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## A compilation of total daily nutrient intake and psychological morbidities in women of reproductive age groups: A cross-sectional study

**Neetu Singh**

### Abstract

Turning to the adult part of the woman's life cycle, it is apparent that pregnancy and childbirth are special events in a woman's life, a time of hope, anticipation and joy. Unfortunately, very often it turns out to be a time of fear, suffering and even death. Today the mental disorders stand among the leading causes of disease and disability in the world. One in four people in the world will be affected by mental or psychological disorder at some point in their lives. Psychological morbidities Viz; Self-esteem, anxiety and depression are likely to have profound influences on the directly pattern of urban women who are in a disadvantaged position on nutrition scale. Approximately one third of them suffer from chronic energy deficiency in India. The Objective of the study was 1. to elicit daily dietary intake of women. 2. To find out ricks of self-esteem, anxiety and depression among women.3.To compare daily dietary intake and psychological morbidity in study subject: This study was carried out in urban area of Varanasi. The approaches adopted for the study was cross-sectional one. For this study 310 women belonging to reproductive age groups (15 to 49 years) except more than four months pregnant women (i.e. excluded from the study) were selected from four Mohall's of Varanasi city by adopting *multistage random sampling* procedure. The tools in the study were pre-designed and pre-tested schedule comprising of family and individual schedule. Self-esteem, anxiety and depression level were assessed by questionnaire method using pre-designed and pre-tested inventory. The study has shown that psychological problem on the criteria of scale of self- esteem, anxiety state-trait and depression were 31.94%, 32.58%, 30.65% and 20.97%, respectively. Majority of women 54.52% had normal in all psychological parameter and 0.32% showed abnormal psychological status in all psychological parameter. Only vitamin B<sub>1</sub> was significant with depression not with other psychological parameters were not having a significant relation. Self-steem and depression were significant ( $p < 0.05$ ) associated with calories intake. In comparison to nutrient intake with psychological parameters fat and vitamin B<sub>2</sub> were significantly ( $p < 0.05$ ) associated with trait anxiety and state anxiety; respectively. No other nutrient showed any relation with other psychological parameters.

**Keywords:** self-esteem, anxiety, depression, Psychological morbidities and daily dietary intake

### 1. Introduction

With the turn of century, we usually speak about a glare of high tech advances where we are celebrating the achievements of our women in diverse field but we tend to overlook some of the most basic aspects of women status. So, looking through the lens of hunger and poverty, there are major areas of discrimination against women in India; namely malnutrition, poor health, lack of education, overwork, unskillness, mistreatment, powerlessness and psycho social abnormalities.

Reproductive and child approach has been defined as "a state when people have ability to reproduce and regulate their fertility, women are able to go through pregnancy and childbirth safely, the outcome of pregnancies is successful in terms of maternal and infant survival and wellbeing and couples are able to have sexual relation free of fear of pregnancy and of contracting diseases (*RCH programme report, Jan; 1998*).

More recently, both biological and socio-economic landmarks bracketing the transition to adulthood have moved in opposite directions. In many countries the social environment - one of the most important component of health, is characterized by poverty, overcrowded, living conditions, unemployment, job insecurity and inequality, a grooming number of broken marriages, man-made and natural disasters, wars, ethnic violence as well as violence energy

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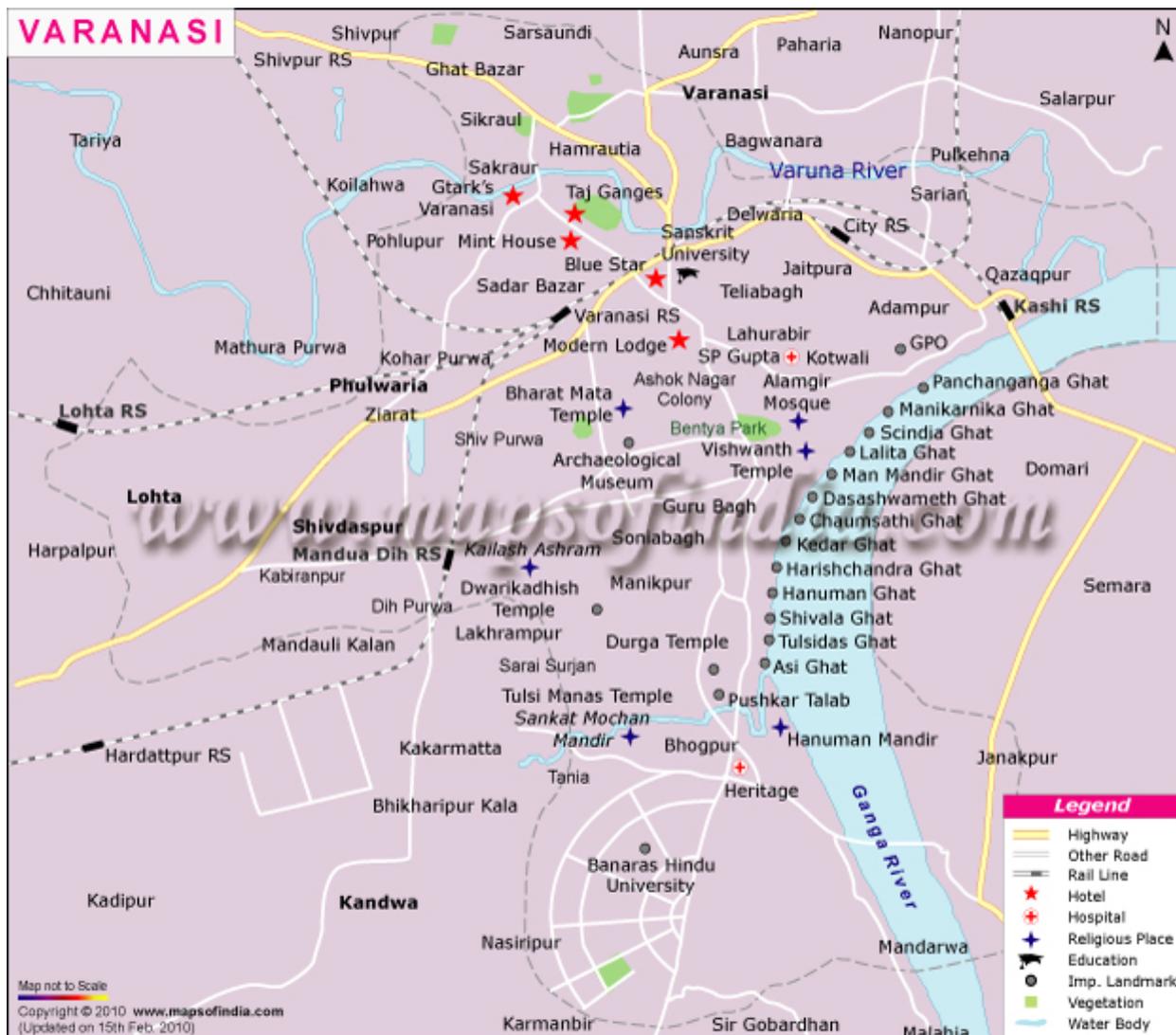
body vulnerable to neuropsychiatric disorders. Women, researchers say are especially exposed to these risks.<sup>[29]</sup> As per WHO, health is a state of complete physical, mental and social well-being. Physical health refers to nutritional status and Women behavior depends largely on self-esteem and her anxiety status. Because of powerlessness, she fails to adapt to a hostile situation and this poses a family into disadvantages position in terms of child care and stated responsibility. Nutritional status of women integrate related to their, dietary intake which is determined by availability of food in terms of quality and quantity and then ability to digest, absorb and utilize food. Dietary practices, cultural traditions, family structure, birth intervals, meal patterns, political environments and food allocation influence food availability. At the same time, digestion and absorption can be effect by infection or metabolic disorders. In general reproductive age groups women are the worst sufferers of the ravages of various forms of malnutrition (viz; protein energy

malnutrition, iron, calcium and other specific nutrient deficiencies) because of their increased nutritional needs and low social power.

Low level of self-esteem in women may be the result of discrimination, sexism, inequalities in all aspects of life, harassment, abuse, dysfunctional family life, a lack of female role models, poor parenting or the portrayal of women in the media. This aspect has remained unexplored; with this background, following objective of the study was;

1. To know daily dietary intake of the reproductive aged women.
2. To study about the ricks of self-esteem, anxiety and depression among women.
3. To compare daily dietary intake of the study subject with their psychological morbidity status.

## Material and Methods



### Location map of study area

The study was conducted for a period of two years. During initial period of study extensive literature search, designing and pre-testing of interview schedule were done. The field data collection was carried out for a period of one year extending from October 2002 to September 2003. The desired sample size for this cross-sectional study was

computed by taking the prevalence of under nutrition as 56.68% and permissible level of error of 10%. The required sample size of 310 women of reproduction age groups (i.e. 15 to 49 years) were considered as study subjects. As weight gain during pregnancy particularly 2<sup>nd</sup> & 3<sup>rd</sup> trimester may affect Body Mass Index, women with gestational period more than 4 months were excluded from the study.

Multistage random sampling was followed in the present investigation. Following stages were involved in arriving at the required sample size.

**Stage 1:**The authority of Banaras Corporation was contacted and the list of all wards including the names of Mohall's were obtained

**Stage 2:** There were altogether 90 wards in the city. Out of which 9 wards (i.e., 10 percent) were selected randomly using random table.

**Stage 3:**Out of aforesaid 40 Mohall's, only 4 Mohall's (i.e., 10 percent) were taken randomly using random table.

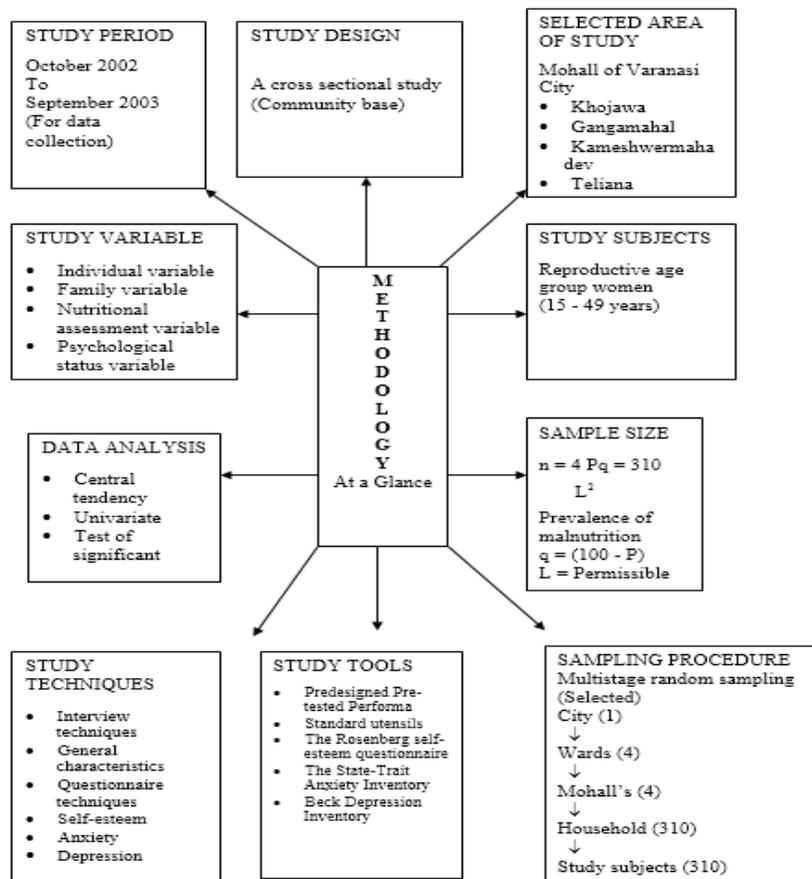
**Stage 4:**Further, household selection was based on probability proportion to size as 310 households were to be selected from 1376, households in selected Mohall's were divided by 4.44 (i.e. 1376 / 310) to get the total number of selected households.

**Stage 5:**The survey was initiated in each selected Mohall. The first house selected randomly say 3<sup>rd</sup> house. Then, following the stratified sampling at the interval of 4, the next house was 3 + 4 = 7<sup>th</sup> house. This method was followed continuously.

**Stage 6:**The study of selected household family was taken form family information. In case of Joint / Extended family, only one family was selected through sample random techniques i.e., by lottery number.

**Stage 7:**Lastly, for individual information, a female between 15-49 years of age from each family was selected randomly

(i.e. by lottery number) for their interview and detailed investigation.



### Tools for daily nutrient intake (24 hours recall methods)

The primary tools in this study were predesigned and pretested interview schedule for recording of family as well as individual information. Standardized utensils such as bowls, spoons and mini weighing machine were for measurement food items during diet survey. Apart from the self-made interview schedule, keeping in view this fact in mind of interview schedule was pretested outside the study area on a sample of 30 households and necessary modifications done in the light of the results obtained.

### Tools for Assessment of psychological aspects

#### I. The State - trait Anxiety Inventory (STAI)

The inventory provides reliable, relatively brief, self-report measure of state (A-state) and trait (A-Trait) anxiety [25]. The Hindi STAI had developed by Sager Sharma (1973) is essentially equivalent to the English form of the scale. The Hindi STAI (A-State) scale consists of 20 statements which ask people to respond according to 'how they feel at a particular movement in time'. Norms are available for adolescents, adults and neuropsychiatry patient. Reliability; Evidence of the reliability (stability) of the Hindi STAI A-Trait scale is reflected in the moderately high test - retest correlations reported in female. These correlations varied from 0.68 to 0.80 over periods ranging from 30 to 90 days. Validity; the correlation between the Hindi and English STAI was 0.85. The high correlation indicate that these scale may be considered as equivalent forms for Hindi - English bilingual subjects scoring ;Each statement had 4 alternatives to describe the level of anxiety namely, Nil; Low; high and very high. These alternatives were assigned for the scores of 4, 3, 2, 1 in positive statements and 1, 2, 3, 4 in negative statements, respectively. The STAI have a direct interpretation: high scores on their respective scales mean more treat or state anxiety and low scores mean less.

#### II. The Beck Depression Inventory (BDI)

The Beck Depression Inventory (BDI) is a one-dimensional instrument to assess depression. Beck described BDI as a self-assessment instrument designed to measure the behavioral manifestation of depression (1961). Beck and Beamesderfer [4] described it as an inventory for measuring the depth of depression. This inventory measures cognitive, behavioral, affective and somatic aspects of depression. The BDI consist of 21 "symptoms-attitude categories" which were derived and judged by Beck and his associates as symptoms of depression. The symptoms categories are as follows: Mood, pessimism, sense of failure, lack of satisfaction, guilt feeling, sense of punishment, self-accusations, self-positive wishes, crying spells, irritability, social withdrawal, indecisiveness, body image, work inhibition, sleep disturbance, fatigability, and loss of appetite, weight loss, somatic preoccupation and loss of libido. Each category represents a characteristic manifestation of depression. The BDI was broadly used to measure stress and distress associated with psychological disorders [4] The scale is often used as a measure of depression in life event studies.

Reliability; BDI's internal consistency estimates yielded a mean coefficient alpha was 0.86 for psychiatric patients and 0.81 for non-psychiatric respondents. Validity of the BDI was checked by correlating the BDI score with Depression Adjective Check. It was 0.66. Scoring; In the BDI, for each item there are four response categories. Each response category has a weighted score as 0, 1, 2 and 3, respectively.

The item scores are added to yield the total score. Minimum and maximum scores ranged from 0 to 63.

Interpretation of Beck Depression Inventory	
Total Score	Level of Depression*
1-10	There ups and downs are considered normal.
11-16	Mild mood disturbance.
17-20	Borderline depression.
21-30	Severe depression.
31-40	Extreme depression.

\* A persistent score of 17 or above indicates subject need professional treatment.

#### III. The Rosenberg Self-Esteem Questionnaire (RSEQ)

The Rosenberg Self-Esteem Questionnaire [23] is an attempt to achieve one-dimensional measures of global self-esteem. He described self-esteem as self-acceptance or a basic feeling of self-worth. The scale consists of ten items, half of the items are positively word and half of them are negatively word. The positive and negative items are present in random order to reduce the effect of respondent set. The items are score on a four-point scale from strongly agrees to strongly disagree. All items are related to the self-acceptance of self-esteem and not with any other. The Rosenberg self-esteem questionnaire has been adopted for Indian population taking into consideration of basic technical requirements. All items was translated into Hindi. Back translation done by bilinguals and was found to be similar to the original set of items. The Hindi version administered on an Indian sample. High score on the test indicates low self-esteem, coefficient of test-retest reliability was found to be 0.80. Validity was checked by correlating the test with Beck Depression Inventory and it was found to be 0.45. Scoring each statement had four alternatives strongly agree to strongly disagree. All alternatives of positive statements were given 4, 3, 2 and 1 scores and all alternatives of negative statements were given 1, 2, 3 and 4 scores, respectively. Therefore, the minimum and maximum possible score was 10 and 40, respectively. High total score indicates high self-esteem on this scale.

#### Techniques of the Study

1. Dietary Intake: Dietary intake of the study subjects was assessed by 24 hours recall oral questionnaire method. Standardized utensils such as, bowls for measuring cooked rice, dal, curd, vegetables, milk etc., mini-weighing machine for chapatti and other cooked items were used for measuring the approximate intake of different food items. Dilution factor of liquid food, such as dal also noted. The survey conducted one day after any festival or special occasion.
2. Assessment of psychological aspect; Psychological aspects included various parameters viz; self esteem anxiety and depression. These parameters was assessed by questionnaire / scheduled techniques using pre-designed and pre-tested scheduled i.e. Beck Depression Inventory (21 Questions); State Trait Anxiety Inventory (20 Questions) and Rosenberg Self-Esteem Questionnaire (10 Questions). For illiterate people these schedules were assessed by interview technique in a familiar atmosphere. These parameters are applied on every study subjects as per their validity of test.

#### Results and Discussion

##### Daily Dietary Intake (24 hours recall methods)

Daily intake of various nutrients by the study subjects was macro (calorie, protein and fat); micro (Calcium, Iron and

folic acid) and vitamins (Thiamine, Riboflavin, niacin, pyridoxine, cyanocobalamin and ascorbic acid) nutrients was assessed by 24 hours recall method. Their average intake of all nutrients in women was (Table 1) compared with their estimated mean Recommended Dietary Allowances (RDA). Average dietary nutrient intake in terms of calories per day ( $1512.15 \pm 227.86$  Kcal) of women was 76.01% on the estimated RDA. Corresponding values for protein and fat intake were 76.15% and 162.25%, respectively. Several workers [3, 12, 8, 30] Pallavi and Antoney, 2002 & Antony *et al*, 1999 [12, 18] have observed the Dietary deficiencies among women. A contrary finding of energy inadequacy in the present study, A study was done where it was reported adequate energy intake in women [2, 5]. However, other side low intake quoted by *Egtesadeet al (2001)* [8] 49%; i.e. 66%. In contrast to the finding of excess fat intake in present study ( $36.07 \pm 13.10$  gm/day) was more than 100% of RDA. Supported by [2]. While in the present study mean intake of protein was 40.57 gm/day. which is significantly lower than the estimated critical difference was that average less intake 13.5% and 26.1% by *Egtesade et al., 2000* and *Raj Kumar & Premkumari, 2000*, respectively, and above intake quoted by *Bains & Mann (2000)* i.e. 94%.

**Table 1:** Average Nutrient Intake of Study Subjects (n = 310)

Nutrient	Nutrient intake Mean $\pm$ SD	Estimated mean RDA	% of RDA
Caloric (kcal/day)	1512.15 $\pm$ 227.86	2011.61	76.01
Protein (gram/day)	40.57 $\pm$ 3.98	54.47	76.15
Fat (gram/day)	36.07 $\pm$ 13.10	24.24	162.25
Calcium (mg/day)	429.82 $\pm$ 11.85	518.06	94.22
Iron (mg/day)	23.30 $\pm$ 11.85	30.36	76.87
Folic acid (mg/day)	57.89 $\pm$ 10.11	121.13	53.13
Ascorbic acid (mg/day)	29.42 $\pm$ 3.72	46.06	68.13
Thiamine (mg/day)	0.84 $\pm$ 0.36	0.98	87.17
Riboflavin (mg/day)	1.02 $\pm$ 0.29	1.18	87.37
Niacin (mg/day)	12.40 $\pm$ 2.10	12.95	96.83
Pyridoxine (mg/day)	1.66 $\pm$ 0.67	2.10	79.70
Cynocobalamine ( $\mu$ g/day)	0.68 $\pm$ 0.22	1.08	64.79

Mean intake of micronutrients viz; calcium, Iron and Folic acid (Table 1) corresponding percent was maximum (94.22%) and minimum (53.13%) according to estimated mean RDA of calcium and folic acid, respectively. Some studies on micro nutrient done separately and founded that high iron, calcium intake quoted by [8] Lowintake of these nutrients quoted by [8, 5] and [21]. The present study distributions of women according to their vitamins intake (viz; Ascorbic acid, Thiamine, Riboflavin, Niacin, Pyridoxine & Cyanocobalamin) were 68.13%, 87.17%, 87.37%, 96.83%, 79.70% and 64.79%, respectively which are all lower than the percentage of estimated mean RDA. Inadequacy of nutrient have also been reported by several other workers to various extent [8, 5] and [21].

**Level of Self-esteem, Anxiety and Depression among women**

There are several ways to find out the magnitude of mental health problems like psychiatric case register in hospitals, case records of general practitioners and population surveys

epidemiological studies involving cross-sectional surveys. These provided information about the magnitude and pattern of illness in the population. Which form the basis for planning of health care services. A large scale study of such nature involving multiple cultures in a defined time frame by trained investigators using a standardized screening tools, which is adopted for specific morbidity, Age, Sex & so on criteria and given by psycho-scientist. The sampling techniques used in the present study in the interview-cum-questionnaire technique, where, tools are used for self-esteem (Rosenberg Self-esteem Questionnaire; RSEQ) Anxiety (State-Trait-Anxiety Inventory; STAI) and Depression (Beck Depression Inventory; BDI) for assessing their level in the study subjects. In the table 2, data were analyzed categorically as low, moderate and high and we founded that majority of them belonged to moderate category viz; 40.65% state anxiety, 50.64%, trait anxiety, 34.19%, self-esteem and 51.71% depression.

**Table 2:** Psychological Status of study subjects based on their score categories

Parameter	Category	Number (310)	Percentage
Score	Category		
<b>State Anxiety</b>			
20-39	Low anxiety	101	32.58
40-59	Moderate anxiety	126	40.65
60-80	High/Sever anxiety	83	26.77
<b>Trait Anxiety</b>			
20-39	Low anxiety	95	30.65
40-59	Moderate anxiety	157	50.64
60-80	High/Sever anxiety	58	18.71
<b>Self Esteem</b>			
10-19	Low	99	31.94
20-29	Moderate	106	
30-40	High	105	33.87
<b>Depression</b>			
1-10	Normal	6	01.94
11-16	Mild	59	19.03
17-20	Borderline	86	27.74
21-30	Moderate	74	23.97
31-40	Severe	63	20.32
Over 40	Extreme	22	07.10

The prevalence of psychological morbidity i.e. self-esteem, state anxiety, trait anxiety and depressions showed in table 2. Magnitude of these psychological parameters were 29.35%, 15.16%, 16.45% and 16.80%, respectively by taking <25 to >75 percentile as abnormal psychological status and 25-50 to 51-75 percentile as normal psychological status (Table 3). High prevalence of anxiety and depression had been reported by several workers, but anxiety level of 24.9%. According to world bank (1993) [31] anxiety has been to the extent of 87% in menopausal women. Euro [9] and Agrawal, (2000) [3] reported depression to the extent of 20% and 36.5%, respectively. Other workers reported lower prevalence of psychological abnormality than the figures obtain in this study. Depression varied from 5% to 15% in different studies. According to *Obenko, (2003), Sharma, (2002)* [26], depression to the extent of 5%, 6.4%, 10% and 9.5% respectively. According to a leading newspaper depression has been to the extent of 15%. Anxiety levels ranged from 6.7% to 12.3% in different studies *World Bank, (1993)* [31].

**Table 3:** Prevalence of Psychological parameters of the Study Subjects on the Basis of its Percentile

Parameter	Percentile							
	< 25		25-50		51-75		> 75	
	No.	%	No.	%	No.	%	No.	%
State anxiety	45	14.52	190	61.29	73	23.55	02	0.64
Trait anxiety	31	10.00	161	51.94	98	31.61	20	6.45
Self esteem	81	26.13	196	63.23	23	07.42	10	3.22
Depression	20	6.45	146	47.10	115	37.10	29	9.35

**Note:**

- <25 and >75 percentile; showed Abnormal psychological status
- 25-50 and 51-75 percentile; showed Normal psychological status

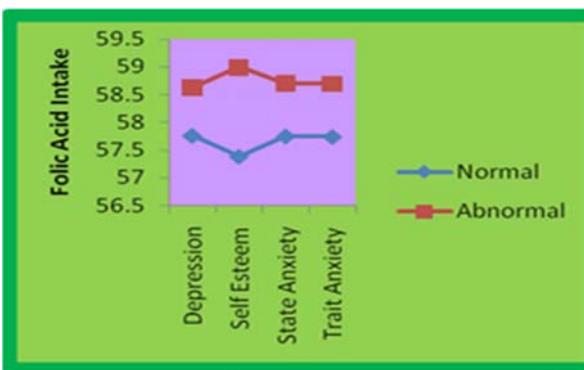
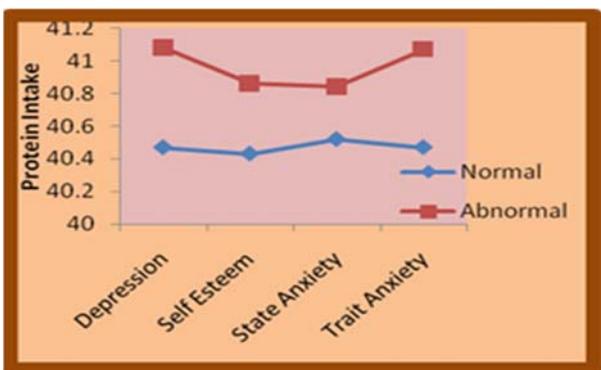
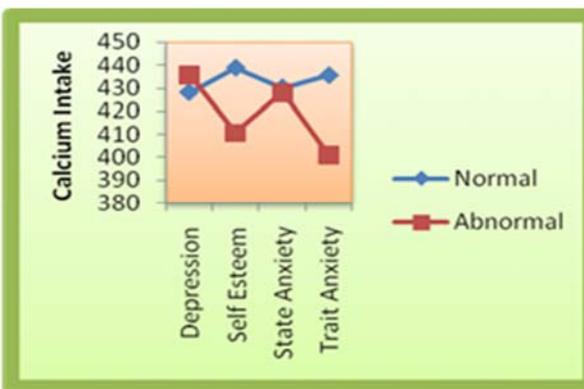
**A Compilation of Total Daily Nutrient Intake and psychological Morbidities in Women of Reproductive Age**

This section deals with nutritional parameters of individuals experiencing a current episode of depression, poor self-esteem and state anxiety with supporting parameter trait anxiety. They reflect the completely vital condition of the study subjects at the time of survey. Considerable variations existed in terms daily dietary intake as well as their practices with some psychological parameters as interrelated with each other's. India is one of the countries, which has double burden of disease. On the one side obesity is the increasingly being recognized as an important risk factor in various chronic medical illness, ranging from danger to life, on the other obvious chronic Energy Deficiency was a critical condition which give to lethal phase of life and increase in

mortality. However, both are seen an important problem amongst psychiatrically ill persons. One of the most common disorders caused by nutritional deficiency is anaemia and this along with Vit. B<sub>12</sub> deficiency result in anxiety. Other supporting references present study are clinical consequences of iron depiction<sup>[13]</sup>

**Table 4:** Nutrient Intake of Study Subjects According to level of Depression

Nutrient	Depression		Test of significant		
	Normal (261)	Abnormal (49)	t	df	p
	Mean±SD	Mean±SD			
Caloric	1502.42±222.41	1563.96±227.86	1.94	308	0.04
Protein	40.47±3.90	41.08±4.16	1.00	308	0.31
Fat	35.70±13.01	38.05±13.35	1.15	308	0.25
Calcium	428.69±209.93	435.89±223.05	0.22	308	0.83
Iron	23.06±12.15	24.54±10.19	0.80	308	0.42
Folic acid	57.76±9.67	58.63±12.9	0.55	308	0.58
Vitamin B <sub>1</sub>	0.82±0.37	0.94±0.29	2.19	308	0.02
Vitamin B <sub>2</sub>	1.02±0.29	1.03±0.28	0.89	308	0.78
Vitamin B <sub>5</sub>	12.47±2.12	12.04±1.95	1.31	308	0.19
Vitamin B <sub>6</sub>	1.66±0.67	1.64±0.67	0.20	308	0.84
Vitamin B <sub>12</sub>	0.68±0.22	0.67±0.21	0.44	308	0.66
Ascorbic acid	29.57±3.73	28.59±3.57	1.91	308	0.49



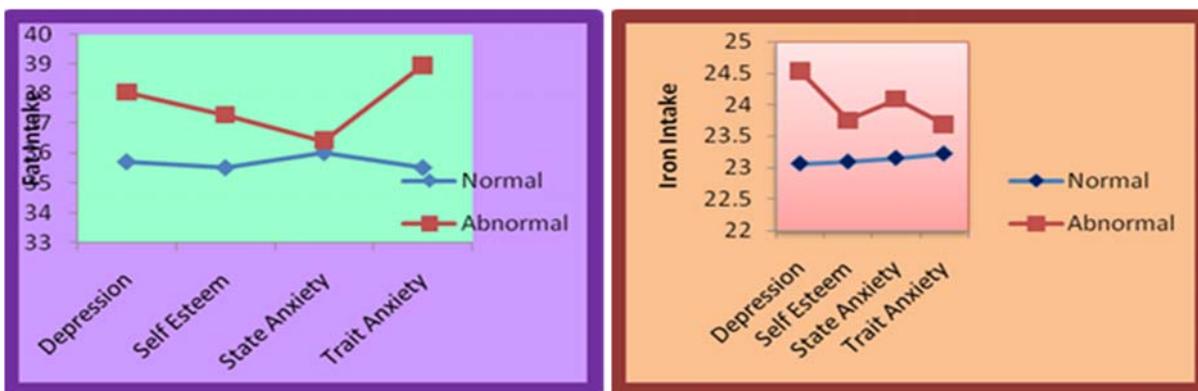


Fig 1: Distance chart of nutrient intake with psychological morbidity of women

There is a broad evidence today that individual can regulate their diet by their nutrient modification, thus affecting those psychological functions which are modulated by serotonergic activity. In table 4, fig1 depression status of study subjects were analyzed with protein, calorie, fat, calcium, Iron, Folic Acid, Vitamin B<sub>1</sub>, B<sub>2</sub>, B<sub>5</sub>, B<sub>6</sub>, B<sub>12</sub> and Ascorbic acid. There existed significant (P<0.05) difference in calorie and VitB<sub>1</sub> intake of normal and abnormal subjects. Calorie and Vit B<sub>1</sub> intakes were 1563.96 ± 227.86 Kcal/day and 0.94 ±

0.29mg/day corresponding value for normal subjects where 1502.42 ± 222.41Kcal/day and 0.82 ± 0.37 mg/day. Supporting studies are [30] and Affeninto and Kersteller, 1999 [1]; Kazes et al, 1995 [16] and Christiansen & Somers, 1996 [7]. Contrary to the findings of the present studies other researchers also found significant relation of depression with Protein [24]; Riboflavin [27] Vitamin B<sub>6</sub> and Vitamin B<sub>12</sub>, (BCTV October, 2002) Omega 3 PUFA (Wells et al, 1998) [32] Fig2.

Table 5: Nutrient Intake of Study Subjects According to their level of self-esteem

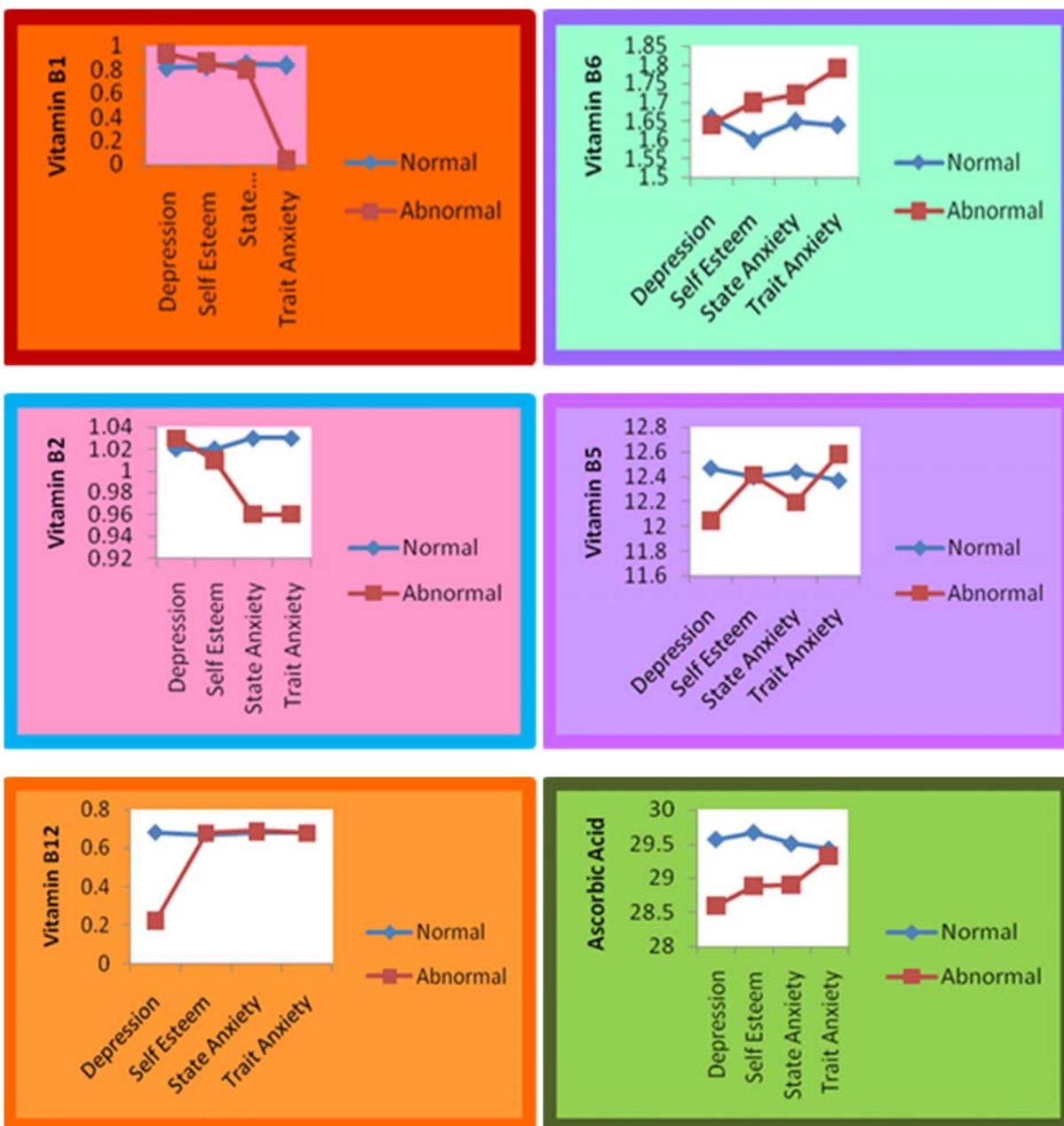
Nutrient	Self Esteem		Test of significant		
	Normal (211)	Abnormal (99)	t	df	p
	Mean±SD	Mean±SD			
Caloric	1495.32±224.16	1598.02±232.67	1.90	308	0.05
Protein	40.43±3.86	40.86±4.12	0.89	308	0.37
Fat	35.50±12.90	37.29±13.52	1.12	308	0.26
Calcium	438.81±218	410.68±196.34	1.09	308	0.27
Iron	23.09±11.96	23.75±11.52	0.46	308	0.65
Folic acid	57.38±9.53	59.00±11.22	0.86	308	0.19
Vitamin B <sub>1</sub>	0.83±0.36	0.86±0.36	0.61	308	0.54
Vitamin B <sub>2</sub>	1.02±0.28	1.01±2.22	0.38	308	0.71
Vitamin B <sub>5</sub>	12.40±2.04	12.41±2.22	0.06	308	0.95
Vitamin B <sub>6</sub>	1.60±0.66	1.70±0.67	0.73	308	0.47
Vitamin B <sub>12</sub>	0.67±0.70	0.68±0.70	1.28	308	0.20
Ascorbic acid	2967±3.83	28.88±3.43	1.75	308	0.08

In the present study (Table 5; Fig1) and studies conducted from time to time by different researches (Garfinkel et al, 1995; Friedman, 1998; Field et al, 1999; Affentis, 1999; Jarry, 1998 and Steiger et al, 1999) [13, 10, 11, 1, 15, 17] identified that negative body image, low self-esteem, fear of becoming. Faddism, chronic dieting and social pressures to be thin are as significant (P<0.05) factors of calorie intake. Other nutrients may also have been significantly associated with self-esteem but majority of researchers (viz: Lower et al, 2001, Richard, 2002) [17, 22] reported that self-esteem was concerned by eating disorder of the individuals. Results showed in table 5; Fig provides a comparable mean ± SD between normal psychological condition and abnormal psychological condition. Out of these nutrients low mean ± SD found for calcium, Vitamin B<sub>2</sub>& Ascorbic acid in subjects with abnormal self-esteem. The nutritional

consequences depend on the nature and severity of the disorder. In this table 5, fig role of nutrient intake of an individual was identified with their state anxiety levels. State anxiety had been a matter of considerable speculation but this had been researched by several workers (Peeke, 2000; BCTV October, 20002 and Wurtman, 1985) [20, 30]. According to present observation state anxiety was significantly (P<0.05) associated with vitamin B<sub>2</sub> and other remaining nutrients had no significant relation with this condition. A term carbohydrate craving was justified by considering mean ± SD of calorie consumptions between normal and abnormal psychological conditions, 1508.10± 226.56 and 1536.77 ± 236.25Kcal/day, in normal and abnormal subjects respectively. i.e. 1533.75 ± 218.97 Kcal /day and other nutrient with their mean ± SD presented in the table 4.5.6.

**Table 6:** Nutrient Intake of Study Subjects According to their level of state anxiety

Nutrient	State Anxiety		Test of significant		
	Normal (263)	Abnormal (47)	T	df	p
	Mean±SD	Mean±SD			
Caloric	1508.10±226.56	1534.77±236.25	0.74	308	0.46
Protein	40.52±3.89	40.84±4.22	0.52	308	0.60
Fat	36.01±13.21	36.41±12.59	0.19	308	0.84
Calcium	430.14±206.47	428.07±241.36	0.06	308	0.95
Iron	23.15±11.65	24.09±13.03	0.50	308	0.61
Folic acid	57.75±10.27	58.71±9.20	0.60	308	0.54
Vitamin B <sub>1</sub>	0.85±0.36	0.80±0.36	0.76	308	0.44
Vitamin B <sub>2</sub>	1.03±0.28	0.96±0.30	1.99	308	0.05
Vitamin B <sub>5</sub>	2.44±2.09	12.19±2.12	0.75	308	0.45
Vitamin B <sub>6</sub>	1.65±0.66	1.72±0.71	0.68	308	0.49
Vitamin B <sub>12</sub>	0.68±0.22	0.69±0.20	0.29	308	0.76
Ascorbic acid	29.51±3.87	28.90±2.71	1.02	308	0.30



**Fig 1:** Distance chart of vitamin intake with psychological morbidity of women

Its showed that Omega-3 fatty acids can minimize poses stress symptoms such as impairment in vigilance and performances, sleeplessness and subjective discomfort. Interestingly it was found that the effect of n-3 PUFA was greater when the stress was more intense <sup>[17]</sup> (Leiberman et al, 1986) and our present study also reported a significant

(P<0.05) relationship of trait anxiety (i.e. existing stress situation in an individual in their life span) with fat intake. (Table 6, fig) It was observed that carbohydrate craving increases the calorie intake in abnormal psychological person i.e. 1533.75 ± 218.97 Kcal /day and other nutrient with their mean ± SD presented in the table 4.5.6.

**Table 7:** Nutrient Intake of Study Subjects According to their Trait anxiety

Nutrient	Trait Anxiety		Test of significant		
	Normal (259)	Abnormal (51)	t	df	p
	Mean±SD	Mean±SD			
Caloric	1507.89±229.75	1533.75±218.97	0.74	308	0.46
Protein	40.47±3.91	41.07±4.08	0.99	308	0.32
Fat	35.50±13.48	38.97±10.61	1.94	308	0.04
Calcium	435.50±210.28	401.01±218.60	1.06	308	0.29
Iron	23.22±11.88	23.68±11.85	0.25	308	0.80
Folic acid	57.74±10.21	58.70±9.65	0.62	308	0.54
Vitamin B <sub>1</sub>	0.84±0.36	0.03±0.35	0.31	308	0.76
Vitamin B <sub>2</sub>	1.03±0.28	0.96±0.30	1.58	308	0.11
Vitamin B <sub>5</sub>	12.37±2.10	12.58±2.07	0.65	308	0.51
Vitamin B <sub>6</sub>	1.64±0.65	1.79±0.71	1.47	308	0.14
Vitamin B <sub>12</sub>	0.68±0.22	0.68±0.19	0.04	308	0.97
Ascorbic acid	29.43±3.76	29.33±3.72	0.18	308	0.86

**Conclusions**

- A large proportion of females were low as well as high level of state anxiety, trait anxiety, self esteem, and depression but the moderate categories was more than fifty percent belong to state anxiety and depression state.
- Two third of study subjects were suffering from low anxiety, poor self- esteem on the criteria of percentile. However, with depression it was more than fifty percent.
- The daily nutrient like caloric intake in relation with depression and self esteem as a significant factors. Beside that there were no relation found with other macronutrient except fat with trait anxiety and depression.
- Micronutrient (viz; calcium, Iron folic acid) told itself own story was that no effect on any one psychological parameter.
- A focus given by vitamin B-complex and ascorbic acid on psychological parameter found during different angle of analysis was that vitamin B<sub>1</sub>vit B<sub>12</sub>& ascorbic acid significant with depression, whereas, vitamin B<sub>2</sub> and vitamin B<sub>8</sub> signified with state anxiety and there were no relation found with self esteem and trait anxiety.

**Recommendations**

Based on the findings and conclusion of the study following recommendations were made.

- In view of widespread under-nutrition in women and alarming macro-nutrient deficiencies, it is imperative that nutrition education programmes, both. In community and at urban area be initiated through the existing urban networks, including health services.
- It would be worthwhile to study psychological parameters of women in different seasons of the year because it would be helpful to contemplate a longitudinal study rather than a cross sectional study which is difficult to pinpoint the role of psychological morbidities in causation of malnutrition.

- Community based family support system through social functionaries, peer groups should be involved, and its potential for women health examined through operation research.
- In spite of universalization of psychological morbidities considerable proportion of women are not to be identifies at community level. what to talk of quality of health, there is urgent need to promote education of women in general and adolescents in particular.

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