

**PREVALENCE AND CORRELATES OF DEPRESSION AMONG EVER –
MARRIED WOMEN IN A COASTAL PANCHAYAT OF RURAL
THIRUVANANTHAPURAM**

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Dedicated to my dear son

“TIMOTHY ZOE GEORGE”

DECLARATION

I hereby declare that this dissertation work titled “Prevalence and correlates of depression among ever – married women in a coastal Panchayat of Rural Thiruvananthapuram” is an original work of mine and it has not been submitted to any institution or university.

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October, 2012

CERTIFICATE

Certified that the work embodied in this dissertation entitled “Prevalence and correlates of depression among ever – married women in a coastal Panchayat of Rural Thiruvananthapuram” is a bonafide record of the original research work undertaken by Dr.Anju Lijin, under our guidance and supervision, in partial fulfilment of the requirements for the degree of “Master of Public Health” awarded by the Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, an Institute of National Importance under Government of India established by an Act of the Indian Parliament.

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GLOSSARY OF ABBREVIATIONS

CI Confidence interval

CHC Community Health Center

DALY Disability Adjusted Life Years

INR Indian rupees

NCD Non Communicable Disease

PHC Primary Health Centre

PHQ Patient Health Questionnaire

PI Principal Investigator

SHG Self Help Groups

TVPM Thiruvananthapuram

USD United State Dollars

ABSTRACT

Background: Depression results in much disability, causes premature mortality either from physical disorders or from suicide and is twice more common among women than men. Kerala has one of the highest suicide rates in India. Studies on depression are very limited among young adult women, especially in coastal regions of Kerala which are frequented by floods with dislocation of households. Therefore this study was conducted with an objective to find the prevalence of depression and its associated factors among ever – married women of a coastal grama panchayat in rural Thiruvananthapuram.

Methods: A cross sectional survey was carried out among 450 ever – married women (18 – 45 years) selected using multistage cluster sampling. Information on socio-demographic variables, health and reproduction related factors were collected using a pre-tested structured interview schedule. Patient Health Questionnaire 9 depression scale was used to screen for depression and those screened were classified as depressed and not depressed using the score of ten as the cut off. Stepwise backward multiple logistic regression analysis was done to find the predictors of depression.

Results: The point prevalence of depression was 24.9 percent. Odds to have screened positive for depression of women aged 30 years and above was more than two times [Odds ratio (OR) 2.61;95 percent Confidence Interval (CI)1.39 – 4.92], those who received education above primary level was half (OR 0.57;CI 0.33 – 0.97), those having gynaecological morbidity was almost three times (OR 2.76;CI 1.68 – 4.52), those who experienced violence from partner in the past one month was almost two times (OR 1.81;CI 1.06 – 3.10) and those whose partners had substance abuse, more than two times (OR 2.62;CI 1.34 – 5.12) compared to their counterparts.

Conclusion: Nearly one fourth of the women screened positive for depression which is at a high magnitude keeping in view the prevalence rate of the country and the global

estimates. Having any reproductive morbidity, recent experience of domestic violence and substance abuse by husband are found to be associated with depression. Social support at times of need and education above primary level are found to be protective. Efforts to combat the negative factors, measures to encourage education of girls beyond secondary school level and to nurture and enhance community and caregiver support groups may help reduce the prevalence of depression among women in this region.

CHAPTER 1: INTRODUCTION

Background

Depression is the single most important neuro-psychiatric disease which contributes to years lived with disability.^{1, 20} In the global context, independent studies on depression show that women are twice as likely as men to suffer from clinical depression.⁷² It is a cause of premature mortality either from physical disorders or from suicides. In fact depression is found to be the most important mental disorder which predicts suicide.¹ Universally attempted suicides are around three times higher among women than men.³⁷ Kerala has one of the highest suicide rates in the country, 27 per 100000 population – which is three times the national average of 10 per 100000.⁷⁵ The contradictions in social development: Very high physical health indicators on the one hand and the alarming growth in female suicides with rate peaking at the age of 15 – 29 for women.⁴¹

Justification / Rationale for the study

- * Depression is predicted to be the world's leading cause of disability by the year 2030. The theme of World mental Health day 2012 is - Depression: A global Crisis⁷⁶.
- * Little is known about the status of the mental health morbidity of coastal women. In fact no studies have been carried out in Kerala on the prevalence of depression among married women of coastal areas.
- * There is a lack of proper surveys, epidemiological or community based, on the prevalence of depression among young adult women, most of whom will be married in the Kerala cultural scenario.⁷²
- * In addition, there are no existing programs via either the Government Health centres or the local Panchayat, which cater to the mental health needs of the women of this panchayat. The program under the District Mental Health Programme also does not

cover in region. Kudumbasree members provide some amount of verbal strengthening, but there are no counseling centres or any other such initiatives as yet.

- * This age group if targeted and appropriate interventions carried out can avert many DALYs with improved quality of life.
- * Understanding the socio-demographic determinants gives us a key to primary prevention - It helps identify targets with suitable effective interventions such as education, which can enhance the currently available biological and psychological treatments.

The following questions were addressed in this study:

1. What is the prevalence of depression among ever – married young adult women in this community?
2. What are the factors associated with depression?

Study Objectives

1. To estimate the prevalence of depression among ever – married young adult women (18-45 yrs) in a coastal grama panchayat using the Patient Health Questionnaire9(PHQ-9) depression scale.
2. To study the strength of association of socio-demographic correlates such as age, religion, marital status, economic status, reproductive health factors, gender-related causes and physical health factors with depression.

CHAPTER 2: LITERATURE REVIEW

Health is defined as "A state of complete physical, mental and social well-being, and not merely the absence of disease".¹ Key to health is mental health which has been defined thus:

"The successful performance of mental function, resulting in productive activities, fulfilling relationships with other people, and the ability to adapt to change and to cope with adversity; from early childhood until later life, mental health is the springboard of thinking and communication skills, learning, emotional growth, resilience, and self esteem".

It can rightly be stated that health is not possible without mental health.² From early childhood onwards, for as long as we live, mental health is the springboard of thinking and communication skills, learning, emotional growth, resilience, and self-esteem. Hence the immense impact mental disorders have on individuals and families worldwide cannot be sufficiently gauged.³

Depression is a symptom complex and is diagnosed based on the Diagnostic and Statistical Manual for mental disorders, fourth edition, text revision (DSM-IV-TR). It is also multifactorial in origin. Diagnosis of a depressed woman as infact the diagnosis of an entire situation.

There is some evidence of a genetic etiology to depression, with a 1.5 to 3 times greater risk of clinical depression in near relatives of those with major depressive disorder⁴ with both a direct and indirect risk, the latter influenced by increased risk of trauma and stress. Recurrence is seen in atleast half the cases, its likelihood increasing with each subsequent episode, with as high a mortality rate as 15 percent among the severely depressed⁵

Prior depression with family history of the same are seen to be associated with increased risk of postpartum depression which also points to a genetic component. In those vulnerable, pregnancy and child birth may be triggers. ^{6,7,8}

It is a disease commonly seen in primary care settings as characterized by medically unexplained physical symptoms ⁽⁹⁾. This is often referred to as somatisation and is a reason for its misdiagnosis among as much as 50 percent of women.¹⁰

DISEASE BURDEN:

GLOBAL

Mental disorders are estimated to affect about 450 million people in the world and account for 12.3 percent of the global burden of disease¹¹. In a population based study conducted in urban Pakistan, prevalence was as high as was 45.9percent ¹².

The landmark global burden of disease study showed that among the developed countries such as the USA, depression accounts for more than 15 percent of the overall disease burden. They thus contribute to a major proportion of the non – communicable diseases - even more than cardiovascular diseases and cancer, and unipolar depression is the leading cause among them, accounting for over 12percent of the global burden of disease, affecting 340 million people globally.^{13,14} Women are subject to the illness twice as often as men¹⁵. Being a major and growing public health burden, it predicts the onset of physical and social disability as age advances. It's prevalence is increasing and is predicted to advance from it's current fourth to becoming the second leading cause of all health disability by 2020^{1,6} and the first by 2030⁷⁵. In the European Region, depression was seen to be the topmost cause of Years Lived with Disability (YLD) - 13.7percent ². In another study performed in Pakistan, prevalence as high as 42 percent was seen among women¹⁴. In Low and Middle Income countries (LAMIC – includes India), its prevalence is 10.6 percent¹⁷ which is an under estimation as it does not take into account the self-

inflicted injuries or under-reporting¹. We quite underestimate under – reporting. A glimpse of its magnitude can be seen from a study conducted in South India where surveillance details, when validated by verbal autopsy, found rates of suicide among young people to be ten times greater than the official national estimates.^{18,19}

It is approximated that yearly, around 8,00,000 people commit suicide, out of which 86percent are from LAMIC, belonging to the 15 - 44 year age group. Certain mental illnesses, unipolar depression being one of them, manifests higher among women in the age group^{20,70}

Despite all this, mental health remains low priority in low and middle income countries (LMIC) due to the ‘perception’ of its having a very high opportunity cost owing to scarce resources¹³. Only 66.7 percent of member countries even have a specified budget earmarked for mental health care, out of which 62.5percent spend less than one percent of their health budget on mental health care. In 30 percent of countries in the South-East Asia Region, out-of-pocket payment is the most important method for financing mental health care while it is the primary means in only 16.4 percent of countries worldwide⁷¹.

INDIA

In India, the situation seems not much different from the global scenario. Affective disorders had a prevalence of 37.4 percent even in the 70s as seen from Ganguli’s study²¹. In the 90s, from a study in the primary health center of rural Haryana, mood disorders constituted 28.6 percent²². In 2001, 20.5 million persons with Common Mental Disorders required services²³. CURES - the Chennai Urban- Rural epidemiological study prevalence of depression among women was 17.4 percent, ranging between 10 and 24 percent between age groups 20-59 years²⁴. Another study, also in Chennai, in its urban slums, found overall prevalence to be 22.8 percent, with female predominance in more than 2:1 ratio, between ages 18 – 50 years²⁵.

In an interesting study performed in 2 villages of rural India which looked into the variation in the prevalence of mental disorders over a 20 year interval (1972 - 1992), the overall prevalence had not changed, but an interesting pattern that was noticed was that though anxiety and other illnesses dropped over this period, rate of depression, besides others, had increased²⁶.

KERALA

Depression is the most prevalent mental health problem among women in India as it is elsewhere^{27, 72}

SOCIO-DEMOGRAPHIC CORRELATES:

The clinical definition of depression describes a state considered to be 'normal' as per the assigned social role of women. When under stress, women are portrayed as those internalizing negative emotions and thus foster passivity and 'learned helplessness' which can lead to depression.²⁸ The learned helplessness hypothesis holds that, through repeated lack of reinforcement, women come to view their actions as ineffectual and unrelated to others' responses. They perceive that they are helpless and expect situations to be uncontrollable because of lowered response initiation. The society stereotypes women's role in such a way that such feeling of lack of control, helplessness and dependence is considered normal. This leads to depression.²⁹

GLOBAL

Millennium Development Goals such as promotion of gender equality and empowerment of women, reduction of child mortality, improvement of maternal health, and reversal of the spread of HIV/AIDS depend on mental health.⁷⁷ Globally, as mentioned previously, there is a heavy burden of mental disorders, and it's distribution is very inequitable. Those disadvantaged - socially and economically, bear its burden and adverse consequences disproportionately¹. From the very start of the 21st century, there has been a

strengthening of the worldwide efforts in dealing with this situation. The theme of the World Health Assembly 2001 was Mental Health: A call for action⁷³. In 2012, the theme for the most recent World Mental Health day was Depression: A global Crisis⁷⁴.

A study among women in the age group 15 – 50 yrs in Pakistan showed a prevalence of 30% in urban areas, but a much higher prevalence (42percent) among rural women¹⁴. It is a cause of tremendous stigma and discrimination which result in poor and delayed health seeking by people even though effective treatments are available, owing to the fear of being labeled². Faith healers and priests were approached most commonly for mental health problems^{30, 31}.

A study conducted in Uganda found that according to most of the stakeholders, there is a strong interrelationship between poverty, stigma and mental illness³².

In order to fight poverty, with time, more and more women began to be employed outside homes, but the burden of household responsibilities was not reduced, but rather doubled. In particular for women who experienced problems with child care and household responsibilities, employment was found to raise susceptibility to depression^{33, 34}.

The second class status of women in developing countries of South East Asia, which can be attributed to the marked gender discrimination in the patriarchal society coupled with family, social and work pressures, was found to have a definite impact on women's mental health. They bear the brunt of the poverty associated adversities such as less access to school, physical abuse from husbands, fewer job opportunities and limitation of their participation in activities outside the home^{35, 36}.

Attempted suicides are the leading cause of morbidity in women in the reproductive age group with self – inflicted injuries being the 2nd leading risk factor of mortality in these countries^{35, 37}. Married women were 2.36 times more likely to be depressed than those who were unmarried³⁰. Depression is known to be one of the common long term

complications of violence committed against women as also lack of social support⁷⁷ and exposure to domestic violence and alcohol-abusing spouses are greater in women from lower socio-economic groups, those married at a younger age, and increase also with an increase in the number of children. In a study among adult women in Pakistan, increasing age, illiteracy, being married, increasing number of children, substance abuse and socio – economic factors were found to be associated with depression.

But a ray of hope is present: Education above primary level seemed to give women protection against depression^{30,78}

INDIA:

India is a country where social causes are in abundance. Muthukumar, in his study in Tamil Nadu found that being illiterate, having co – morbidities like diabetes, hypertension, ischemic heart disease, some types of cancer etc, being separated / divorced / widow have significant association with depression²⁵. Patel and Kirkwood, while similarly looking into the social correlates of depression, identified some of these such as poverty, being married as against being single, chronic physical illness, being widowed or separated, having low autonomy in decision making, having low levels of support from one's family, reproductive health problems, and factors indicative of severe economic difficulties as significant risk factors³⁸. Poverty among the vulnerable, is identified to be both a cause and consequence of common mental illnesses such as depression and anxiety and the association was found to universal across all societies, irrespective of the development indices. Among the vulnerable, a vicious cycle of poverty and depression is set up³⁶. While looking into the community beliefs, even being a woman and being unemployed was found to increase chances of depression!³⁹

Gender disadvantage-particularly experiencing violence from the husband is another major risk factor which need a separate mentioning. Owing to the deep-rooted patriarchal

norms followed in India, women are stereotyped as being weak and inferior, and husbands assume to 'own' women and dominate them, even forcefully! Wife beating is thus not only very common, but attitudes uniformly justify wife-beating, and few women would opt out of an abusive marriage⁴⁰. In addition, similar to the global picture, as seen from a study in North India, attempted suicides are more among women and depression was associated with 37.5% of attempters⁴¹.

In spite of all this reality, as per the WHO study on mental health resources⁷¹, India is seen to have only pilot projects of community care facilities, and is not practiced countrywide though it has an established national mental health program. But there is an attempt to integrate mental health care facilities at primary level which is seen to be useful.

KERALA:

Kerala, among all the Indian states, has remarkable achievements with some of the best health indicators, highest literacy levels, almost 100% hospital deliveries etc. But in terms of non-conventional indicators like gender-based violence, mental ill-health, suicide etc, Kerala women do not score well.⁷⁹ There is an alarming rise in suicides rates among women in Kerala - around thrice the national average, one of the highest in the country⁷⁵ and 50 percent more than Karnataka, the state with the second highest rate⁸⁰. In 2002, Kerala had the highest suicide rates – 30.8 per lakh, as against the national average of 11.2/ lakh population. And it is known that depression accounts for nearly half the number of patients committing suicide⁸¹. Iniquitous gender roles and societal structures that perpetuate women's subordination are a cause of tremendous stress, which must be particularly looked into in order to broaden our understanding of such growing mental distress among women⁴². A study on the priority psychiatric disorders in Ernakulam showed rates of affective disorders which includes depression among women increasing above 30 years than the lower. Though this study demonstrated a very low overall

prevalence rate, when stratified by socio – economic status, the rate was found to increase 15 fold!⁴³ Also, depression is seen to be both a predictor of onset of ischemic heart disease (IHD), and its associated mortality probably owing to behaviours associated with the former.⁸²

COASTAL

Of the fourteen, nine districts of Kerala have regions lying along the coastal belt. These areas are marginalized, and in addition to other factors including alcoholism being a major problem, have low levels of education, which has been the crux behind the rapid health transition of Kerala. Their income is seasonal and working hours overlap the service hours of the local PHCs. Hence access to services is poor inspite of physical accessibility to the centers.

There are many reported mental stress disorders arising due to the impact of natural disasters such as the Tsunami, especially affecting coastal regions. The prevalence of depressive disorder among adult women of a fishing community in Pakistan was 7.5%, and was reported as being of a high magnitude in this group when compared with rates of the country and globally³⁰.

DIAGNOSIS & QUESTIONNAIRE

Depression is an illness of various manifestations. Hence many different means of measuring depression exist, - DSM IV, ICD 10, etc with many depression scales such as Self Reported Questionnaire 20(SRQ 20), Primary Care Evaluation of Mental Disorders (PRIME MD), the latter's self report version – Patient health questionnaire 9(PHQ9) and others^{44,45,46}. Estimates of prevalence based on scales in general tend to be far higher than those based on the DSM-IV or other diagnostic criteria. One advantage of the PHQ-9 over the others is that it exclusively focuses on the 9 diagnostic criteria for depressive disorders as per the DSM-IV criteria⁴⁷.

The DSM-IV diagnostic criteria for what is termed a ‘major depressive episode’ require at least five of the following symptoms during a two-week period (at least one of the first two symptoms must be present for the diagnosis): (1) depressed mood nearly all of the time; (2) loss of interest or pleasure in most activities; (3) change in appetite or unintentional weight loss or gain; (4) change in sleep patterns; (5) change in psychomotor behavior (6) lethargy or fatigue; (7) feelings of guilt or worthlessness; (8) difficulty concentrating or making decisions; and (9) ‘ recurrent thoughts of death’ or suicidal ideation.

One or more of such episodes constitute a ‘major depressive disorder’^{15, 48, 34}

WAY AHEAD

Though a range of effective psychosocial and pharmacological treatments exist for depression, there are strong barriers to health seeking, the foremost of which is stigma which erodes the confidence its treatability, deters the caretakers from spending resources on them thus reducing the consumers access to opportunities for treatment and services.

PRIMARY PREVENTION

Poverty being an important risk factor of depression, can lead to increased indebtedness to money lenders, which is very stressful. Initiatives such as community banks or microcredit schemes could be a part of the solution in addressing this problem³⁶. Also improvement in overall development by promoting equity and investing in health and basic infrastructure, may be associated with better mental health as evidenced from a study in Indonesia⁴⁹.

A study which found a strong interrelationship of poverty, stigma and mental illness highlighted the need to turn our focus to material resources and the importance of stigma reduction programmes in protecting the mentally ill from being left out³².

SECONDARY PREVENTION

Studies show that primary care physicians are instrumental in early diagnosis of depression among women⁵⁰. The key to secondary prevention is to strengthen the treatment of common mental disorders in primary health care³⁶. In a randomised placebo controlled drug trial carried out in Goa, the intervention was demonstrated to be effective in terms of outcome and cost, the latter when affordable antidepressants such as fluoxetine are used. This was suggested to be taken as the treatment of choice for managing depression in developing countries⁵¹. In a review of literature article, it was concluded that since women may achieve higher plasma concentrations of antidepressants, thus requiring lower dosages of these medications while establishing the effectiveness of antidepressants such as Selective Serotonin Reuptake Inhibitors (SSRIs)¹⁵. Though the efficacy and cost – effectiveness of drugs have been established through such studies, stigma continues to pose a great barrier.

COST OF TREATMENT AND BUDGET ALLOCATED:

The cost of treatment of depression summed up to as much as \$30.4 billion in 1990, which includes both direct costs and indirect costs of treatment, the latter being the costs of lost productivity owing to improper work done or premature death. Considering the two-thirds of cases which go untreated, additional \$6 to \$10 billion was calculated to be added to the direct cost per annum⁵². If all cases of depression were treated successfully, it can reduce per capita health care expenditure by 20 percent, which amounts to almost \$4 billion³⁴.

A prospective cohort study conducted in India and Pakistan found a heavy burden of health care costs, mostly in the private sector, with indirect costs extending to almost three times as much⁵³. There was a fall in the baseline cost of treatment at the end of the study period owing to integration of mental health care with primary care.

AN EXISTING MODEL IN INDIA

The National Institute of Mental Health and Neurosciences (NIMHANS), located in Bangalore, began implementing a model of psychosocial care for survivors of the tsunami: community-based self-help groups, with community-level workers as providers of psychological care and facilitators of recovery, strengthening the survivor's coping abilities. Local community workers, trained by mental health professionals, made the program appropriate and sensitive to the culture of the survivors⁵⁴.

Community based interventions might be the way forward. Among many coastal regions of Kerala, self – help groups (SHGs) confer many economic and social benefits. They aim to provide economic empowerment and assist women in developing their personality to face the challenges in life. They attempt to bring in social justice. This is a process of social transformation, where women gain control of decision making over issues that affect their lives, in order to have access to and control over resources and benefits. Thus, through empowerment, women become a key ingredient of social development⁵⁵.

CHAPTER 3: METHODOLOGY

3.1 Study Design:

This was a cross sectional study.

3.2 Study Setting

This survey was conducted in a coastal region of a rural Panchayat of Thiruvananthapuram (TVPM) district in Kerala. This Panchayat has 14 wards.

3.3 Study population: -

The study population consisted ever- married women from randomly selected 10 wards of the Panchayat.

3.4 Inclusion criteria:

Ever - married women between ages 18 and 45 years, who were willing to participate in the study and willing to provide a written informed consent were included in the study.

3.5 Exclusion criteria:

Women who were previously diagnosed to be mentally retarded or schizophrenic, those who were on psychotropic drugs, those who were very ill/physically disabled that they cannot cooperate, unmarried women.

And those who were not willing to participate and provide consent were excluded from the study.

3.6 Sample size:

Sample size was estimated by Epi info version 3.3.2. Taking 10 percent as the anticipated prevalence of depression with a 95 percent confidence interval between 6 percent and 14 percent, the sample size was estimated to be 450. As the sample selection procedure was multi stage cluster sampling, a design effect of 2 was used to estimate the final sample size using the following formula:

$$N = (1.96)^2 PQ/D^2$$

$P = 0.10, Q = 0.90$

Anticipated proportion of depression was assumed to be between 6 percent and 14 percent.

I took $D = 4\% = 0.04$

$N (\text{Women}) = 1.96 * 0.10 * 0.90 / 0.04^2 = 214$

As it was cluster-sampling, design effect of 2 was used to calculate the final sample size.

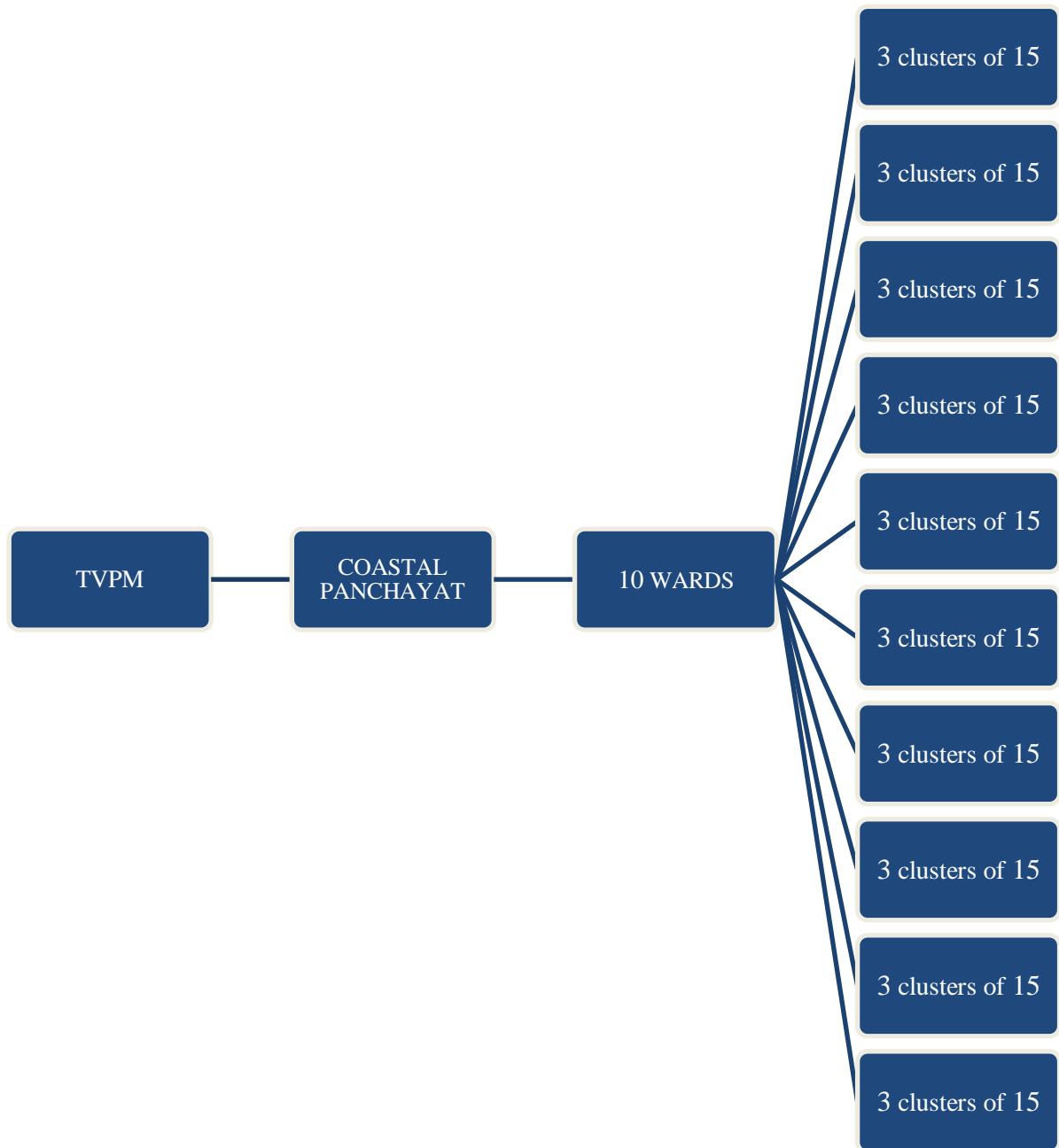
$214 * 2 = 428$ rounded off to 450.

Estimated sample size was 450 ever – married women in 30 selected clusters, 3 from each of the 10 randomly selected wards across the whole Grama Panchayat area. These three clusters were selected within the wards by systematic random sampling of households to select 3 households, and a cluster is defined as households adjacent to these selected 3 households. Cluster size was 15, i.e. 15 ever – married women were selected. The total sample size planned was thus $15 * 3 * 10 = 450$.

3.7 Sample selection procedure:

The coastal Panchayat was chosen purposively. The first stage of sampling was selection of 10 wards randomly from the 14 wards of the Panchayat. This was done by lottery method. The second stage of sampling was the selection of three areas in each ward through randomly selecting one household in each ward from the census list and systematically selecting 2 other areas in the same ward. Starting from each of the selected 30 households, nearby houses were visited in a circular manner till 15 ever – married women aged 18 – 45 years were identified. Hence it is a multi – stage cluster sampling technique.

Fig 3.1 Sampling Procedure



3.8 Data Collection Procedure

Door to door survey using tools:

1. PHQ-9 depression scale- The outcome was the total score obtained on administration of the Malayalam version of the Patient Health Questionnaire – 9 depression scale.

2. The socio - demographic details and determinants of depression were collected using a structured interview schedule.
3. Height, weight and Blood Pressure (BP) were measured using measuring tape, electronic weighing machine and OMRON electronic BP apparatus respectively.

Note: Height was measured using a measuring tape as it is not one of the primary variables for analysis and hence minor variations in recording as against a stadiometer are not of significance.

The data was collected from 16th July till 10th September 2012. Informed consent from each participant was obtained before collecting the data; all interviews were conducted by the principal investigator, with one field worker collecting data regarding height and weight.

3.9 Data collection process:

Total number of wards	14
Number of wards selected	10
Number of clusters	30
Cluster size	15
Number of women eligible	450
Number willing to participate	442
Number interviewed	442
Number excluded due to incomplete data	12
Number included for analysis	430

The response rate is $(442/450)*100 = 98.2\%$

The field worker helped to identify the selected households in each ward. One eligible woman was selected from each house to participate in the study. If there were more than

one eligible woman in a house, lottery method was used to recruit a woman for the study. Nearby consecutive houses were visited in a circular manner starting from the right side of the selected household until the required number of 15 ever – married women was reached in each cluster.

In each house, the nature and purpose of the study were explained to the eligible woman and written informed consent (**Annexure 2**) was obtained and an information sheet (**Annexure 1**) was given to them. Information on the demographic profile, socioeconomic status, gender, reproductive and physical health factors were also assessed in addition to the administration of the depression scale - PHQ 9 (**Annexure 3**).

3.10 Variables under the study: -

3.10.1 Definition of variable: -

Remarried: Those who have married more than one time.

Currently Married: Those who were married and living with their spouse.

Separated: Those who are living separated physically from their spouse due to some problems between them, but are not separated by law.

Divorced: Those who are legally separated from their spouse.

Ever Married: Those who have been married at least once until then. It includes those who are currently married, the remarried, the separated, divorced and widowed.

Frequent use of Alcohol: Those who consume alcohol at least once in a month, but not on a daily basis.

Daily use of alcohol: Those who consume alcohol at least once in a day.

Substance abuse: Those who use either alcohol or tobacco or both at least once in a month.

Household: was defined as those were sharing the same kitchen.

Socio Economic Status(SES): Was assessed based on a composite index based on their having their own house, number of rooms, flooring, having own bathroom, own piped water supply connection, electricity, nature of job from which major source of income was drawn and any defaulted debts. It was categorized into low and high based on the median value cut off value.

3.10.2 Operational definitions: -

No Depression: Women who had a score of 9 or below on the PHQ 9 depression scale were classified as not having depression.

Depression: Women who had a score of 10 or above in the PHQ 9 depression scale were classified as having depression.

3.10.3 Outcome variable definitions:

Depression was taken as the outcome variable. A woman who has depression was defined as one who had a PHQ 9 score of 10 or more.

3.11 Measurement of depression:

We used the PHQ 9 scale in order to screen for depression. It consists of nine cardinal symptoms of depression on which diagnosis of DSM-IV depressive disorder is based, and the frequency of experiencing these symptoms in the past two weeks, with four responses for each namely ‘not at all’, ‘on some of the days’, ‘more than half the days’ and ‘almost on a daily basis’. These responses are scored 0, 1, 2 and 3 respectively and the total score of all the symptoms is taken as the final score which ranges from 0 to 27. A score of (≥ 10) has been shown to have an 88% sensitivity and 88% specificity for major depression. This is hence the recommended cut off when a single screening cut off is to be chosen, as scores less than 10 never occurs in persons with major depression, while scores 15 and above indicate presence of major depression.⁴⁷ In this study also, a score of 10 was taken as the cut off to screen for depression.

This scale can be administered by any trained person in the community, not necessarily a Psychiatrist. It screens those who are likely to be depressed. The symptoms asked are based on the ICD 10 criterion indicating a depressive episode: Loss of interest in activities that are normally pleasurable, depressed mood, sleep disturbances, decreased energy or increased fatigue, change in appetite, feelings of self reproach or guilt, decreased ability to concentrate, change in psychomotor activity with agitation or retardation and thoughts of suicide or suicidal behavior.

3.12 Predictor variable definitions:

1. Age Group
2. Whether Christian (LC)
3. Working woman
4. Any gynaecological morbidity
5. History of any pregnancy wastage
6. Child Abuse
7. At least one NCD
8. Recent Domestic Violence (past one month)
9. Any Substance Abuse
10. Support in need
11. Socio Economic Status
12. Education above primary level

3.12.1 Socio demographic characters:

Age, caste, marital status, education, and occupation (working status) were used.

Age: Age was recorded as reported by the patient.

Caste: The variable was classified as those who were Latin Catholics and those who were not..

Marital status: Information was collected on whether the woman was currently married, separated, divorced, widowed or remarried. It was then re – classified as whether she had any negative marital experiences (separated, divorced, widowed or remarried) or not.

Education: Levels of education were classified into two groups - as primary and below, and above primary.

Working: Women were classified in to categories: Those who had any job were categorized as working, and the others were categorized as jobless.

3.12.2 Socio economic Characteristics:-

It was classified into two categories based on the median of a compositely created score as mentioned in the previous section.

3.12.3 Partner related factors:

Substance abuse by partner: This variable has two categories based on whether their husbands has substance abuse as Substance abuse present and no substance abuse.

3.12.4 Reproductive morbidities:

Gynaecological morbidity – Gynaecological symptoms that were asked in this study were regarding vaginal discharge, menstrual disturbances, urinary tract infections, pain, itching or wounds around genital area. Of these, vaginal discharge was the most commonly reported one, as also seen in a study where it was reported by more than forty percent of women in the reproductive age group⁵⁶.

3.12.5 Co morbidity: - Details of history of coronary artey disease, hypertension, diabetes mellitus and cancer were asked and a new variable: whether having any Non – communicable disease (NCD) was computed. If atleast one of the 4 conditions were present, it was classified as *having an NCD*, and the rest as *none*.

3.13 Data storage and data cleaning

Along with data collection the data were entered in Epidata version 3.1 and then imported to SPSS for windows version 17.0 for analysis purpose. The hard copies of interview schedule are stored in a locked chamber under my vigilance. The privacy and confidentiality of the participants is being strictly maintained. Computerized data cleaning was done after data entry by the Principal Investigator (PI).

3.14 Data analysis and statistical methods: -

The quantitative data analysis included sample characteristics, bivariate and multivariate analysis. Mean and standard deviation (SD) were computed for all continuous data. Frequencies (with percentages) were calculated for categorical and binary variables. PHQ 9 score was classified into two groups. No depression and Depression. Chi square test was used to find out statistically significant associations. Odds ratios with 95percent confidence intervals were calculated. Chi Square test, Fisher Exact Test and binary logistic regression were done using Depression as the outcome variable; while various study variables were used as independent variables. A p-value of less than 0.05 was considered to be statistically significant for all analysis. Variables that were significantly associated with the outcome variable in the bivariate analysis were used for multiple logistic regression analysis.

3.15 Expected outcomes: -

Approximately 10 percent depression in community among this age group

3.16 Ethical considerations: -

Ethical clearance was obtained from the Technical Advisory committee (TAC) and Institutional Ethics committee (IEC) of Sree Chitra Tirunal Institute for Medical sciences and Technology. Panchayat leaders were informed and their verbal consent was obtained. Written informed consent was obtained from all the participants in the study. The

information about the patient's identity was not included with the main data. Name has not been asked in order to avoid identifiers. Confidentiality of both the interview and the data was assured and is being maintained. Women screened positive for depression will be referred to a psychiatrist, General Hospital, Thiruvananthapuram. Conflict of interest – none.

CHAPTER 4: RESULTS

Out of the 450 women approached, 442 women consented and participated in the study (response rate: 98.2 percent). Twelve were discarded due to incomplete and missing data. The mean age of the study population was 32.8+/-6.9 (range: 18 - 45 years) and the mean age at marriage was 20.5 +/-5.4. Out of these 442 women, 107 screened positive for depression.

4.1 DESCRIPTIVE STATISTICS

4.1.1 Socio demographic and pregnancy related characteristics

Table 4.1.1 gives socio-demographic and pregnancy profile of the study participants. Level of education was categorized into two for analysis: Primary and below; and Above primary level.

Table 4.1.1: Socio – demographic and pregnancy related characteristics (N = 430)

Variable		Frequency	Percentage
Age	>= 30	288	67
Caste	LC	314	73
SES	Low	200	46.5
Education	Up to Primary level	106	24.7
Having Debt	In debt	42	9.8
Bathroom	None	97	22.6
Water Supply	No connection	212	49.3
Source of Income	Daily	334	77.7
	Monthly	19	4.4
	NRI	77	17.9
Contraception (PPS)		300	69.8
Treatment for Infertility		48	11.2

Negative Pregnancy	127	29.5
Under 5 child mortality	14	3.3
Multiple Negative Pregnancy	27	6.3

4.1.2 Physical and reproductive morbidity

Table 4.1.2 Physical and reproductive morbidity (N = 430)

Variable		Frequency	Percentage
Heart Disease		27	6.3
Diabetes		22	5.1
Hypertension		43	10
Depression		107	24.9
Reproductive Morbidity		196	45.3
BMI category	Normal	223	51.9
	Overweight	135	31.4
	Obese	72	16.7

Height and weight were measured and body mass index (BMI) was computed. Then a new variable BMIcategories was computed with three groups: Normal (BMI<25), Overweight (BMI 25 – 29.9) and Obese (BMI>=30). BP measured in the study helped to identify 16(3.7 percent) of new hypertensive's and 18(4.2 percent) of uncontrolled hypertensive's. Depression, the outcome variable under study, refers to those who screen positive for depression based on the score of the PHQ 9 depression scale. All other co morbidities of the respondents were self reported

4.1.3 Gender and domestic violence

Table 4.1.3: Gender and domestic violence related factors (N = 430)

Variable	Frequency	Percentage
Working woman	110	25.6
Partner violence	268	62.3
Substance abuse by partner	300	69.8
Problem with partner within 1 week	174	40.5
Problem with partner within 1 month	249	57.9
Child Abuse	77	17.9

Being a working mother was found to put additional stress on the woman as the brunt of her responsibilities at home are not reduced.

4.2 Prevalence of depression:

The prevalence of depression in the Panchayat is given in the figure below.

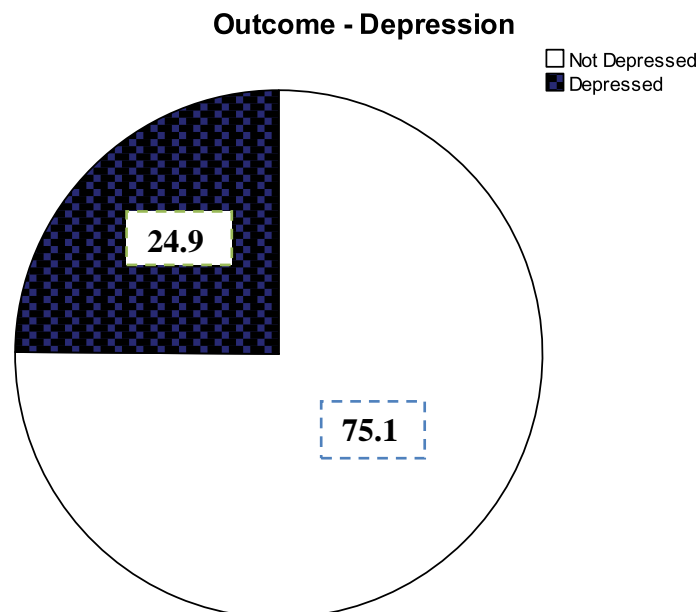


Fig 4.2 Prevalence of depression among ever – married women aged 18 – 45 years

4.3 BIVARIATE ANALYSIS: Those which are significant and selecting only one among highly inter related variables.

4.3.1 Socio – demographic characteristics and depression

Age, caste, socio economic status and whether having debt were the variables taken as the socio – demographic variables.

Table: 4.3.1 Socio-demographic characteristics and depression(%)

Variable		N(%)	Odds Ratio	95% Confidence interval	P value
Age	< 30	16 (11.3)	1		
	>= 30	91 (31.6)	3.64	2.04 – 6.47	0.000
Caste	Others*	17 (14.7)	1		
	LC	90 (28.7)	2.34	1.32 – 4.13	0.003
SES	Low	65 (32.5)	2.16	1.38 – 3.37	0.001
	High	42 (18.3)	1		
Having Debt	No debt	5 (11.8)	1		
	In debt	102 (26.3)	2.64	1.01 – 6.90	0.048

Table 4.3.2: Poverty and depression(%)

Variable		N(%)	Odds Ratio	95% Confidence Interval	P value
SES	Low	65 (32.5)	2.16	1.38 – 3.37	0.001
	High	42 (18.3)	1		
Having Debt	No debt	5 (11.8)	1		
	In debt	102 (26.3)	2.64	1.01 – 6.90	0.048

Poverty is related to depression in a vicious cycle with low SES leading to an increased chance of depression, and the direct and indirect costs of depression further push the person into poverty.

4.3.3 Child mortality

Table 4.3.3: Child mortality and depression(%)

Variable		N (%)	Odds Ratio	95% Confidence interval	P value
Negative	None	65 (21.5)	1		0.012
Pregnancy	MTP/ Abortion/ Early NND	42 (33.1)	1.81	1.14 – 2.87	
Under Five mortality (U5)	None	99 (23.8)	1		
	U5mortality	8 (57.1)	4.27	1.45 – 12.60	0.000
Kid Mortality	None/ U5 More than 5 years old	97 (23.5) 10 (55.6)	1 4.06		
				1.56 – 10.57	0.004*

* Fisher Exact Test

4.3.4 Level of Education

Table 4.3.4: Relationship of level of education and depression(%)

Variable		N (%)	Odds Ratio	95% Confidence interval	P value
Education	Primary and below	45 (42.5)	1		
	Above Primary	62 (19.1)	0.32	0.20 - 0.52	0.000

4.3.5 Non communicable diseases

NCD includes heart disease, hypertension, diabetes mellitus and cancer. Only one woman in the study population had cancer. Those with history of heart disease have nearly 5 times (OR = 4.99 [2.24 – 11.13]), those with hypertension have nearly 2 times (OR=1.93

[0.99 – 3.74]) and those with diabetes have more than 2times (OR=2.67 [1.12 – 6.38]) the odds of having depressed as against their counterparts.

Table 4.3.5: Non – communicable diseases and depression(%)

Variable		N (%)	Odds Ratio	95% Confidence interval	P value
NCD	None	77 (21.6)	1		
	Atleast one NCD	30 (40.5)	2.47	1.46 – 4.19	0.001

4.3.6 Gynaecological complaints

Gynaecological morbidity includes any menstrual disturbances, urinary infections, vaginal discharge, and pain or wounds in the genital area in the past 6 months.

Table 4.3.6: Gynaecological Morbidity and depression

Variable		N (%)	Odds Ratio	95% Confidence interval	P value
Gynaecological morbidity	None	35 (15)	1		
	At least one	72 (36.7)	3.30	2.08 – 5.24	0.000

Women with untreated morbidity have 3.85 times the odds and those with unresolved morbidity have nearly 5 times the odds of being depressed than those without any such gynaecological morbidity, both being significant at $p < 0.001$.

4.3.7 Domestic Violence and depression

Women who have experienced physical, mental or any other form of violence from the partner are more than 4 times as likely to be depressed. (OR=4.31 [2.46 – 7.57]). Those who are afraid of their partners have almost 3times the odds (OR=2.81 [1.71 – 4.62]) and those who feel they are controlled by their partner have more the odds (OR=3.17 [1.94 –

5.20]) of having depression than their counterparts. Having a problem with the partner within the past one week and one month put them at twice the risk of being depressed than those without such a problem. All the above findings are significant at $p < 0.001$. But more than 60% of the study population consider wife beating a right of their partners.

Table 4.3.7: Domestic Violence and depression(%)

Variable		N (%)	Odds Ratio	95% Confidence interval	P value
Problem in last 1 week	No	43 (16.8)	1		
	Yes	64 (36.8)	2.88	1.84 – 4.52	0.000
Problem in last 1 month	No	28 (15.5)	1		
	Yes	79 (31.7)	2.54	1.57 – 4.12	0.000
Child Abuse	No	75 (21.2)	1		
	Yes	32 (41.6)	2.64	1.57 – 4.43	0.000

4.3.8 Substance abuse

Table 4.2.8: Relationship between Substance Abuse by partners and Depression(%)

Variable		N (%)	Odds Ratio	95% Confidence interval	P value
Substance Abuse	No	14 (10.8)	1		
	Yes	93 (31)	3.723	2.031 – 6.825	0.000

Partners who use tobacco and/or consume alcohol at least once a month are classified as having substance abuse. Those who never consumed alcohol/tobacco, or took it rarely with more than 1 month interval were not considered to be substance abusers.

4.3.9 Social Support

Social support includes any physical, mental or financial support from any source other than banks when there is either good news (social occasions), personal problems, feeling low or ill or in times of financial difficulties. No support in any form or supports only in social occasions were considered as *No Support* and all other form of support was considered as timely support in times of need. *Support in need* was computed based on these criteria.

Table 4.3.9: Social Support and depression(%)

Variable		Frequency (%)	Odds Ratio	95% Confidence interval	P value
Support	None	16 (50)	1		
In need	Present	91(22.9)	0.30	0.14 – 0.62	0.001

4.4 MULTIVARIATE ANALYSIS: PREDICTORS OF DEPRESSION

Multivariate logistic regression model was built in a stepwise backward manner with probability of entry 0.1 and probability of removal 0.05.

The following variables were entered: age group, caste (Latin Catholic), education above primary level, socio – economic status, working woman, having at least one non communicable disease, having gynaecological complaints, substance abuse by husband, history of any pregnancy wastage, recent Partner violence (problem with spouse within 1 month), child abuse and social support when in need.

Final model

Age group, education above primary level, having gynaecological complaints, substance abuse by husband – both alcohol and tobacco, and social support when in need were the variables that were included in the final model.

Table 4. Results of multiple regression analysis.

Variable		Adjusted Odds Ratio	95% Confidence interval	P value
Age Group	< 30 years	1		
	>= 30 years	2.61	1.39 – 4.92	0.003
Education	Up to Primary	1		
	Above Primary	0.570	0.33 – 0.97	0.039
Support in need	None	1		
	Support present	0.37	0.16 – 0.84	0.018
Substance Abuse	No	1		
	Yes	2.62	1.34 – 5.12	0.005
Gynaecologic Morbidity	None	1		
	Morbidity present	2.76	1.68 – 4.52	0.000
Problem with spouse in last month	No	1		
	Yes	1.81	1.06 – 3.10	0.030

Dependent variable: Depression.

The point prevalence of depression was 24.9 percent. Odds to have screened positive for depression of women aged 30 years and above was more than two times [Odds ratio (OR) 2.61;95% Confidence Interval (CI)1.39 – 4.92], those who received education above

primary level was half (OR 0.57;CI 0.33 – 0.97), those having gynaecological morbidity was almost three times (OR 2.76;CI 1.68 – 4.52), those who experienced violence from partner in the past one month was almost two times (OR 1.81;CI 1.06 – 3.10) and those whose partners had substance abuse, more than two times (OR 2.62;CI 1.34 – 5.12) compared to their counterparts.

CHAPTER 5: DISCUSSION AND CONCLUSIONS

To the best of my knowledge, this was the first study on depression in a coastal region, and among ever – married women aged between 18 and 45 years in Kerala. This age group is considered to be the ‘demographic group at the highest risk’⁵⁹. Besides the prevalence advancing age (age 30 years and above), gynaecological morbidity, substance abuse and problem with partner within past one month were found to be independent risk factors of depression while support in times of need and education above primary level were protective.

However neither caste, socio – economic status, having a non – communicable disease, being a working woman, having a history of any pregnancy wastage or child abuse were independent predictors, though they have significant association with depression.

The prevalence rate from this study was high (24.9 percent). This is consistent with the figures reported by WHO for developing countries⁶⁰.

In this study, prevalence toward the higher side could be attributed in part to the heavy substance by partners which were perceived to be the most common cause of domestic violence, the rate of which is also high. Also local factors such as water supply coming through the common pipes was at around three in the morning when most of the women would wake up to fill their jars. Hence falling back to sleep after all that work was not easy for women there. Another characteristic of these women is that most of them never had breakfast. In the afternoon, when their partners returned from fishing, they brought in some of the fish caught that day for lunch. Hence these women ate a proper meal only at that time. So the responses to the questions on appetite and sleeping difficulties on the PHQ 9 scale were probably over – reporting when compared with the studies in the general community. In addition, due to the geographical location, there was besides others, associated problems such as temporary housing, uncertainty in income generation,

annual rise in water levels, etc. The local cultural factors could also be a contributing factor. In addition, those screened positive were not confirmed by a Psychiatrist. Similarly high rates are also seen in other studies as well. South East Asia is known to have one among the largest prevalence of depression among women (30 percent)⁷¹.

Prevalence of depression among coastal women aged 18 – 64 in the ODIN study in Europe gives a prevalence of 21.15 percent⁶¹. A population based study in Pakistan gave an unusually high prevalence of around 45 percent for which the reasons suggested were also geography, adverse social environment and local culture¹².

Advancing age was found to be a significant predictor of depression and the odds of those who were 30 years and above having depression was 2.6 times more than those who belonged to a younger age group. Increasing age of women was found to be significantly associated with depression in other studies as well^{62, 63}. A case control study done among adult women in a fishing community also showed that being 29 years and older had a 2.8 times more odds of being depressed than those who were younger³⁰. In a population based study in Chennai, a steady rising trend with age was noted²⁴.

Gynaecological morbidity is found to be a significant predictor of depression as is evidenced from many other studies as well. In a cross-sectional study carried out in Goa, psychological factors including depression was found to be an important independent risk factor for abnormal vaginal discharge⁵⁸. In the developed countries, a strong relationship between gynaecological symptoms and mental disorders such as depression has been demonstrated^{64, 65}. In fact self-reported gynaecological morbidity such as abnormal vaginal discharge are among the most commonly cited health problems in women in South Asia⁵⁷. The strongest association with the complaint was not the presence of reproductive tract infections (RTI) as one would consider it to be, but were psychosocial

factors among which depression along with anxiety was found to be independently associated with gynaecological complaints⁵⁸.

It is in fact now being considered to be a culturally shaped stress induced somatic idiom of distress indicative of depression^{38, 57, 66}. This could in part explain the aetiology of non – infectious vaginal discharge⁵⁷. This is a significant finding as it implies the need to call for an alternate approach at the primary care centres, the place where maximum number of depressed women are identified, toward those who present with complaints of vaginal discharge by introducing screening for depression in addition to the biological investigations. This could aid in early diagnosis of the depression and introduction of interventions in addition to bringing down rates of misdiagnosis at this level. The study conducted in Goa also pointed toward the need of refinement of algorithms for the syndromic management of vaginal discharge so that early psychological interventions can be provided to those who present with a non – infectious etiology. The author also suggested that such care for both conditions could be given at the same point in the health care system and would also aid in reducing healthcare costs⁵⁸.

Odds to have depression among women who had above primary level education when compared to those with lower levels of education or the illiterate was 0.57. This protective effect of education above primary level has also been observed in other studies^{30, 67}. In a population based study, formal years of schooling was bound to lead to a lower incidence of depression, which also again consistent with the findings in this study. It is likely that education enhances autonomy also in decision making regarding their own health^{14, 63, 68}.

Education beyond primary level was found to exhibit a protective effect as those with such levels of education were seen to have a lower risk of being depressed than those who were educated below this level. The protective effect of education can also be evidenced

from other studies as well. In a survey by college faculties⁶⁹, mental morbidity in women from rural areas who had greater advantage of education was 20 percent in contrast to 40 percent among those with lower levels of education.

Substance abuse by partner was found to be significantly associated with depression, with women whose partners consumed alcohol or tobacco within past month being almost three times more likely to be depressed than those whose partners did not consume either of the two. Another community survey which supported this finding⁶⁹. While 39 percent of women from rural area whose husbands abstained had poor mental health, where husbands did not abstain, 64percent of women were found to have the negative outcome.

Domestic violence from partner, especially within past one month, is seen to be an important risk factor for depression, when adjusted for age, education, gynaecologic morbidity, social support and substance abuse. Prevalence of partner violence in this study was also high. This finding is also evidenced in other studies. In a cross – sectional study by the Indian Clinical Epidemiology Network which is carried out by the faculty of various medical colleges, including Trivandrum, According to a study in 2 states of India, one in the north and the other in the south, prevalence of partner violence ranged between 36 – 48 percent⁴⁰. There was strong correlation between any kind of physical partner violence and poor mental health of the woman, with a relative risk of poor mental health greater than two when compared with women who had not reported any physical partner violence.

In order to address the plight of women experiencing domestic violence, at the break of this century, in the 54th World Health Assembly, particular interventions which can help cater to the mental health needs of women experiencing domestic violence were suggested were to provide special training of health workers, and to take preventive measures to cut at the roots of alcohol and drugs, which lead to violence by men.⁷⁴

Social support when in need was yet another variable which turned out to be a significant risk factor. A similar finding was seen in another study where increasing amount of social support was accompanied by a decreasing trend in the rates of poor mental health⁶⁹. Thus increasing support for women in their families, in the community, at workplace etc may help combat this problem.

It was surprising that low socio – economic status was not a significant risk factor in this study, though it has been identified to be a strong predictor in many other studies^{24, 36, 59}. This could be attributed to the overall low socio – economic status of the whole Panchayat.

In short, some of the recommendations from the findings of this study are:

Gynaecological complaints among those at the primary and other health care levels should be approached with particular care, keeping view of the psychological aetiology as well. Their social and mental circumstances need to be probed further in order to avoid misdiagnosis of depression. Community level models similar to the model in Bangalore need to be applied to these areas in a local culturally sensitive manner. Policy level actions are needed in order to take stringent measures to deal with social evils such as alcohol and tobacco, and thereby the resultant domestic violence, which are an important risk factors of depression. More resources need to be expended on the factors such as social support groups and education beyond primary level to more girls in coastal regions.

5.6 Limitations:

Only one coastal panchayat has been included in this study. It is a cross sectional survey, and the temporality of the associations cannot be assessed. Those women who were screened positive have not been confirmed by a psychiatrist. Subgroups with mild, moderate, severe depression could not be studied due to small sample size for that

purpose. Because PI went as a doctor, there is a possibility of over reporting of co – morbidities and domestic violence.

5.7 Strengths of the study

Data was collected by PI with the help of one field assistant – reduces inter observer variability. Very few studies have been conducted on prevalence of depression among women of coastal regions. As far as I know, this is the first study on the prevalence of depression among women of a coastal region from Kerala.

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ANNEXURE – 1

PARTICIPANT INFORMATION SHEET

ENGLISH VERSION

I, Dr. Anju Lijin, am currently pursuing my post graduation (Master of Public Health) at Achutha Menon Centre for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram. As part of this course, I am undertaking a study to assess the overall health status of women in this Panchayat. I would like to collect some information related to this from you through an interview. The interview is expected to take around 30 minutes. This is a routine procedure to obtain informed consent from the participant in a study.

While at present, there is no significant individual benefit, it is possible that the findings of the study can add to evidence that will necessitate formulation of better health policies in order to help women like you in the near future.

I assure you that the information provided by you shall not be disclosed to anyone under any circumstances anywhere in the public at any time. Strict confidentiality will be maintained and the data collected will be used solely for research purposes. If at any time you want to stop answering the questions, or choose not to answer some of the questions, you can refuse to do so. If you have any doubts, kindly feel free to ask me.

For further clarifications you can contact me or Dr. Anoop Kumar Thekkuveetil (Member – Secretary of the Institutional Ethics Committee at SCTIMST, Trivandrum) at any time.

Dr. Anju Lijin – Ph: 92494 54548

Dr. Anoop Kumar Thekkuveetil – Ph: (0471) 2520256 / 257

ANNEXURE – 2

WRITTEN INFORMED CONSENT

ENGLISH VERSION

Are you willing to participate in the study? YES: _____ NO: _____

As part of the requirement, I need your signature / thumb impression which indicates your willingness to participate. Will you be able to sign?

Signature of the participant

Left thumb impression

If you are unwilling to sign / give thumb impression, but willing to be interviewed, signature of an independent witness to the consent being taken

Signature of the witness

Signature of the interviewer

Date:

Time:

Place:

ANNEXURE - 3

INTERVIEW SCHEDULE - ENGLISH

General:																
1	a. Ward No: b. Cluster No: c. ID No:															
2	Age															
3	Religion (Tick Appropriate) <table border="1" style="width: 100%; margin-top: 10px;"> <tr> <td style="width: 25%;">Hindu</td> <td style="width: 25%;">Christian</td> <td style="width: 25%;">Muslim</td> <td style="width: 25%;">Others (specify)</td> </tr> <tr> <td style="height: 100px;"></td> <td></td> <td></td> <td></td> </tr> </table>				Hindu	Christian	Muslim	Others (specify)								
Hindu	Christian	Muslim	Others (specify)													
4	Caste (Tick Appropriate) <table border="1" style="width: 100%; margin-top: 10px;"> <tr> <td style="width: 25%;">SC</td> <td style="width: 25%;">ST</td> <td style="width: 25%;">OBC</td> <td style="width: 25%;">Others (specify)</td> </tr> <tr> <td style="height: 100px;"></td> <td></td> <td></td> <td></td> </tr> </table>				SC	ST	OBC	Others (specify)								
SC	ST	OBC	Others (specify)													
5	Educational Status <table border="1" style="width: 100%; margin-top: 20px;"> <thead> <tr style="background-color: #cccccc;"> <th style="width: 10%;"></th> <th style="width: 60%;">Years of Education(upper limits not included)</th> <th style="width: 30%;">Tick Appropriate</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">A</td> <td>No formal education</td> <td></td> </tr> <tr> <td style="text-align: center;">B</td> <td>< 5 years</td> <td></td> </tr> <tr> <td style="text-align: center;">C</td> <td>5 – 10 years</td> <td></td> </tr> </tbody> </table>					Years of Education(upper limits not included)	Tick Appropriate	A	No formal education		B	< 5 years		C	5 – 10 years	
	Years of Education(upper limits not included)	Tick Appropriate														
A	No formal education															
B	< 5 years															
C	5 – 10 years															

	D	10 – 15 years		
	E	15 – 20 years		
	F	> 20 years		
Economic Status:				
Housing:				
6	Is this house your own or is it rented?			
	Own	Rented	Others	
7	Number of rooms (including kitchen)			
8	Flooring (Observation)			
		Type	Tick Appropriate	
	A	Mud		
	B	Cement		
	C	Mosaic		
	D	Marble/Granite		
	E	Others (specify)		
9	Toilet			
	Own	Commo n	Nil	
10	Source of drinking water			
	Well Water	Piped Water Supply		

	Own	Common	Own	Common	Tanker Supply	Others (specify)
11	Does your house have electricity connection?					
	Yes		No			
12	With whom do you stay?					
	Own Parents	Husband	Husband's Family	Others (specify)		
13	What is the main source of income in your family?					
	Daily wages	Monthly salary	NRI	Others (specify)		
14	Do you have any debts?					
	Yes		No			
15	In whose name is the loan taken?					
16	Are you able to repay without default? (Yes/No)					
	Yes		No			

17	What is your job?								
Unemployed	Fish Vending	Coir Work	Domestic Help	Others (Specify)					
18	Marital Status								
Married	Widowed	Separated	Divorced	Remarried	Others(specify)				
29	At the time of your marriage what was your age?								
19	At what age did you first become pregnant?								
20	Are you currently pregnant?								
Yes	No								
21	Details of pregnancies (Tick Appropriate)								
	Outcome				Type of Delivery (Normal / CS)	Sex of the Child	Age of the Child	If dead at what age	Cause of Death
	Abortion		Still Birth	Live Birth					
MTP	Spontaneous								

22	<p>Have you taken treatment in order to become pregnant?</p> <table border="1" data-bbox="354 264 722 340"> <tr> <td data-bbox="354 264 533 340">Yes</td> <td data-bbox="533 264 722 340">No</td> </tr> </table>	Yes	No										
Yes	No												
23	<p>Do you use any contraceptives?</p> <table border="1" data-bbox="354 416 722 495"> <tr> <td data-bbox="354 416 533 495">Yes</td> <td data-bbox="533 416 722 495">No</td> </tr> </table>	Yes	No										
Yes	No												
24	<p>If yes, whose decision was it to adopt contraception?</p> <table border="1" data-bbox="354 712 1447 864"> <tr> <td data-bbox="354 712 488 864">Yours</td> <td data-bbox="488 712 671 864">Husband</td> <td data-bbox="671 712 855 864">Together</td> <td data-bbox="855 712 1447 864">Others (specify)</td> </tr> </table>	Yours	Husband	Together	Others (specify)								
Yours	Husband	Together	Others (specify)										
25	<p>What according to you is the ideal number of children in a family?</p>												
26	<p>Who usually makes this decision?</p> <table border="1" data-bbox="354 1086 1447 1238"> <tr> <td data-bbox="354 1086 501 1238">Yours</td> <td data-bbox="501 1086 671 1238">Husband's</td> <td data-bbox="671 1086 847 1238">Together</td> <td data-bbox="847 1086 1447 1238">Others (specify)</td> </tr> </table>	Yours	Husband's	Together	Others (specify)								
Yours	Husband's	Together	Others (specify)										
27	<p>During the last six months, did you have any of the following reproductive health problems?</p> <table border="1" data-bbox="354 1456 916 1904"> <tr> <td data-bbox="354 1456 790 1534">Menstrual disorders / Bleeding</td> <td data-bbox="790 1456 916 1534"></td> </tr> <tr> <td data-bbox="354 1534 790 1608">Leucorrhoea</td> <td data-bbox="790 1534 916 1608"></td> </tr> <tr> <td data-bbox="354 1608 790 1682">Itching around the genital area</td> <td data-bbox="790 1608 916 1682"></td> </tr> <tr> <td data-bbox="354 1682 790 1756">Pain while passing urine</td> <td data-bbox="790 1682 916 1756"></td> </tr> <tr> <td data-bbox="354 1756 790 1830">Pain in genital area</td> <td data-bbox="790 1756 916 1830"></td> </tr> <tr> <td data-bbox="354 1830 790 1904">Ulcers in genital area</td> <td data-bbox="790 1830 916 1904"></td> </tr> </table>	Menstrual disorders / Bleeding		Leucorrhoea		Itching around the genital area		Pain while passing urine		Pain in genital area		Ulcers in genital area	
Menstrual disorders / Bleeding													
Leucorrhoea													
Itching around the genital area													
Pain while passing urine													
Pain in genital area													
Ulcers in genital area													

28	<p>If yes what did you do?</p> <table border="1"> <tr> <td data-bbox="352 264 895 416">a. Speak about to anyone? If yes to whom?</td> <td data-bbox="895 264 1437 416"></td> </tr> <tr> <td data-bbox="352 416 895 488">b. Consult a doctor</td> <td data-bbox="895 416 1437 488"></td> </tr> <tr> <td data-bbox="352 488 895 562">c. Self-medication</td> <td data-bbox="895 488 1437 562"></td> </tr> <tr> <td data-bbox="352 562 895 712">d. Are you relieved of the problem?</td> <td data-bbox="895 562 1437 712"></td> </tr> </table>	a. Speak about to anyone? If yes to whom?		b. Consult a doctor		c. Self-medication		d. Are you relieved of the problem?	
a. Speak about to anyone? If yes to whom?									
b. Consult a doctor									
c. Self-medication									
d. Are you relieved of the problem?									
27	<p>Have you attained menopause?</p> <table border="1"> <tr> <td data-bbox="352 786 533 864">Yes</td> <td data-bbox="533 786 722 864">No</td> </tr> </table>	Yes	No						
Yes	No								
28	<p>If yes, did you face any problems related to menopause such as hot flushes, joint pain, back ache, loss of temper...etc.</p> <table border="1"> <tr> <td data-bbox="352 1081 507 1160">Yes</td> <td data-bbox="507 1081 652 1160">No</td> </tr> </table>	Yes	No						
Yes	No								
Marital History:									
30	<p>Do you know anyone among your friends, colleagues or relatives who are experiencing physical / mental stress in their families? (Caused by either Father, Mother, Brother, Sister, Husband, relatives, in-laws or others)</p> <table border="1"> <tr> <td data-bbox="352 1603 711 1682">Among relatives</td> <td data-bbox="711 1603 1437 1682"></td> </tr> <tr> <td data-bbox="352 1682 711 1753">Among friends</td> <td data-bbox="711 1682 1437 1753"></td> </tr> <tr> <td data-bbox="352 1753 711 1827">Among colleagues</td> <td data-bbox="711 1753 1437 1827"></td> </tr> <tr> <td data-bbox="352 1827 711 1906">Others (specify)</td> <td data-bbox="711 1827 1437 1906"></td> </tr> </table>	Among relatives		Among friends		Among colleagues		Others (specify)	
Among relatives									
Among friends									
Among colleagues									
Others (specify)									

31	What according to you are the causes?					
32	<p>Do you think husbands have the right to beat their wives?</p> <table border="1"> <tr> <td>Yes</td> <td>No</td> </tr> </table> <p>If yes, under what all circumstances?</p>	Yes	No			
Yes	No					
33	<p>Have you had to face similar situations?</p> <table border="1"> <tr> <td>Yes</td> <td>No</td> </tr> </table>	Yes	No			
Yes	No					
34	<p>Are you afraid of your partner?</p> <table border="1"> <tr> <td>Yes</td> <td>No</td> </tr> </table>	Yes	No			
Yes	No					
35	<p>Do you feel controlled by your partner?</p> <table border="1"> <tr> <td>Yes</td> <td>No</td> </tr> </table>	Yes	No			
Yes	No					
36	<p>When was the last time you had a problem with your partner?</p> <table border="1"> <tr> <td>Within last week</td> <td>Within last month</td> <td>Within six months</td> <td>Within one year</td> <td>> 1 year</td> </tr> </table>	Within last week	Within last month	Within six months	Within one year	> 1 year
Within last week	Within last month	Within six months	Within one year	> 1 year		
37	When you have problems with your husband, are you worried about the security of your children?					

	<table border="1"> <tr> <td>Yes</td> <td>No</td> </tr> </table>	Yes	No																			
Yes	No																					
38	<p>Does your husband consume alcohol?</p> <table border="1"> <tr> <td>Yes</td> <td>No</td> </tr> </table>	Yes	No																			
Yes	No																					
39	<p>If yes, how often does he consume?</p> <table border="1"> <tr> <td>Rarely</td> <td>Occasionally</td> <td>Daily</td> <td>Many times in a day</td> </tr> </table>	Rarely	Occasionally	Daily	Many times in a day																	
Rarely	Occasionally	Daily	Many times in a day																			
40	<p>Does he take drugs?</p> <table border="1"> <tr> <td>Yes</td> <td>No</td> </tr> </table>	Yes	No																			
Yes	No																					
41	<p>Do you need anyone's permission while deciding to do the following:</p> <table border="1"> <thead> <tr> <th></th> <th>Yes/No</th> <th>From Whom</th> </tr> </thead> <tbody> <tr> <td>a. Visit mother's house</td> <td></td> <td></td> </tr> <tr> <td>b. Visit friends house</td> <td></td> <td></td> </tr> <tr> <td>c. Take part in religious activities</td> <td></td> <td></td> </tr> <tr> <td>d. See a doctor</td> <td></td> <td></td> </tr> <tr> <td>e. Keep money aside for personal use</td> <td></td> <td></td> </tr> <tr> <td>f. Take time to do things for yourself</td> <td></td> <td></td> </tr> </tbody> </table>		Yes/No	From Whom	a. Visit mother's house			b. Visit friends house			c. Take part in religious activities			d. See a doctor			e. Keep money aside for personal use			f. Take time to do things for yourself		
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d. See a doctor																						
e. Keep money aside for personal use																						
f. Take time to do things for yourself																						
42	<p>Do you participate in any of women's groups or associations?</p>																					

	Yes	No	
--	-----	----	--

43	Do you go for meeting friends?	
	Yes	No
44	Do your friends or relatives visit you?	
	Yes	No
45	Do you receive mental, physical or financial support in the below mentioned matters?	
		Yes/No
	a	There is a good news
	b	There are personal problems
	c	You need to borrow some amount of money for a particular need
	d	You are feeling low/ill
Physical Health Factors:		
46	Do you have any of the following ailments?	
	Health Problems (Self reported)	Yes/No
	a. Heart disease	
	b. Diabetes Mellitus	
	c. Hypertension	
	d. Cancer	
	e. Others(specify)	
47	Height (measuring tape)	
48	Weight (electronic weighing machine)	
49	Blood pressure (Electronic Blood Pressure measuring apparatus)	

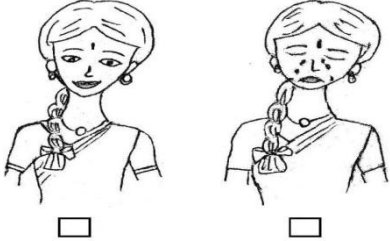
Psychological Factors:

How often during the past 2 weeks were you bothered by

50

		Not at all	Several Days	More than half the days	Nearly everyday
		0	1	2	3
1	Little interest or pleasure in doing things				
2	Feeling down, depressed, or hopeless				
3	Trouble falling or staying asleep, or sleeping too much				
4	Feeling tired or having little energy				
5	Poor appetite or overeating				
6	Feeling bad about yourself, or that you are a failure, or have let yourself or your family down				
7	Trouble concentrating on things, such as reading the newspaper or watching television				
8	Moving or speaking so slowly that other people could have noticed. Or the opposite – being so fidgety or restless that you have been moving around a lot				

	more than usual												
9	Thoughts that you would be better off dead, or of hurting yourself in some way												
Sum up the columns													
Total Score													
51	<p>If you have gone through any of the problems in this questionnaire how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">Not difficult at all</td> <td style="width: 25%;">Somewhat difficult</td> <td style="width: 25%;">Very difficult</td> <td style="width: 25%;">Extremely difficult</td> </tr> <tr> <td style="height: 40px;"></td> <td></td> <td></td> <td></td> </tr> </table>					Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult				
Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult										
52	<p>Does anyone in your family, to your knowledge, suffer from any form of mental illness?</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Yes</td> <td style="width: 50%;">No</td> </tr> </table>					Yes	No						
Yes	No												

53	If you have experienced physical, mental or any other kind of abuse in your lifetime please tick the box below the picture on the right side.	
54	If you have experienced physical, mental or any other kind of abuse in within the last one year please tick the box below the picture on the right side.	