Prevalence of Post Stroke Depression in Male and Female Patients Visiting A Rural Hospital Out Patient Department

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Abstract: *Stroke is a clinical entity of immense importance considering both psychiatric and psychological aspects of any social being. This study is unique because it is being undertaken in patients attending neuropsychiatry outpatient department in a rural hospital unlike most of the studies that have been conducted in an urban setting. A sample size of 50 male and 50 female has been chosen to statistically correlate the concerned variables. In this study it was found depression was more associated with adult male post stroke patients belonging to the age group of 51 to 60 years compared to the females as obtained by Post Stroke Depression Rating Scales (PSDRS). It interesting to note that in the present study finding the male patients of both the age groups were found to suffer more from somatic symptoms compared to the females.*

Keywords: Post Stroke Depression, Prevalence.

Introduction:

Stroke is a clinical entity of immense importance considering both psychiatric and psychological aspects of any social being. A stroke, or cerebro vascular accident, is defined as an abrupt onset of a neurologic deficit that is attributable to a focal vascular cause (Harrison's Textbook of Internal Medicine). Depression has been defined in Psychiatry as a persistent and distinct feeling of loss of pleasure or any interest in usual activities that lasts for at least 2 weeks and is associated with at least 4 of the following symptoms like depressed mood for most of the day if not the whole day indicated either by subjectively or their observant, markedly diminished interest or pleasure in all day to day activities, significant weight loss when not dieting or atypically a weight gain, lack of sleep(insomnia) or increased sleep(hypersomnia), psychomotor retardation or agitation nearly every day(reported both by the subject and observed by others),fatigue or loss of energy over most of the day, feeling of worthlessness and excessive or inappropriate sense of guilt, diminished ability to think, concentrate and indecisiveness, recurrent thoughts of dying and not just a mere fear and also recurrent suicidal ideations.(Diagnostic Statistical Manual V) A promising avenue for the exploration of gender differential rates concerning either gender came from a study of couples selected for experience of a shared severe life event in order to compare the ways in which women would respond differently from men (Nazroo JY et al)[1]. Post Stroke Depression has been widely studied nowadays. Robinson et al described 3 types of mood disorders commonly seen in patients suffering from stroke [2,3,4,5]. The first type is severe depression with symptoms that meet the criteria for Major Depressive Disorder. The second criteria is Dysthymia (minor depression) (Robinson et al).The later is characterized by a chronic nature of illness with a late onset appearance of symptoms. The third mood disorder associated with stroke is characterized by an indifference or apathetic mental state accompanied by inappropriate cheerfulness. Literature suggests physical reorganization of brain is the primary cause of delayed onset post stroke depression.[6]In our study, we have enrolled only those subjects who have

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experienced a stroke 3 months (at least) and not more than 5 years earlier. In this study we have used Post Stroke Depression Rating Scale which has been shown to be slightly superior to the Hamilton Depression Rating Scale especially in diagnosing positive predictive value for Major Depression-like Disorder(MDL) and not very much influenced by a major cognitive dysfunction which is very much in common in a post stroke setting.[7]The study will also explore selective prevalence of different correlates associated with post stroke depression namely depressed mood, guilt feelings, suicidal ideations, vegetative disorders, apathy-indifference assessment, anxiety, catastrophic reaction, emotional components, anhydonia. The study will attempt to find out whether incidence of depression is different in either gender attending outpatient rural hospital clinic post stroke.

Methodology:

The aim of the study is to find out the prevalence of depression in post stroke male and female patients independently in a rural hospital outpatient department setting and then compare them to find out whether there is any statistically significant difference on the gender based prevalence of post stroke depression. In this study the Mini Mental State Examination [8]and Global Assessment of Functioning scale are used as a screening procedure.

The **inclusion criteria** for the present studies are as follows:*(1)*Subjects belonging to the age group of 40 to 50 years and 51 to 60 years were included in two separate groups in this study after confirmation of a clinical diagnosis of stroke.*(2)*Only subjects coming to the outpatient department of a rural hospital of either gender were considered.*(3)*Subjects having a Mini Mental State Examination Score of 23 and above were included in the study.*(4)*Subjects having a score of 70 and above in the Global Assessment of Functioning were included in the study.*(5)*Subjects living the rural area adjoining to the hospital ground were considered.(6)The primary diagnosis of stroke had to be established on grounds of cerebral imaging. The following factors were considered as an **exclusion criteria** in the present study: *(1)*Indoor admitted post stroke patients were not considered.*(2)*Subjects having a preceding psychiatric diagnosis of depression or affective disorder prior to the occurrence of stroke were excluded.*(3)*Subjects unable to respond to verbal

commands and realize the outcome of their response were excluded.*(4)*Subjects having a Mini Mental State Examination score below 23 were excluded.(5)Subjects having a score below 70 in the Global Assessment of Functioning Scale were excluded.(6)Subjects who showed normal cerebral imaging and a spontaneous resolving course conforming to a clinical diagnosis of Transient Ischaemic Attack(TIA) were excluded.(7)Subjects having co morbid psychiatric illness like psychosis, intellectual impairment were excluded.(8)Subjects having comorbid medical illness like diabetes, hypo-hyperthyroid, cushing's syndrome and hypertension were excluded .(9)Urban subjects or post stroke subjects visiting a private clinician's chamber were excluded.(10)Subjects suffering from language dysfunction were excluded.

A permission letter was collected from the concerned rural hospital authoritites for conducting the study. A separate consent form was signed by the subjects explaining fully the aims and objectives of the study complying with standard good clinical practice guideline protocols. After establishment of an adequate rapport and a brief preliminary interviewing for their basic demographic particulars like age, sex, nationality and necessary medical documents pertaining to brain imaging for the occurrence of a cerebrovascular event the subjects were screened for a major cognitive deficit by the Mini Mental State Examination Scale(MMSE).Then the subjects were screened for their respective Global Assessment of Functioning Score(GAF).These subjects were then age stratified to Group A(Aged 40-50 years) and Group B(Aged 50-60 years).Twenty five subjects were enrolled in each group of either sex and prevalence of depression and its sub specifiers were measured using the Post Stroke Depression Rating Scale(PSDRS).After collecting the data statistical treatment were chosen as per the objectives and the number of data collected and finally interpretation and conclusion were drawn.

Results:

Table I shows the Mean and Standard Deviation (SD) of the respective subscale values for the Post Stroke Depression Male patients belonging to the age group 40 to 50 years. Mean and SD for **PSDR1** were found to be 2.32 and 0.627;**PSDRS 2** values are 1.8 and 0.764 ;**PSDRS3** values are 1.4 and 0.913;**PSDRS4**

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values are 2.72 and 1.061;**PSDRS5** values are 1.92 and 0.997;**PSDRS6** values are 2.12 and 1.201;**PSDRS7** values are 1.12 and 0.726;**PSDRS8** values are 1.08 and 0.812;**PSDRS9** values are 3.68 and 0.9;**PSDRS10** values are 1.76 and 0.779 respectively. From the Table

it appears that the integrated PSDRS Score (**PSDRS11**) for this Group has a Mean of 19.92 and the Standard Deviation being 2.914.As per our study design, this group has a prevalence of Post Stroke Depression.

Table I - Post Stroke Depression MALE patients between age 40 to 50 years

	PSDRS1	PSDRS2	PSDRS3	PSDR4	PSDRS5	PSDRS6	PSDRS7	PSDRS8	PSDRS9	PSDRS10	PSDRS11
Mean	2.32	1.8	1.4	2.72	1.92	2.12	1.12	1.08	3.68	1.76	19.92
SD	0.627	0.764	0.913	1.061	0.997	1.201	0.726	0.812	0.9	0.779	2.914

Table II shows Mean and Standard Deviation (SD) of the subscale values of the male patients aged between 51 to 60 years of age. From the above table the Mean and SD for **PSDR1** are found to be to be 3.36 and 0.7;**PSDRS 2** values are 3.04 and 0.841 ;**PSDRS3** values are 2.84 and 0.688;**PSDRS4** values are 3.44and 0.768;**PSDRS5** values are 2.88 and 0.666;**PSDRS6**

values are 2.48 and 0.653;**PSDRS7** values are 1.2 and 0.577;**PSDRS8** values are 1.08 and 0.64;**PSDRS9** values are 4.36 and 0.995 ;**PSDRS10** values are 2.16 and 0.943 respectively. From the Table it is seen that the integrated PSDRS Score (**PSDRS11**) for this Group has a Mean of 26.84 and the Standard Deviation being 4.16.

Table II - **Post Stroke Depression MALE patients aged 51 to 60 years**

	PSDRS1	PSDRS2	PSDRS3	PSDR4	PSDRS5	PSDRS6	PSDRS7	PSDRS8	PSDRS9	PSDRS10	PSDRS11
Mean	3.36	3.04	2.84	3.44	2.88	2.48	1.2	1.08	4.36	2.16	26.84
SD	0.7	0.841	0.688	0.768	0.666	0.653	0.577	0.64	0.995	0.943	4.16

Table III shows the Mean and SD of the subscale values of female patients aged between 40 to 50 years of age. From the table the Mean and SD for **PSDR1** are found to be 2.16 and 0.746;**PSDRS 2** values are 1.8 and 0.707 ;**PSDRS3** values are 1.4 and 0.913;**PSDRS4** values are 2.12 and 0.526;**PSDRS5**

values are 2.24 and 1.052 ;**PSDRS6** values are 1.16 and 0.8 ;**PSDRS7** values are 1.16 and 0.8;**PSDRS8** values are 1.16 and 0.8 ;**PSDRS9** values are 3.28 and 1.061;**PSDRS10** values are 2.04 and 0.79 respectively. It is seen that the integrated PSDRS Score (**PSDRS11**) for this Group has a Mean of 19.08 and the Standard Deviation being 4.394.

Table III - Post Stroke Depression FEMALE patients between age 40 to 50 years

	PSDRS1	PSDRS2	PSDRS3	PSDR4	PSDRS5	PSDRS6	PSDRS7	PSDRS8	PSDRS9	PSDRS10	PSDRS11
Mean	2.16	1.8	1.4	2.12	2.24	2.24	1.16	1.16	3.28	2.04	19.68
SD	0.746	0.707	0.913	0.526	1.091	1.052	0.8	0.8	1.061	0.79	4.394

Table IV shows the Mean and SD of the subscale values of female patients aged between 51 to 60 years of age. From the table the Mean and Standard Deviation (SD) for **PSDR1** are found to be 2.56 and 1.261;**PSDRS 2** values are 2.28 and 0.936 ;**PSDRS3** values are 1.92 and 1.222;**PSDRS4** values are 2.56 and

1.083;**PSDRS5** values are 2.36 and 0.757;**PSDRS6** values are 2.08 and 0.64;**PSDRS7** values are 1.48 and 0.714;**PSDRS8** values are 1.28 and 0.614;**PSDRS9** values are 3.76 and 0.926 ;**PSDRS10** values are 2.16 and 0.85 respectively. It is seen that the integrated PSDRS Score (**PSDRS11**) for this Group has a Mean of 22.44 and the Standard Deviation being 5.347

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Table IV - Post Stroke Depression FEMALE patients between age 51 to 60 years

	PSDRS1	PSDRS2	PSDRS3	PSDRS4	PSDRS5	PSDRS6	PSDRS7	PSDRS8	PSDRS9	PSDRS10	PSDRS11
Mean	2.56	2.28	1.92	2.56	2.36	2.08	1.48	1.28	3.76	2.16	22.44
SD	1.261	0.936	1.222	1.083	0.757	0.64	0.714	0.614	0.926	0.85	5.347

Table V shows the comparative analysis of *t-values* and *p values* of male and female post stroke patients belonging to the age group 40 to 50 years. From Table, it is evident that the values obtained are not statistically significant while comparing the subjective experience of depressed mood with a t value of 0.82078 (**PSDRS1**) between male and female subjects belonging to 40 to 50 years age group(p>0.5). There is no statistical significance while comparing the subjective feeling of guilt with a t value of 0 (**PSDRS2**) and suicidal ideations with a t value of 0 (**PSDRS3**) in the same age subgroup. Comparative analysis of vegetative symptoms concerning sleep and appetite (**PSDRS4**) shows statistical significance (with *p*-value 0 .014652) which means as per the study, male patients belonging to the age group 40 to 50 years are found to be suffering more from vegetative symptoms than their female counterparts with a t value of 2.53245. The table does not any statistically significant difference of apathy, abulia and indifference with a t value of -1.08283 (**PSDRS5**) among the male patients compared to the females in the concerned age group

(*p*-value of 0.284294).There is no statistically significant relationship of anxiety with a t value of -0.37574 (**PSDRS6**) and catastrophic reaction with a t value of -0.18516 (**PSDRS7**) and emotional control with a t value of -0.35082 (**PSDRS 8**) and Anhydonia with a t value of 1.43715 (**PSDRS 9**) between the two discussed groups. The diurnal variation of symptoms' described in the different subscale of our tool used also failed to show any statistically significant difference with a t value of -1.26234between male and female patients of the said age group (**PSDRS 10**).The total score (**PSDRS11**) obtained between male and female patients of the said age group showed a p value of 0.82094 which is more than 0.05 and a t value of 0.22758 which is not statistically significant. This means that although individual Mean and SD obtained from the two groups by the used scale do show a prevalence of depression amongst the post stroke patients, it cannot be statistically concluded that male patients belonging to the age group of 40 to 50 years are suffering more than the female from post stroke depression and vice versa.

Table V - **Comparative statistical representation of the data obtained from male and female population belonging to the age group 40 to 50 years**

Scale/Subscale	t-value	Statistical Significance
PSDRS1	0.82078	The *p*-value is .415828. The result is *not* significant at *p* < .05
PSDRS2	0	The *p*-value is 1. The result is *not* significant at *p* < .05
PSDRS3	0	The *p*-value is 1. The result is *not* significant at *p* < .05
PSDRS4	2.53245	The *p*-value is .014652. The result is significant at *p* < .05
PSDRS5	-1.08283	The *p*-value is .284294. The result is *not* significant at *p* < .05
PSDRS6	-0.37574	The *p*-value is .70877. The result is *not* significant at *p* < .05
PSDRS7	-0.18516	The *p*-value is .853881. The result is *not* significant at *p* < .05
PSDRS8	-0.35082	The *p*-value is .727256. The result is *not* significant at *p* < .05
PSDRS9	1.43715	The *p*-value is .157162. The result is *not* significant at *p* < .05
PSDRS10	-1.26234	The *p*-value is .212926. The result is *not* significant at *p* < .05
PSDRS11	0.22758	The *p*-value is .82094. The result is *not* significant at *p* < .05

Table VI shows the comparative analysis of *t-values* and *p values* of male and female post stroke patients belonging to the age group 51 to 60 years. As evident from the table, there are significantly more males suffering from subjective feeling of depressed mood

with a t value of 2.7735 compared to the females (**PSDRS 1**) with a p value of 0.007875. This finding is contrary to the findings in the previous table (Table IX) which had shown no statistical significance. This implies that while gender does not play a statistically

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significant role while considering subjective feeling of depressed mood in the age group 40 to 50 year group, it does have a significant role whenever the person crosses 50 years and enters the age group 51 to 60 years age group. The Table also shows statistically significant increased subjective feeling of guilt (**PSDRS2**) among post stroke depressive male patients with a t value of 3.01993 in the 51 to 60 year age group (p value 0.004043).The table shows a significantly higher subjective feeling of suicidal ideations (**PSDRS3**) among male patients compared to the females with a t value of 3.28014 in this age group with a statistically significant p- value of 0. 001936. This significance was not found in the previous age group table. The comparative values of subjective vegetative symptoms associated with loss of sleep, appetite (**PSDRS4**) showed a significantly higher value in the male population with the p value of 0.001758 and a t value of 3.31349 .This finding is similar to the finding obtained from the previous table data. The comparative analysis of apathy, abulia and indifference (**PSDRS5**) in this age group showed a statistically significant occurrence and a t value of 2.5786 in favour of the males with a p value of 0.013042.The result was different while analyzing data from the other group which shows that in this study Post Stroke Depressive Males were found to suffer more from apathy, abulia and indifference compared to

the female subjects. The occurrence of psychosomatic anxiety (**PSDRS 6**) was found to be more and statistically significant with a t value of 2.18652 in the case of males while studying this age group with a p value of 0.033684.This means with an increase in age, the occurrence of psychosomatic anxiety is more in the males compared to the females in the study population. Like the previous table, there was no statistically significant difference in values while comparing catastrophic reaction with a t value of -1.5245 (**PSDRS 7**) diurnal variation of symptoms with a t value of 0(**PSDRS 10**) and emotional control with a t value of -1.12747 (**PSDRS 8**) within the specified study group. However analysis showed a significantly higher level of anhydonia among male patients compared to females with a p value of 0.032082 and a t value of 2.20763 (**PSDRS9**) .This means that the male subjects are found statistically to be more prone to suffer from anhydonia compared to females as the age advances to 51 to 60 year age group. As evident from the table, the sum total of the PSDRS subscales (**PSDRS 11**) imply that the males suffer significantly more with a t value of 3.24737compared to females from Post Stroke Depression in our study population in the age group of 51 to 60 years. This means, as the age advances to this age group, the gender difference concerning the disease entity becomes statistically significant (p value of 0. 002128).

Table VI - **Comparative statistical representation of the data obtained from male and female population belonging to the age group 51 to 60 years**

Scale/Subscale	t-value	Statistical Significance
PSDRS1	2.7735	The *p*-value is .007875. The result is significant at *p* < .05.
PSDRS2	3.01993	The *p*-value is .004043. The result is significant at *p* < .05
PSDRS3	3.28014	The *p*-value is .001936. The result is significant at *p* < .05
PSDRS4	3.31349	The *p*-value is .001758. The result is significant at *p* < .05
PSDRS5	2.5786	The *p*-value is .013042. The result is significant at *p* < .05
PSDRS6	2.18652	The *p*-value is .033684. The result is significant at *p* < .05
PSDRS7	-1.5245	The *p*-value is .133945. The result is *not* significant at *p* < .05
PSDRS8	-1.12747	The *p*-value is .265149. The result is *not* significant at *p* < .05
PSDRS9	2.20763	The *p*-value is .032082. The result is significant at *p* < .05
PSDRS10	O	The *p*-value is 1. The result is *not* significant at *p* < .05
PSDRS11	3.24737	The *p*-value is .002128. The result is significant at *p* < .05

Discussion:

In this study post stroke depression was studied among 25 male and 25 female subjects each in the age group of 40-50 years and 51-60 years attending out patient department of a rural hospital. Our hypothesis prior to

beginning of this study was that no difference would be found in prevalence of depression between male and female post stroke patients as per age stratification .The primary objective of this study has been to find out prevalence of post stroke depression among subjects of either gender. As evident from the Mean

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and SD, both the groups have depression which is significant. Taking 18 as the cut off point for the Post Stroke Depression Rating Scale(PSDRS) in conformity with the research undertaken by Davide Quaranta et al (2008)[9,10] all the groups show clinically significant depression in this study. The decision to take 18 as a cutoff point rests on the fact that according to the study undertaken to establish the validity of PSDRS, conducted on 62 women and 81 men, there was an established specificity of 92.78% and a sensitivity of 76.09%.

The present study does show a significant difference based on gender on the occurrence of depression amongst the post stroke patients in the age group of 51 to 60 years. This is in accordance to 27 studies reviewed by Niloufar Hadidi (2009)[11] and her colleagues which showed a positive relationship of post stroke depression with gender. However the age group of 40 to 50 years in the present study failed to show any statistically significant results. Similar results were found by Berg et al (2003)[12] while they were conducting a comparative analysis between gender and Post Stroke Depression (PSD) among 100 patients coming to an 18 month Post Stroke follow up. Their study showed no correlation between the two genders and occurrence of PSD. In that study Berg et al had used Beck Depression Inventory (BDI) and Hamilton Depression Rating Scale (HDRS).The difference could be due to the fact that in their study the study population mostly consisted of urban subjects coming from a relatively high socio economic status and the tools used were also different.

The comparative analysis of the total PSDRS score in our study shows that depression is more common in male patients compared to females in the age group of 51 to 60 years. According to Wade D et al(1986)[13],women live longer and in general are affected by stroke at a later age. This may be one of the reason why we had such a distribution of post stroke contrary to the popular ideas as the population studied by us were not very old and were equal to or less than 60 years. Wade and Langton Hewer have also suggested that the effects of stroke were more severe at a later age >70 years compared to males. A study undertaken by Paradiso et al (1998)[14, 15] showed an increased prevalence of depression among post stroke female patients compared to males. However in contrary to our study, their study consisted of much

elderly population more than 65 years of age coming from an urban background.

In order to find out whether there is any statistically significant difference in the subjective experience of depressed mood in the study population of either gender in each age group our study shows no significant difference of subjective experience of depressed mood between males and females in the age group 40 to 50 years. However the Subjective experience of depressed mood seems to increase in males of the age group 51 to 60 years. According to a study undertaken by Gallo and his colleagues (1999)[16], post stroke depressive patients at an early age in many cases tend to underestimate subjective feeling of depressive symptoms denying that some of the experiences are due to a state of depression. This study supports the first part of our findings where age group 40 to 50 years did not show any statistically significant depression between the two genders. Blazer et al (2003) [17] also emphasized a similar finding but his observations favored women had greater subjective experience of depressed mood more as compared to men in contrary to our study. This may be because of the fact that stigma related to depressive and psychiatric illnesses are more prevalent in Indian rural women compared to the western community. Women in Indian village has to perform many social roles and have very little time left to think of their own physical and mental health problems. Also both the above referred studies were conducted in educated population while this study has been conducted on a rural platform with poor socioeconomic background. This perhaps explains the ambivalent results obtained while considering subjective feeling of depression in the present study.

Another objective in this study has been to compare the subjective feeling of guilt among either gender. As evident from the study, there is no significant difference while comparing subjective guilt feeling between male and female subjects in the first age group of 40 to 50 years. However guilt becomes statistically significant in favour of the males in the 51 to 60 year age group. This result is in conformity to the study undertaken by Angeleri et al(2004) [18].In their study 124 post stroke patients were enrolled and a follow up was done at the interval of 2 months,6 months and 12 months. The results showed that men were more prone to a guilt feeling compared to

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females. This is more prominent at 51 to 60 year age group considering the fact that the family mostly depends socially and financially on the elderly male head of the family. A significant impairment of his social commitment may result in arousing a sense of guilt.

According to a study conducted by Guinotti et al (1999)[19] patients with endogenous depression (i.e. not associated with any brain injury) were more prone to suicide compared to post stroke depressive patients. This is in contrary to the popular belief and evidence that links ordinary unipolar depression with increased suicidal ideations. In our study, the first age group of 40 to 50 years does not show any statistically significant difference of suicidal ideations on either sex. This is supported by the above mentioned research work. However in the 51 to 60 years age group, there is a statistically significant increased occurrence of suicidal thoughts among the males. This finding is again supported by an extensive study conducted by T W Teasdale et al (2001)[20] that showed an overall increased occurrence of suicidal ideations among male post stroke patients compared to their female counterparts. In a socio political article written by Jonathan Kennedy et al (2014)[21] the rural male patients belonging to the age group of 50 years and beyond are found to suffer from suicides due various socio political reasons in Indian village. This crisis has been described as an "agrarian crisis" in post globalization India. Our study was conducted in a population that mostly consisted of rural villagers. The findings of Kennedy et al. support our findings of increased suicidal ideations among 51 to 60 years male rural post stroke patients in our study.

Post Stroke Depression (PSD) commonly presents with vegetative disorders like a significant alteration of sleep, appetite, weight loss and others. . In the present study, there is statistically significant increased occurrence of vegetative disorders amongst the male population compared to the females. In a study conducted by Appelros NS (2006)[22] and Carlsson et al (2003) [23] suggests that the occurrence of vegetative disorders is more in the male post stroke population compared to the females which are in concordance with our study findings. However study conducted on post stroke patients by Naess et al(2005) [24]showed that there were no statistically significant correlation in the occurrence of vegetative disorders in either sex which

is not supported by our study finding. Two independent studies by Glader et al (2002)[25] however showed an increased prevalence of vegetative disorder and fatigability among female post stroke patients compared to males. Moreover one of the many explanations to this finding may be due to the fact that the rural population with comparatively low sociodemographic status is more liable to express their feelings through somatic forms. Further, as the families examined in this study are mostly patriarchal, the concern for vegetative symptoms has also been significantly higher in the male population. A study undertaken by Sandeep Grover et al(2010) [26] on Indian population showed an increase in somatic symptoms among the depressed patients in India. This supports our test finding. Hoch E(1961)[27] clearly mentions that Indian males and female post stroke depressive patients suffer from an increased somatic symptoms. In a study undertaken by Srivastava et al (2010) [28] ,Indian rural post stroke depressive male patients were found to suffer more from somatic symptoms compared to females. In this study the probable reason highlighted were comorbid medical illnesses like diabetes and hypertension. In our study although these possibilities were excluded in the exclusion criteria, subclinical medical comorbities may have led to a finding that supports the above referred study.

In our study, in 51 to 60 year age group, the male subjects were found to suffer statistically significant apathy compared to the female post stroke patients. Apathy, abulia, indifference in post stroke patients of either gender have been interviewed by Chen et al (1999) [29] in their research work. According to the study outcome there was a marginal increase of occurrence of these symptoms in the male post stroke patients compared to the females. According to this research, symptoms like apathy, abulia, and emotional lability are at times poorly reported by post stroke depressive female patients. The condition becomes more difficult to formulate a differential diagnosis of post depressive apathy whenever a care giver of the female patient is interviewed for this purpose. This is also supported by our own findings where depression is seen to be less reported by females of the age group 51 to 60 years while interviewing the rural population The observation made by Chen et al (1999) highlights the phenomenon.

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There has been no statistically significant difference in catastrophic reaction and emotional control in either gender suffering from PSD. According to the studies conducted by Gallo and Rabin (1999) [30] catastrophic reaction and emotional control may not have a significant role while describing post stroke depression symptomatology. Their findings support the present findings that 40 to 60 year old patients of either gender do not show characteristic catastrophic reaction in most of the cases.

Anxiety and Anhydonia are integral components of PSD. In the present study there were no statistically significant difference in anxiety and anhydonia among the 40 to 50 years age group male and female post stroke patients. However in the age group of 51 to 60 years, both anhydonia and anxiety were found to be statistically significant. Males were found to have more anxiety and anhydonia as compared to females. According to a study undertaken by Morris et al(1991) [31] male population aged 55 years and above were found to have more anxiety and anhydonia proportionate to the extent of their physical disability ensued after stroke. In an article studying gender difference in post stroke population, Sergei Paradiso and Robert G.Robinson (1996) emphasizes the existence of these two factors in PSD.A study conducted by Angeleri et al (1993) also showed similar results in favour of male post stroke depressive subjects. These research findings go in favour of our present findings.

Limitations:

The present study had the following limitations. Firstly, study sample size was not large which may have led to further scope of elaborate research in the process. Secondly, only patients attending outpatient department of a rural hospital were considered that warrants inclusion of urban and semi urban population as well. The interviewing pattern in the scale used was binary leading to possibility of subjective bias in certain areas. Indoor patients were not included in this study which could have led to scope of further exploration into this subject. The sample is not a representative sample of the community. So generalizations of findings are not possible. Age groups beyond 60 years could have been considered to expand further the scope of this research work. A community setting approach instead of a hospital

setting could have been considered in the study. Also the time since the occurrence of stroke and laterality of brain lesion could have been included in the study. Finally more sophisticated statistical measures including a fully analyzed correlation study warrants further scope into this matter.

Conclusion:

It interesting to note that in the present study finding the male patients of both the age groups were found to suffer more from somatic symptoms compared to the females. The subjective experience of depressed mood, Guilt feeling, suicidal ideations, anxiety, apathy, abulia and anhydonia was more common among male 51 to 60 year post stroke depressive patients compared to females belonging to the same age group. There was no difference observed between either groups in catastrophic reaction, diurnal variation of symptoms, emotional control .The entire study was based on rural population visiting outpatient department of a rural hospital after suffering from a cerebrovascular accident.Post Stroke Depression is an important clinical entity that ensures further exploration and early intervention to prevent morbidity and mortality associated with it. Considering the fact that stroke or cerebrovascular accident itself causes significant cognitive impairment leading to progressive deterioration of social functioning of an individual, the present study is found to have the following important implications. The study ensures early screening for depressive symptoms in an individual and necessitates the need for medication or early psychotherapeutic intervention that may have important clinical outcome.The study clearly indicates that Depression is significantly more severe in the male patients belonging to age group 51 to 60 years when considering the rural outpatient population which warrants the need for careful monitoring of the specified age group. Need for regular follow up of post stroke patients should also be considered and implicated in this study. Simultaneous assessment of other affective co morbidities occurring beyond the depressive domain may help us to establish psychosocial factors in concordance to other factors of organic brain syndrome. The Post Stroke Depression Scale can be successfully used as a tool to measure depression in an urban or rural cohort and can be used as a screening test. Finally the need for empathy, proper nursing and care by the primary care givers and

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family members may be highlighted while dealing with patients suffering from post-stroke depression.

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