Research Paper Medical Science

A Study on the Prevalence of Depression Among Women in the Reproductive Age Group (15- 49 Years) in A Rural Population

*Dr. Christina Mary Priya Paul **Dr.A. Meriton Stanly, M.D. ***Dr.P.A.Archanalakshmi, M.D.

* Assistant Professor, Department of Community Medicine, A.C.S. Medical College, Vellappanchavadi, Chennai-600077

** Associate Professor, Department of community medicine, Sri Ramachandra Medical College & Research Institute, Sri Ramachandra University, Porur, Chennai-600116

*** Assistant Professor, Department of Community Medicine, Karpaga Vinayaga Institute of medical sciences, kanchipuram-603308

ABSTRACT

Background
Dramatic hormonal changes during puberty, pregnancy and post-partum make women more likely to develop depression than men. So, a population based study on the prevalence of depression among women would be worthwhile.
Objectives
To estimate the prevalence of Depression and to know its association with certain suspected risk factors.
Settings and Design
The study was carried out in a rural population served by Thiruninravur Primary Health Center in Thiruvallur district.
Materials and Methods
400 women in the reproductive age group 15 – 49 years were administered the PHQ9 questionnaire after the completion of the interview schedule on background information and the measurement of height and weight.
Results
Overall prevalence of all grades of depression was found to be 39.7% with a 95% Confidence Interval (95% C.I.) of 34.91 - 44.49. Statistically significant associations were seen between depression and women without spouses (p = 0.056), subjects who were illiterates or had only completed primary schooling (p = 0.004), subjects with low S.L.I. (p = 0.003), and women with B.M.I. less than 23 (p = 0.011).
Conclusions
Primary care physicians should be trained to identify depression and refer cases that need specialist management. Treating depression at the early stages could go a long way in reducing the morbidity and mortality of Indian women.

Keywords : Depression, Rural, Prevalence, PHQ9, BMI

Introduction

Dramatic hormonal changes occurring during puberty, pregnancy and post-partum can lead to depression among women. Post-partum depression is a serious medical condition requiring prompt treatment. Nearly two-thirds of people with a known mental disorder never seek help of a health professional. Stigma, discrimination, and neglect prevent care and treatment from reaching people with mental disorders, says the World Health Organization (WHO) [1]. The poor often bear the greater burden of mental disorders, both in terms of the risk in having a mental disorder and the lack of access to treatment. Constant exposure to severely stressful events, dangerous living conditions, exploitation, and poor health in general all contribute to the greater vulnerability of the poor. The lack of access to affordable treatment makes the course of the illness more severe and debilitating, leading to a vicious circle of poverty and mental health disorders that is rarely broken [1]. Depressed patients are three times more likely not to comply with medical regimens than non-depressed patients[2]. Depression, predicted to be the second leading cause of global disability burden by 2020, is twice as common in women as in men, across most societies and social contexts [3]. Depression is an illness that affects both the mind and the body and is a leading cause of disability, workplace absenteeism, decreased productivity and high suicide rates.[4]

Materials and Methods

Study Design

This study was done as a cross sectional study with both analytical and descriptive components .The descriptive component was used to estimate the prevalence of depression and to describe the socio-demographic profile of the study subjects and the analytical component was used to find the association between the suspected risk factors and depression.

Study Setting and Subjects

The study was carried out in a rural population served by Thiruninravur Primary Health Center (PHC) in Thiruvallur district. This area is about 30 Kilometers from Chennai. The study was conducted on fourteen villages selected from three randomly selected sub-centers (Kosavanpalayam, Nemilichery and Dasarpuram), belonging to the Thiruninravur PHC.

Selection and Description of Participants

Women in the reproductive age group (15-49 years) were in-

cluded in the study. Only women who gave written informed consent were included in the study. The subjects were chosen from 3865 families belonging to the 14 villages included in the study. One woman was included from each of the chosen families.

Sample Size
A PHQ9 and Self-Rating Questionnaire (SRQ) prevalence of depression on a population-based study done in a Pakistani village showed that the prevalence of depression among women was 57.5% [5]. Based on this, the prevalence was kept at 50%. With type I error of 5 % and with limit of accuracy kept at 10 % of prevalence which amounts to 5%, the minimum sample size required for the study was calculated to be 384 and it was decided to use a sample size of 400 for the study.

Ethical Considerations
The study was based on the well-established PHQ9 questionnaire and a written informed consent was obtained from all the participants at the start of the study. Hence, there were no ethical considerations.

Data Collection
Each of the family selected by simple random sampling method from the family registers was visited by the investigator accompanied by a Village health nurse (VHN). After explaining about the study and its importance to the adult women in the family, one woman in the reproductive age group was selected randomly, if there was more than one woman in the reproductive age group. After explaining all the details about the study, written informed consent was obtained from the subjects. Information was collected from the participant using the pre-tested interview schedule, following which height and weight of the study subjects were measured using standard procedures. At the end of the session the subject was thanked for her co-operation for the study.

Classification of main study variables
Classification of Depression

Based on the PHQ9 score, the depression status of the study subjects was classified into – None, Mild, Moderate, Moderately Severe and Severe.

Education
The subjects were divided into five groups based on their educational status as illiterates, primary school completers, secondary school completers, graduates/diploma holders and post graduates/professionals. For the purpose of analysis, the subjects were further classified – illiterates and subjects with only primary schooling were grouped together and those with secondary schooling and above were grouped together.

Standard of living index (S.L.I)
Standard of living index was calculated as per the procedure followed in NFHS-2 (1998-1999) India survey. S.L.I is considered as a predictor of the socio-economic status[6]. The subjects were divided into three groups based on their S.L.I as low, medium and high. The low S.L.I. group was matched as a risk factor for depression against the medium and high S.L.I. subjects who were grouped together.

Concentration of coffee intake
The concentration of coffee intake was calculated by multiplying the number of coffee cups the subject drinks in a day with the duration of coffee intake in years and based on the value obtained the subjects were divided into two groups. Values between 0 – 20 was called low coffee drinking and values above 20 was called high coffee drinking.

Concentration of tea intake
The concentration of tea intake was calculated by multiplying the number of tea cups the subject drinks in a day with the duration of tea intake in years and based on the value obtained the subjects were divided into two groups. Values between 0 – 20 was called low tea drinking and values above 20 was called high tea drinking.

Classification of body mass index (B.M.I)
Based on the body mass index the subjects were divided into two groups. Subjects with B.M.I less than or equal to 23 were categorized as low B.M.I group and subjects with B.M.I more than 23 were categorized as high B.M.I group[7].

Data Analysis
The data entry and analysis were done using statistical package for social sciences (SPSS) version 15. The final data was summarized into percentages and analyzed by cross tabulations for various variables. 95% confidence intervals were calculated wherever appropriate. Associations were assessed through odds ratio and 95% confidence interval of the odds ratio which was found using Epi Info version 7.1.2.

Results
A population based cross sectional study on the prevalence of depression among women in the reproductive age group (15-49 years of age) was conducted in Kosavanpalayam, Dasarpuram and Nemilichery sub-center areas of Thiruninravur primary health center, and Poonamallee block of Thiruvallur district.

Socio-Demographic profile of the study subjects
Of the study subjects 83% were Hindus, 15% of were Christians and 2% were Muslims. The standard of living index (S.L.I) was also measured and 78.8% subjects had low S.L.I, 17% of the study subjects had medium S.L.I and 4.2% of the subjects had high S.L.I. while grouping them according to their educational status it was found that 25% of the study subjects were illiterate, 0.2 % study subject had finished post-graduation, 37% subjects had done primary schooling, 34.8% subjects had done secondary schooling and 3% of the subjects were graduates. Based on the occupation 79.2% of the women were involved in semi-skilled occupations. Details are shown in Table 1.

Table 1: Socio-Demographic profile of the subjects

Variable	Classification	Total Number (Percentage)
Religion	Hindus	332 (83 %)
	Christians	60 (15 %)
	Muslims	8 (2 %)
Marital Status	Single	25 (6.3 %)
	Married	357 (89.3 %)
	Separated	4 (1 %)
	Divorced	0 (0 %)
	Widowed	14 (3.4 %)
Educational Qualification	Illiterate	100 (25 %)
	Primary School	148 (37 %)
	Secondary School	139 (34.8 %)
	Graduate/Diploma	12 (3 %)
	Post-Graduate/ Professional	1 (0.2 %)
S.L.I.	Low	315 (78.8 %)
	Medium	68 (17 %)
	High	17 (4.2 %)
Occupation	Unskilled	67 (16.8 %)
	Semi-Skilled	317 (79.2 %)
	Skilled	16 (4 %)

Overall prevalence of depression
The overall prevalence all grades of depression was 39.7% (159 subjects out of 400) with a 95% Confidence Interval (95% C.I.) of 34.91 - 44.49. The prevalence of mild, moderate, moderately severe and severe forms of depression were 11%, 7.5%, 19% and 2.3% respectively. Details found in Table 2.

Table 2: Classification of Depression based on the PHQ-9 score

Classification of Depression	PHQ-9 Score	Number of Subjects	Percentage	95% C.I.
None	0 – 4	241	60.3	55.51 - 65.09
Mild	5 – 9	44	11	7.93 - 14.07
Moderate	10 – 14	30	7.5	4.92 - 10.08
Moderately Severe	15 – 19	76	19	15.16 - 22.84
Severe	20 – 27	9	2.3	0.83 - 3.77

Association between depression and certain suspected risk factors

The association between depression and certain suspected risk factors were evaluated as given in Table 3.

Table 3: Association between depression and certain suspected risk factors **

Risk Factor	Number with Depression (159)	Number without Depression (241)	Odds ratio (95% C.I.)	P. Value
Marital Status (Without spouse Vs. With spouse)	22	21	1.68 (0.89 – 3.17)	0.056
Education (<Sec. school Vs. ≥ Sec. School)	111	137	1.76 (1.15 – 2.68)	0.004*
S.L.I. (Low Vs. Med/ High)	136	179	2.05 (1.21 – 3.47)	0.003*
Coffee Intake (No Vs. Yes)	39	52	1.18 (0.74 – 1.90)	0.246
Coffee cups/ day * duration (≥20 Vs. < 20)	79	106	1.26 (0.84 – 1.88)	0.133
Tea Intake (No Vs. Yes)	32	41	1.23 (0.74 – 2.05)	0.217
Tea cups/day * duration (≥20 Vs. < 20)	81	114	1.16 (0.77 – 1.73)	0.239
B.M.I. (<23 Vs. ≥23)	84	99	1.61 (1.07 – 2.41)	0.011*

** - statistically significant*

*** - The suspected Risk Factor is mentioned before the "Vs." symbol and the number with/without the disease is given for the suspected Risk factor, and hence individual 2x2 tables can be formed for each row*

Women without spouses (Single/Divorced/Separated/ Widowed) were 1.68 times at a greater risk of developing depression when compared to women with spouses. However, the odds-ratio was not statistically significant (p = 0.056). Subjects who were illiterates or had only completed primary schooling were 1.76 times at a greater risk of developing depression when compared to subjects with secondary schooling and above, and the Odd-ratio was found to be statistically significant (p = 0.004). Subjects with low S.L.I. were 2.05 times at a greater risk of developing depression when compared to those with medium and high S.L.I, and the odds-ratio was found to be statistically significant (p = 0.003). Women with B.M.I. less than 23 were 1.61 times at a greater risk of developing depression when compared to women with B.M.I greater than or equal to 23, and the association was found to be statistically significant (p = 0.011). Subjects who did not consume coffee, whose coffee cups per day * duration in years was greater than or equal to 20, who did not consume tea and whose tea cups per day * duration in years was greater than or equal to 20 were found to have odds-ratios 0.246, 0.133, 0.217 and 0.239 respectively. However the odds-ratios were not statistically significant.

Discussion

This study was a population based cross sectional study done using simple random sampling method, which ensures generalizability of results to the study population. The present study shows that the overall prevalence of all grades of depression among reproductive age group women (15-49 years) in this rural population (Thiruninravur Primary Health Centre area) was 39.7%. The 95% C.I was quite narrow (34.91 - 44.49) indicating the good precision of the study.

Overall prevalence of depression

Dramatic hormonal changes during puberty, pregnancy and post-partum make women more likely to develop depression than men. So, a population based study on the prevalence of depression among women was undertaken. Overall prevalence of depression was calculated keeping a PHQ-9 score greater than or equal to 5 as a case of depression. The subjects were graded into cases of mild, moderate, moderately severe and severe depression using score cut-offs 5, 10, 15 and 20. It was a 9 item questionnaire and the maximum possible score was 27[8]. Literature was scarce with regard to the population based prevalence of depression among rural women in India. The current study shows that the population based prevalence of depression among rural women in the reproductive age group was 39.7% which was a lot higher than that seen in a large study done in an urban south Indian population[4], according to which 16.3% of women were depressed. This difference could be because of two reasons, one being the rural-urban difference and the second being that they had modified the PHQ-9 questionnaire and made it into a 12 item one. The prevalence of depression among Pakistani rural women was 57.5% according to a study [5] which was more than that in the present study probably because it was in a different country and the diagnosis was made using the PHQ-9 and a self-rating questionnaire.

Association between depression and the suspected risk factors

Women without spouses (Single/Divorced/Separated/Widowed) were 1.68 times at a greater risk of developing depression when compared to women with spouses, which was comparable to a study done on common mental disorders(CMD) showing a 5.4 times higher risk of CMD among widowed/ separated women when compared to currently married women[9]. However the odds-ratio was not statistically significant (p = 0.056). Subjects who were illiterates or had only completed primary schooling were 1.76 times at a greater risk of developing depression when compared to subjects with secondary schooling and above, and the Odd-ratio was found to be statistically significant (p = 0.004). These results were compared to a study done to identify the relationship between educational status and depression[10], which concluded that people with less years of education were more depressed and also developed depression at an early age when compared to people with more years of education. Standard of living index was used as a measure of the socio-economic status of the individual in the present study and it was seen that Subjects with low S.L.I. were 2.05 times at a greater risk of developing depression when compared to those with medium and high S.L.I, and the odds-ratio was found to be statistically significant (p = 0.003), which was comparable to the conclusions of a meta- analysis done to study the association between socio-economic status and depression[11]. This could be because affluent people have better access to health care and have better standard of living. Women with B.M.I. less than 23 were 1.61 times at a greater risk of developing depression when compared to women with B.M.I greater than or equal to 23, and the association was found to be statistically significant (p = 0.011). Though obesity is a risk factor that is commonly associated with depression, this study has shown otherwise probably because obesity is a sign of affluence and better health care as far as rural areas are concerned, which was in contrast with the results of a study done in a western population that concluded that obese women and those with body image dissatisfaction were more depressed [12]. A study done based on psychiatric surveys concluded that there is a

statistically significant association between obesity and major depressive disorders which is again in contrast with the present study probably because of the same reason mentioned above [13]. There was no statistical association between coffee/ tea intake and depression in the present study.

The response rate and cooperation of the subjects was much better than was anticipated. Reassurance and health education and counselling was given to all the study subjects with depression. The subjects were told about the importance of treating a mood-related disorder even though they did not perceive it as a health problem, and how it would improve their quality of life dramatically. Subjects with suicidal tendencies were given urgent referral to a psychiatry setup of their convenience and the same was informed to the Medical Officer of the Thiruninravur PHC after obtaining consent.

Conclusion and Recommendations

In conclusion, the high prevalence of depression and the poor health seeking behavior of women with the same emphasize on the need for health programs addressing this aspect of women's health. Primary care physicians should be trained to identify depression and refer cases that need specialist management. Treating depression at the early stages could go a long way in reducing the morbidity and mortality of Indian women. Health education can go a long way in removing the stigma attached with communicating a mood related problem to a doctor.

Acknowledgement

I would like to sincerely thank Dr. Dutta Gupta for his valuable suggestions and time, both of which have been very useful for the making of this article. I would also like to sincerely thank the creators of the PHQ9 questionnaire for acknowledging this study and promptly mailing the instruction manual.

REFERENCES

1. http://www.who.int/whr/2001/media_centre/press_release/en/ | 2. DiMatteo MR, Lepper HS, Croghan TW. : Depression is a risk factor for noncompliance with medical treatment: meta-analysis of the effects of anxiety and depression on patient adherence - Arch Intern Med. 2000 Jul 24;160(14):2101-7. | 3. 54th world health assembly – a call for action by world health ministers (pg. 6) | 4. Poongothai S, Pradeepa R, Ganesan A, Mohan V :Prevalence of Depression in a Large Urban South Indian Population — The Chennai Urban Rural Epidemiology Study (Cures – 70). 2009 PLoS ONE 4(9): e7185. doi:10.1371/journal.pone.0007185 | 5. N. HUSAIN, F. CREED and B. TOMENSON :Depression and social stress in Pakistan. Psychological Medicine / Volume 30 / Issue 02 / March 2000, pp 395-4022000 Cambridge University Press | 6. National family health survey (NFHS)-2 (1998-1999), India | 7. http://www.igovernment.in/site/India-reworks-obesity-guidelines-BMI-lowered | 8. Instruction manual for – instructions for patient health questionnaire (PHQ) and GAD measures | 9. Vikram Patel M.D, Phd, Betty R. Kirkwood MA, Sulochana Pednekar MA et al: gender disadvantage and reproductive health risk factors for common mental disorders in women: a community survey in India Arch gen psychiatry. 2006; 63: 404-413 | 10. Richard Allen Miech, Michael J Shanahan, Glen H. Elder.Jr : socio-economic status and depression in life course perspective CDE Working paper No. 98-24 | 11. V.Lorant, D.Dielege, W.Eaton et al : socio- economic inequalities in depression- a Meta –Analysis Am J Epidemiol 2003; 157 : 98-112 | 12. Amelia R Gavin, Gregg E Simon, Evette J Ludman : association between obesity, depression and educational attainment in women: the mediating role of body image dissatisfaction J Psychsom Res.2010 69(6) : 573-581 | 13. Amelia R.Gavin, Tessa Rue, David Takeuchi : Racial/ Ethnic differences in the association between obesity and major depressive disorder : Findings from the comprehensive psychiatric epidemiology surveys : Public Health reports ;2010/ 125 :698 - 708 |