light intensity of work (91%, n= 10). Partners of the majority of the participants were in unskilled occupation (62%) [Table/Fig-1].

Family History

Twenty three percent of the participants reported positive family history of either diabetes (10%) or hypertension (23%). One of the participants had hypothyroidism from five years with treatment being taken from the past one year. Only 4% had used some kind of contraception such as condom (2%) and hormonal contraceptive (2%) in the past. Almost all of the participants had never ever consumed tobacco (98%) or alcohol in any form (99%). Twelve percent of the participants were exposed to second hand smoke for an average duration of two hours (SD= 1) for four days a week (SD= 2). Majority of the participants reported that their partner had not experienced depression (75%) and a little more than one fifth were not sure if their partner is having depression or had it in past. Only one respondent reported that her partner when depressed "gets too worried and shows his anger on me".

Variable	n=100
Age (years)	Mean= 25; SD= 3
≥ 30	6
25-29	45
20-24	49
Type of family	
Joint	52
Nuclear	48
Total number of household members	Mean=4; SD= 2
Child gender wise distribution	
Male	16
Female	20
Education	
≤ 10th class	24
11-12th but no college	37
Graduate and above	39
Occupation (Self)	
Working	11
Non – working	89
Occupation (Partner)	
Skilled worker	38
Unskilled worker	62
Annual household income (INR)	Mean= 1,98,900; SD= 1,27,110
≤ 50,000	8
50,001 to 1 lakh	28
>1 lakh	64
Gestational week	Mean= 30; SD= 5
1st trimester (0-13 week)	4
2nd trimester (14-27 week)	10
3rd trimester (28-42 week)	86

[Table/Fig-1]: Socio-demographic characteristics of participants

Depression assessment

Majority of the participants (65%) had scored 13 or higher on the Edinburg Depression Scale reflecting high likelihood of depression and thus needing further assessment and appropriate management [Table/Fig-2]. The thought of harming oneself was reported by 24% of the participants. Eighty percent of the participants reported difficulty in perceiving funny side of the things. Thirty percent of the participants agreed that their involvement in enjoyable things is now lesser than it was earlier and they blamed themselves when things go wrong some of the times. More than half of the participants (56%) reported sometimes to very often anxiety or worry without any reason. Thirty six percent of the participants reported that they are not able to cope up with the things while 47% of the participants reported sleeplessness. The average score for the two independent scales were 17 (SD=4) (Idealistic Distortion Scale) and 30 (SD=7) (Marital Satisfaction Scale) and average score of enriched marital satisfaction scale was 44 (SD=22). Average scores of personality issues and responsibility issues of the partner for marital satisfaction scale were 2.6 (SD=1) and 3.6 (SD=1) respectively [Table/Fig-3].

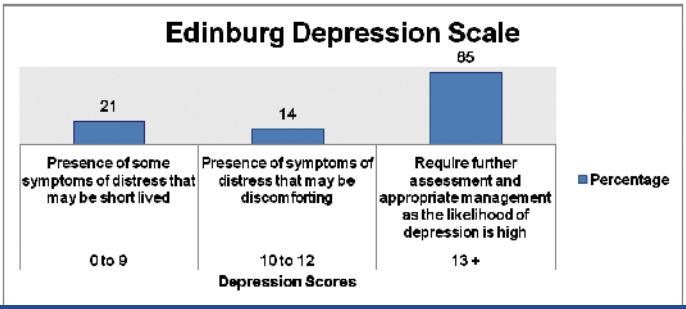
Sixty percent of the participants reported that they have enough people to care for them and 56% agreed that they get sufficient amount of love and affection. Similarly 55% of the participants reported that they get help when they get sick. Thirty seven percent of the participants reported that they get someone to share their problems but would like to seek more attention. Twenty two percent of the participants informed that they get lesser or no chance to share personal or familial problem to a trustworthy person. Average score of Duke functional social support scale and its components: a) affective and b) confident were 3 (SD=1), 11 (SD=3) and 16 (SD=4) respectively.

Antenatal care

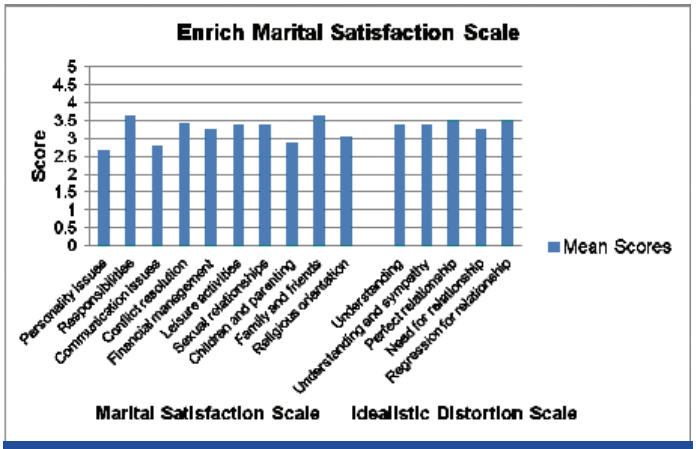
Majority of the participants reported to have obtained iron supplementation for anaemia (34%) or medication for gestational diabetes mellitus (5%) during their antenatal care.

Decision making at home

Majority of the times (70%) the decision maker in the general household matters was the partner followed by in-laws (17%) and then the participant herself (13%). Majority of the participants (66%) had been bothered by feeling down, depressed or hopelessness during the past month. Similarly, majority (63%) also reported to have been bothered by having little interest or pleasure in doing things. Majority of the participants who reported to be bothered by



[Table/Fig-2]: Shows the categorical distribution of participants on the basis of scores of Edinburg depression scale



[Table/Fig-3]: Shows the average scores of various elements of enriched marital satisfaction scale as reported by the participants

the above needed someone to talk to as they perceived themselves to be lonely (51%, n=31), and felt the need of counselling and guidance (18%, n=11) [Table/Fig-4].

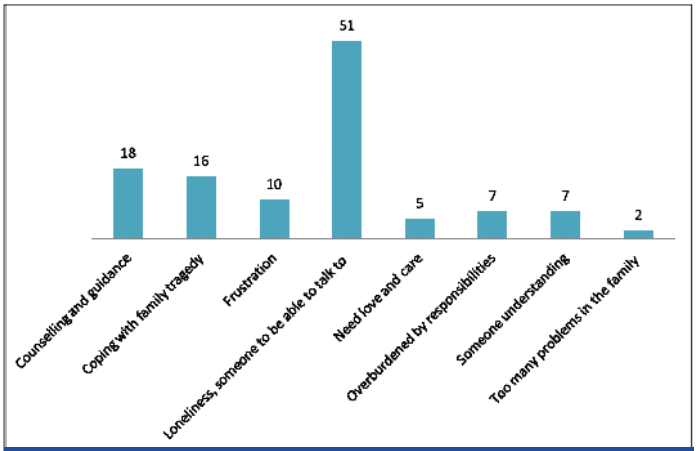
Results showed that there was a significant positive association between enriched marital satisfaction scale and Edinburg depression scale (p=.025). Age (p=.49), education status (p=.70), annual household income (p=.23) and average Duke functional social support score (p=.09) did not show any significant association. [Table/Fig-5].

DISCUSSION

This is an important pilot cross-sectional study involving pregnant rural women. Majority of the participants were in their third trimester of pregnancy. The study reports that more than half of the pregnant woman had scored equal or more than 13 on the Edinburgh Postnatal Depression Scale, thus requiring counselling, guidance and further examination. Early detection of distress and depression is very crucial for promotion of social, mental and clinical maternal and child health. The Edinburgh Postnatal Depression Scale has been previously used widely to efficiently assess the perinatal depression among women. To the best of our knowledge there is no separate scale for examining ante natal depression but past studies have effectively utilised to detect antenatal depression. It is regarded as a gold standard and is the most commonly self rated scale used [22,23].

A recent systematic review had shown prevalence ranging from 8.7% to 45.5% [23]. Results of our study had shown 65% prevalence of depression among the pregnant woman of rural areas. Multiple risk factors are involved in causing depression during perinatal period. These factors include socio-demographic characteristics, financial status, prior depression, unwanted events in past pregnancy, desire for male child, recent adverse life events, marital satisfaction and partner's educational and occupational status [23]. This list of risk factors is not inclusive of all factors and may involve other unknown factors.

Our study had shown that age, educational status, family size and annual household income had no significant differences in Edinburgh Postnatal Depression Scale categories. Pregnant woman of joint



[Table/Fig-4]: Shows the type of help needed by the depressed pregnant woman for overcoming of the depression

Variables	Edinburg Depression Scale			p-value
	Short lived	Distress	Depressed	
SOCIO-DEMOGRAPHIC				
Age (in years)	M= 25; SD= 4	M= 24; SD= 3	M= 25;SD=3	.49
20-24	10 (20%)	9 (18%)	30 (61%)	.53
25-29	9 (20%)	4 (9%)	32 (71%)	
≥ 30	2 (33%)	1 (17%)	3 (50%)	
Family type				
Nuclear	13 (25%)	9 (17%)	30 (58%)	.27
Joint	8 (17%)	5 (10%)	35 (73%)	
Total Household Members	M= 4; SD= 2	M= 4; SD= 1	M= 4; SD= 2	.89
Annual Household Income (INR)	M= 1,84,286; SD= 1,21,679	M= 1,81,071, SD= 1,03,109	M= 2,07,462; SD= 1,34,135	.23
≤ 50,000	1(12%)	2 (25%)	5 (63%)	.37
50,001-1lakh	9 (32%)	4 (14%)	15 (54%)	
>1lakh	11 (17%)	8 (13%)	45 (70%)	
Educational Status				
≤ 10th class	8 (21%)	6 (15%)	25 (64%)	.70
11-12th but no college	5 (21%)	5 (21%)	14 (58%)	
Graduate and above	8 (22%)	3 (8%)	26 (70%)	
OBSTETRIC VARIABLES				
Gestational Week	M= 29, SD= 6	M= 29, SD= 7	M= 30; SD= 3	.24
Trimester 1	2 (50%)	2 (50%)		.019
Trimester 2	1 (10%)		9 (90%)	
Trimester 3	18 (21%)	12 (14%)	56 (65%)	
Gravida				
Primigravida	11 (18%)	10 (17%)	39 (65%)	.53
Multigravida	10 (25%)	4 (10%)	26 (65%)	
Parity				
Nulliparous	11 (18%)	10 (16%)	40 (64%)	.54
Primiparous	8 (27%)	2 (7%)	20 (66%)	
Multiparous	2 (2%)	2 (2%)	5 (6%)	
Enrich Marital Satisfaction Scale	M= 38; SD= 9	M= 41; SD= 14	M=32; SD= 15	.025
Idealistic Distortion Scale	M= 86, SD= 17	M= 76, SD= 26	M= 59, SD= 33	.001
Marital Satisfaction Scale	M= 60, SD= 15	M= 62, SD= 27	M= 44, SD= 23	.004
Duke Functional Social Support	Mean= 3.7; SD= .6	M= 3.4; SD= .7	Mean=3.3 ; SD= .9	.09
Affective	M= 12; SD= 2	M= 11; SD= 3	M= 10; SD= 3	.12
Confident	M= 18; SD= 3	M= 16; SD= 3	M= 16; SD= 5	.13
Partner's History of Depression				
Yes		1 (100%)		.015
No	17 (23%)	13 (17%)	45 (60%)	
Not Sure	4 (17%)		20 (83%)	
Decision Making Power				
General: In Laws	4 (23.5%)	4 (23.5%)	9 (53%)	.67
Spouse	15 (21%)	9 (13%)	46 (66%)	
Self	2 (13%)	1 (8%)	10 (77%)	
Financial: In Laws	4 (23.5%)	4 (23.5%)	9 (53%)	.54
Spouse	15 (19%)	10 (13%)	52 (69%)	
Self	2 (33%)		4 (67%)	

[Table/Fig-5]: Shows Association of independent variables with antenatal depression among participants

families (73%) had shown higher frequency of depression than pregnant woman (58%) from nuclear families but this difference was statistically insignificant. Similarly there was no significant difference among primigravida and multigravida. Marital relations with the partner play very crucial role at the time of pregnancy. Pregnant woman having uneducated, unemployed, less supportive, working at distant place, having marital difference nature of partner are more likely to suffer from depression [23-25]. We have used enriched marital satisfaction scale for assessing the level of satisfaction among the pregnant woman and results of the study have shown significant association with the Edinburg depression scale.

Decision making power and financial security facilitate in providing women the security and prevents her from getting depressed. Our study has shown that spouse was the main decision maker in general and financial matters. Need of social support by the participants was assessed by Duke UNC FSSQ and its average score was lowest among the depressed category participants.

Almost all participants reported having no history of depression in their lifetime in the present study. However, past study [11] has found a significant relation between personal history of depression and ante partum depressive symptoms. Though this is contrary to available evidence, it may be important to consider that psychological morbidity is hard to diagnose even among medical professional and lay awareness of mental disorders is especially low. It has been said that many members of the public cannot correctly recognize mental disorders and do not understand the meanings of psychiatric terms [25,26]. Thus this may need further exploration as there is lacking evidence from India about the knowledge, perceptions and beliefs regarding psychological morbidities like depression.

The limitations of the current study include the limited sample size of 100 pregnant women chosen conveniently. The causality of the factors of prenatal depression could not be determined by this cross sectional study and thus a longitudinal study is warranted. Finally, the study was restricted to one village and hence the proportion of depressed population might represent more than actual. Thus a larger, longitudinal study is needed to design, develop and evaluate interventions that can modify the risk factors that attribute to the cause of antenatal depression among pregnant women living in rural settings.

CONCLUSION

Pregnancy is very crucial period not only for mother, for the baby but the whole family. By virtue of this study we have shown very high frequency of depression among the study subjects during pregnancy, having no history of depression in their lifetime. Hence, this study emphasizes the need for a longitudinal study to design interventions that can address emerging burden of antenatal depression among pregnant women living in rural settings, the "hour of the need".

REFERENCES

[1] Collins PY, Insel TR, Chockalingam A, Daar A, Maddox YT. Grand Challenges in Global Mental Health: Integration in Research, Policy, and Practice. *PLoSMed*.2013;10(4):e1001434.doi:10.1371/journal.pmed.1001434.

[2] World Health Organization. Promoting mental health: concepts, emerging evidence, practice: summary report/a report from the World Health Organization, Department of Mental Health and Substance Abuse in collaboration with the Victorian Health Promotion Foundation and the University of Melbourne. 2004; Accessed on 28th October 2014. http://www.who.int/mental_health/evidence/en/promoting_mhh.pdf.

[3] Report of a UNFPA/WHO international expert meeting: The interface between reproductive health and mental health. Hanoi, June 21-23, 2007. Geneva: Department of Reproductive Health and Research World Health Organization;2009.

[4] NICHM. Identifying and treating maternal depression: strategies and considerations for health plans. NICHM Foundation issue brief. 2010; Accessed on 28th October 2014. http://nihcm.org/pdf/FINAL_MaternalDepression6-7.pdf.

[5] Vesga-López O, Blanco C, Keyes K, Olfson M, Grant BF, Hasin DS. Psychiatric disorders in pregnant and postpartum women in the United States. *Arch Gen Psychiatry*. 2008;65:805-15.

[6] Demissie Z, Siega-Riz AM, Evenson KR, Herring AH, Dole N, & Gaynes BN. Physical Activity and Depressive Symptoms among Pregnant Women: The PIN3 Study. *Archives of Women's Mental Health*. 2011;14(2):145-57. PMCID: PMC3399732.

[7] Zeenia F Baraia. Pregnant and Feeling low? Times News Network. March 4, 2013. Accessed on 28th October 2014. http://articles.timesofindia.indiatimes.com/2013-03-04/health/35705912_1_prenatal-care-postnatal-depression-pregnancy.

[8] Nasreen HE, Kabir ZN, Forsell Y, Edhborg M. Prevalence and associated factors of depressive and anxiety symptoms during pregnancy: a population based study in rural Bangladesh. *BMC Womens Health*. 2011;11:22. doi: 10.1186/1472-6874-11-22.

[9] Patel V, Rahman A, Jacob KS, Hughes M. Effect of maternal mental health on infant growth in low income countries: new evidence from South Asia. *BMJ*. 2004;328(7443):820-23.

[10] NIMH. Home, Outreach, and Strategic Plans. Women and Depression: Discovering Hope. Accessed on 29th October 2014. http://www.nimh.nih.gov/health/publications/women-and-depression-discovering-hope/index.shtml.

[11] Grote NK, Bridge JA, Gavin AR, Melville JL, Iyengar S, Katon WJ.A meta-analysis of depression during pregnancy and the risk of preterm birth, low birth weight, and intrauterine growth restriction. *Arch Gen Psychiatry*. 2010;67(10):1012-24. doi:10.1001/archgenpsychiatry.2010.111.

[12] Melville JL, Gavin A, Guo Y, Fan MY, Katon WJ. Depressive disorders during pregnancy: prevalence and risk factors in a large urban sample. *Obstet Gynecol*. 2010;116(5):1064-70. doi: 10.1097/AOG.0b013e3181f60b0a.

[13] Patel V, Prince M. Maternal psychological morbidity and low birth weight in India. *Br J Psychiatry*. 2006;188:284-85.

[14] Fisher J, Cabral de Mello M, Patel V, Rahman A, Tran T, Holton S, et al. Prevalence and determinants of common perinatal mental disorders in women in low-and lower-middle-income countries: a systematic review. *Bull World Health Organ*. 2012;90(2):139-49G. doi: 10.2471/BLT.11.091850. Epub 2011 Nov 24.

[15] Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression: Development of the 10-item Edinburgh Postnatal Depression Scale. *Br J Psychiatry*. 1987;150:782-86.

[16] Wisner KL, Parry BL, Piontek CM. Postpartum Depression. *N Engl J Med*. 2002;347(3):194-99.

[17] Flynn HA, Sexton M, Ratliff S, Porter K, Zivin K. Comparative performance of the Edinburgh Postnatal Depression Scale and the Patient Health Questionnaire-9 in pregnant and postpartum women seeking psychiatric services. *Psychiatry Res*. 2011;187(1-2):130-34. doi: 10.1016/j.psychres. 2010.10.022. Epub 2010 Nov 30.

[18] Murray D, Cox JL. Screening for depression during pregnancy with the edinburgh depression scale (EDDS). *Journal of Reproductive and Infant Psychology*. 1990;8(2):99-107.

[19] Austin MP, Hadzi-Pavlovic D, Saint K, Parker G. Antenatal screening for the prediction of postnatal depression: validation of a psychosocial Pregnancy Risk Questionnaire. *Acta Psychiatr Scand*. 2005;112(4):310-17.

[20] Escribà-Agüir V, Artazcoz L. Gender differences in postpartum depression: a longitudinal cohort study. *J Epidemiol Community Health*. 2011;65(4):320-26. doi: 10.1136/jech.2008.085894. Epub 2010 Jun 1.

[21] Kumar N, Gupta N, Kishore J. Socioeconomic scale: Updating income ranges for the year 2012. *Indian J Public Health*. 2012;56(1):103-34. doi: 10.4103/0019-557X.96988.

[22] Dunkel Schetter C, Tanner L. Anxiety, depression and stress in pregnancy: implications for mothers, children, research, and practice. *Curr OpinPsychiatry*. 2012;25(2):141-48. doi: 10.1097/YCO.0b013e3283503680.

[23] Roomruangwong, Chutima, C Neill Epperson. Perinatal depression in Asian women: prevalence, associated factors, and cultural aspects. *Asian Biomedicine*. 2011;5(2):179-93.

[24] Shidhaye P R, Giri P A. Maternal depression: A hidden burden in developing countries. *Ann Med Health Sci Res*. 2014;4:463-65.

[25] Qiao Y, Wang J, Li J, Wang J. Effects of depressive and anxiety symptoms during pregnancy on pregnant, obstetric and neonatal outcomes: A follow-up study. *J Obstet Gynaecol*. 2012;32:237-40.

[26] Jorm AF. Mental health literacy Public knowledge and beliefs about mental disorders. *Br J Psychiatry*. 2000;177:396-401.

PARTICULARS OF CONTRIBUTORS:

1 MBBS Student, Saveetha Young Medical Researchers Group (SYMRG), Saveetha Medical College & Hospital, Faculty of Medicine, Saveetha University, Saveetha Nagar, Chennai, Tamil Nadu, India.
2. Public Health Researcher, Department of Public Health, Foundation of Healthcare Technologies Society, New Delhi, India.
3. Public Health Researcher, Department of Public Health, Foundation of Healthcare Technologies Society, New Delhi, India.
4. Public Health Researcher, Department of Public Health, Foundation of Healthcare Technologies Society, New Delhi, India.
5. Associate Professor & Vice Principal, Department of Biochemistry, Saveetha Medical College & Hospital, Faculty of Medicine, Saveetha University, Saveetha Nagar, Chennai, Tamil Nadu, India. Foundation of Healthcare Technologies Society, New Delhi, India.
6. Assistant Dean and Associate Professor, Department of Public Health, CUNY School of Public Health, New York, USA.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Surapaneni Krishna Mohan,
Associate Professor, Department of Biochemistry, Saveetha Medical College & Hospital, Faculty of Medicine,
Saveetha University, Saveetha Nagar, Thandalam, Chennai - 602 105, Tamilnadu, India.
Email : krishnamohan.surapaneni@gmail.com

FINANCIAL OR OTHER COMPETING INTERESTS: None.

Date of Submission: **Dec 02, 2014**
Date of Peer Review: **Jan 12, 2015**
Date of Acceptance: **Jan 13, 2015**
Date of Publishing: **Apr 01, 2015**