(International Print/Online Journal)

SJIF IMPACT FACTOR: 4.617
GADIF IMPACT FACTOR: 1.49

ISSN (Print): 2209-2870
ISSN (Online): 2209-2862

International Journal of Medical Science and Current Research (IJMSCR)
Available online at: www.ijmscr.com
Volume1, Issue 4, Page No: 59-72
November-December 2018

A comparative study of perceived stress in patients with Generalized Anxiety Disorder and Depression

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Type of Publication: Original Research Paper
Conflicts of Interest: Nil

ABSTRACT

Background: There is yet limited research and dearth of study on perceived stress and Generalised Anxiety Disorders (GAD) & Depression in India till date. Very few studies have investigated the relationship between GAD, Depression and perceived stress.

Aims and Objectives: This study aimed to assess and compare the perceived stress in patients with Generalized Anxiety Disorder (GAD), Depression & Control group.

Study Design: This was a prospective, comparative hospital based cross sectional study.

Setting: The study was conducted only on the indoor patients admitted in the Department of Psychiatry, Assam Medical College and Hospital, Dibrugarh.

Materials and Methods: 50 GAD and 50 Depression patients diagnosed as per ICD-10 in the age group 18-65 years admitted in the Department of Psychiatry, AMCH were included for the study. A control group of 50 individuals was selected from age & sex matched people from normal healthy population. The Perceived Stress in patients with Generalized Anxiety Disorder (GAD), Depression & Control group was assessed by Perceived Stress Scale (PSS).

Statistics: Statistical analyses were done using Analysis of Variance (ANOVA), Chi square test and Fischer's exact test (where the cell count was <5). P value <0.05 was taken as significant.

Results: Mean Perceived Stress Scale (PSS) score of GAD and Depression patients were higher than Control group and it was also noted that mean Perceived Stress Scale (PSS) score of Depression patients were significantly elevated than GAD patients.

Conclusions: Our study findings are consistent with the role of perceived stress in GAD and Depression. So, future study in this aspect with a larger sample and follow up is needed to explore the existence of a possible link between GAD, Depression and perceived stress.

Keywords: Perceived Stress, Depression, Generalized Anxiety Disorder.

INTRODUCTION

Generalized Anxiety Disorder (GAD) is characterised by excessive anxiety and worries regarding some events or activities. The duration, intensity, or frequency of the worries and anxieties are out of proportion to the actual impact of the anticipated event.[1] Symptoms must be persistent and continuing, duration of at least six months, is required for diagnosis of GAD to be established.[1][2] In a year, approximately 6.8 million adult American population and 2% European adults suffer from GAD.[3] Lifetime prevalence rates range from 0.8% to 6.6% in the general population and 3.8% to 11.9% in primary care settings (Maier *et al.*, 2000)[4]. In fact, GAD is considered to be the most frequently occurring of all anxiety disorders in primary care (Wittchen & Hoyer, 2001; Wittchen *et al.*, 2002)[5][6]. 1-year prevalence rates of GAD in the general population range from 1.0% to 4.4%, and rates found in the primary care population are approximately 8%. The vast majority (17%–40%) of patients with GAD also have at least one other psychiatric diagnosis (Kessler *et al.*, 1999)[7].

Lifetime rates of co-morbidities in GAD patients can reach as high as 90% (Wittchen *et al.*, 1994)[8]. Major

depressive disorder (MDD) is the most common co-morbidity associated with GAD, ranging in lifetime prevalence from 38.6% to 80% (e.g., Kessler *et al.*, 1994; 1999; Kessler *et al.*, 2002)[6][7][8]. In Indian context, Ganguli (2000) [9] analyzed 15 epidemiological studies on psychiatric morbidity in which prevalence rate of anxiety neurosis was found to be 16.5 per thousand. In a metaanalysis of 13 Indian epidemiological studies on psychiatric morbidity (Reddy and Chandrashekhara, 1998)[10] with overall sample size of 33, 572 subjects, the prevalence rate of GAD was found to be 5.8%. Madhav (2001), [11] after analysing 10 India based studies on psychiatric illness, found that prevalence rate of anxiety neurosis was 18.5 per thousand population. In a study conducted in Dibrugarh, Assam Chaudhury *et al.*, 2006 found that over a period of 12 months, disability due to anxiety was significant. [12]

Depression is a major public health problem, due to its prevalence and the dysfunction, suffering, , morbidity and economical burden. According to the report on Global Burden of Disease, the point prevalence of unipolar depression is 1.9% for males and 3.2% for females, and 1 year prevalence is found to be 5.8% for men and 9.5% for women. If the current trend of demographic and epidemiological transition continues, It is estimated that by the year 2020, the burden of depressive disorder will increase to 5.7% of the total burden of disease and it will be the second leading cause of Disability Adjusted Life Years (DALYs), next after Ischemic Heart Disease (IHD).[13] Many Indian studies estimated the prevalence of depressive disorder in community samples which varied from 1.7 to 74 per 1000 population.[10, 14] Reddy and Chandrasekhar (1998) have done a metanalysis, which included 13 psychiatric epidemiological studies on 33572 subjects from the community and found the prevalence of depression to be 7.9 to 8.9 per 1000 population and the prevalence rate was approximately twice in the urban areas compared to rural population. [10] A population based South Indian study on more than 24, 000 subjects in Chennai using Patient Health Questionnaire (PHQ)12 found the prevalence of depression to be 15.1% after age adjustment using 2001 census data.[15] Nandi *et al.,2000*.[14] compared the prevalence of depression in the same catchment area in an interval of 20 years (in 1972 and 1992) and found that the prevalence of depression increased from 49.93 per 1000 population to 73.97 per 1000 population. Studies on primary care centres have reported a prevalence rate of 2140.45%.[16–19] Studies in hospital settings have shown that 5 to 26.7% of patients attending the psychiatric OPD have depression.[20–23] In the study mentioned earlier that was conducted in Assam, Chaudhury *et al.*, 2006 found that like anxiety, disability due to depression was also significant and was a major public health burden in upper Assam. [12]

Stress is our response to events that disrupt or threaten to disrupt our physical or psychological functioning (Lazarus & Folkman, 1984[24]). The definition of stress refers to "the state manifested by a specific syndrome which consists of all the nonspecifically induced changes within the biological system" (Selye, 1956[25]). Three major forms of stressors are common in our environment today and are investigated throughout the literature: life events, chronic strains, and daily hassles (Thoits, 1995[26]). Psychological stress is known to activate the sympathetic nervous system and Hypothalamic Pituitary Adrenal (HPA) axis, resulting in the release of catecholamines and glucocorticoids (Miller & O'Callaghan, 2002[27]; Rozanski & Kubzansky, 2005[28]). Chronic stress may cause alteration in the Hypothalamic–Pituitary–Adrenal (HPA) axis and the immune system, which can eventually cause depression and anxiety.[29] Hypothalamic–Pituitary–Adrenal (HPA) axis and Autonomic Nervous System (ANS) activity is found to be associated with depressive symptomatology (Raison *et al.*, 2006[30]; Dantzer *et al.*, 2008[31]); these two systems are also involved in anxiety disorders (Toker *et al.*, 2005[32]; Pitsavos *et al.*, 2006[33]; O'Donovan *et al.*, 2010[34]).

Generalised Anxiety Disorders (GAD) and Depression are the two mental illnesses which together comprise a major burden of public health importance. Very few studies in India have investigated the relationship between Generalised Anxiety Disorders (GAD), Depression and inflammatory biomarkers, in particular C-reactive protein (CRP).[35] But there is yet limited research and dearth of study on perceived stress and Generalised Anxiety Disorders (GAD), Depression in India till date, the present study is a sincere effort to compare the perceived stress in Generalized Anxiety Disorder (GAD) and Depression.

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Materials and Methods

Aims and objectives- The study was undertaken to assess and compare the perceived stress in patients with Generalized Anxiety Disorder (GAD) and Depression.

Place of Study:

The study was done in the Department of Psychiatry, Assam Medical College & Hospital. Assam Medical College & Hospital is a tertiary care institute situated in Dibrugarh and receives patient from entire Assam as well as neighboring North-eastern states.

Duration of Study:

The study duration was one year starting from June 2015 to May 2016.

Study Design :

The study was a hospital based cross sectional study.

Ethical Issues:

The study proposal was submitted to the Institutional review board for review and appraisal. Study was undertaken after the approval. A written consent was obtained from every participant and they were free to withdraw the consent at any point of time.

Selection of Sample:

The study group was selected from only the indoor patients admitted in the Department of Psychiatry, Assam Medical College and Hospital, Dibrugarh. Consecutive cases were taken for study.

Group A: 50 newly diagnosed patients of Generalized Anxiety Disorder (GAD) admitted in the Department of Psychiatry, AMCH, fulfilling the inclusion and exclusion criteria.

Group B: 50 newly diagnosed patients of Depression admitted in the Department of Psychiatry, AMCH, fulfilling the inclusion and exclusion criteria.

Group C: 50 age & sex matched people from normal healthy population, fulfilling the inclusion and exclusion criteria.

Selection Criteria:

Inclusion Criteria:

Study Group:

- ☑ Patients of age group between 18 to 65 years.
- ☑ Patients of both the sexes.
- ☑ Newly diagnosed cases of Generalized Anxiety Disorder (GAD) & Depression admitted in the Department of Psychiatry, AMCH, diagnosed as per ICD-10 and confirmed by a Consultant Psychiatrist, Department of Psychiatry.
- ☑ Patients giving informed consent for the study.

Control Group:

- ☑ Control of age & sex matched people from normal healthy population.
- ☑ Persons giving informed consent for the study.

Exclusion Criteria:

- ☑ Patients of age less than 18 years or more than 65 years.
- ☑ Patients not giving informed consent for the study.

Tools Used:

(1) Informed Consent form

(2) Semi-structured Proforma for socio-demographic data developed and used in the Department of Psychiatry, Assam Medical College & Hospital, Dibrugarh, Assam

(3) Kuppuswamy's Socioeconomic Status Scale (2014)

(4) International Classification of Diseases, Revision-10 (ICD-10) diagnostic guidelines

(5) Perceived Stress Scale (PSS) by Sheldon Cohen *et al.*,1983

Statistical Analysis of Data:

The statistical analysis of data was done using the Statistical Package for Social Sciences (SPSS for Windows, version 21.0. Chicago, SPSS Inc.) and Microsoft Excel (Redmond, Washington: Microsoft, 2003. Computer Software). Results on continuous measurements are presented as mean ± standard deviation are compared using Analysis of Variance (ANOVA). Where the p value was found significant ($p<0.05$) among 3 groups, post hoc Bonferroni test was done to find out the significance between 2

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individual groups. Discrete data are expressed as number (%) and are analysed using Chi square test and Fischer's exact test (where the cell counts were <5).

Procedure:

All patients in the age group 18-65 years admitted in the Department of Psychiatry, AMCH and diagnosed as Generalized Anxiety Disorder (GAD) & Depression as per ICD-10, confirmed by a consultant psychiatrist were included for the study as Group A & Group B respectively. A control group (Group C) was selected from age & sex matched people from normal healthy population. An informed consent was taken from each participant. A socio-demographic data of each patient was recorded in the demographic sheet. The Perceived Stress in patients with Generalized Anxiety Disorder (GAD), Depression & Control group was assessed by Perceived Stress Scale (PSS)**.** Analysis of the observed data was done and specific statistical tools were used as and when necessary.

Results and Observation

Socio-demographic variables

Age Characteristics Of The Sample:

Age distribution of both study and the control groups had been tabulated in Table–1 and graphically represented in Fig-1. It was found that majority of the patients (42%) of GAD belonged to 30-39 years age group whereas depression was most common among 20-29 years age group (34%). Most of the controls were from 30-39 years (30%) and 20-29 years (30%) age group. Mean age of the GAD cases was 37.96 ± 10.70 years and depression cases was 36.82 ± 12.49 years. Mean age of the control group was 37.00 ± 12.08 years.

TABLE–1

DISTRIBUTION OF CASE AND CONTROL ON THE BASIS OF AGE

AGE GROUP (in years)	GROUP–A (GAD)		GROUP–B (Depression)		TOTAL CASES		GROUP–C (Control)		*t value*	*p value*
	n	%	n	%	n	%	n	%		
<20	1	2.00	2	4.00	3	3.00	1	2.00	0.192	0.424
20—29	9	18.00	17	34.00	26	26.00	15	30.00		
30—39	21	42.00	9	18.00	30	30.00	15	30.00		
40—49	10	20.00	11	22.00	21	21.00	10	20.00		
50—59	6	12.00	9	18.00	15	15.00	7	14.00		
≥ 60	3	6.00	2	4.00	5	5.00	2	4.00		
TOTAL	50	100.00	50	100.00	100	100.00	50	100.00		

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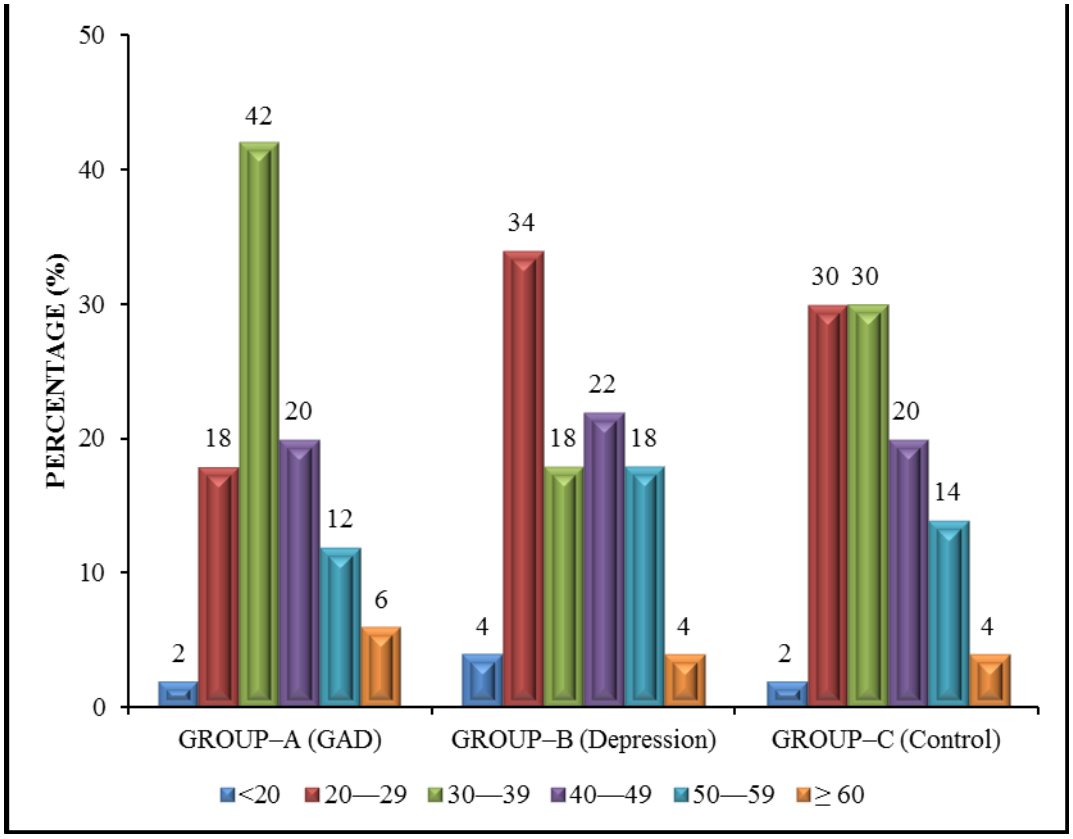

SEX CHARACTERISTICS OF THE SAMPLE:

Sex distribution of both the study and control groups had been tabulated in Table–2 and graphically represented in Fig-2. It was found that majority of the GAD (54%) cases were female whereas depression was more common in males (60%). 54% of the control group were males and 46% were females.

TABLE–2

DISTRIBUTION OF CASE AND CONTROL ON THE BASIS OF SEX

SEX	GROUP–A (GAD)		GROUP–B (Depression)		TOTAL CASES		GROUP–C (Control)		Chi-square (χ^2)	*p value*
	n	%	n	%	n	%	n	%		
Male	23	46.00	30	60.00	53	53.00	27	54.00	0.013	0.908
Female	27	54.00	20	40.00	47	47.00	23	46.00		
TOTAL	50	100.00	50	100.00	100	100.00	50	100.00		

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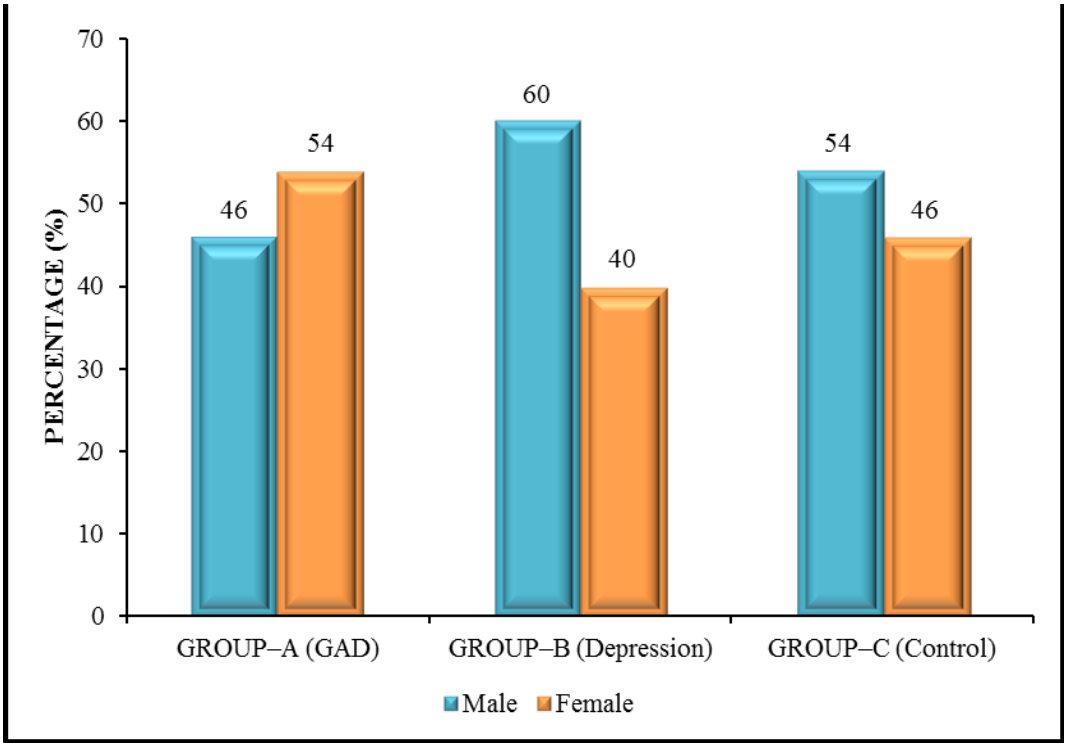

FIG-2

SOCIO-DEMOGRAPHIC PARAMETERS OF CASE AND CONTROL GROUPS:

The socio-demographic parameters of the case and the control group had been tabulated in the Table–3 and graphically represented in Fig-3.1-3.5. Most of the participants were Hindu by religion (86% of GAD patients and 88% of depression patients and 92% of control group). Among the GAD patients, 8% were Christian and 6% were Islam by religion. 10% of the depression patients were Islam by religion and only 2% belonged to some other religion. In the control group, 6% were Islam by religion and 2% belonged to Christian religion. The distribution of religious status of the participants for both the study and control groups showed statistically insignificant difference (Chi-square (χ^2) = 8.0325 and *p value* >0.05).

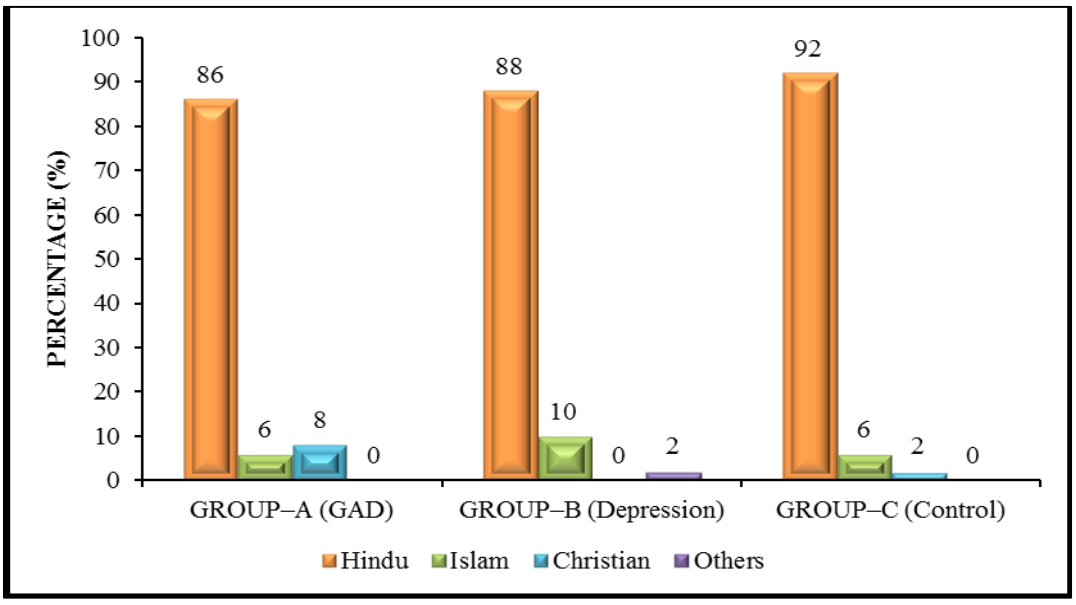

FIG-3.1

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Majority of the cases and control were married. 78% of GAD cases, 66% of depression cases and 58% of control group were married. In contrast only 22% of GAD cases, 30% of depression cases and 38% of control group were unmarried. 4% each of depression and control group were widow. The statistical analysis depicted an insignificant difference (*Chi-square (χ^2) = 5.6383 and p value >0.05*) between marital status in the study and control group.

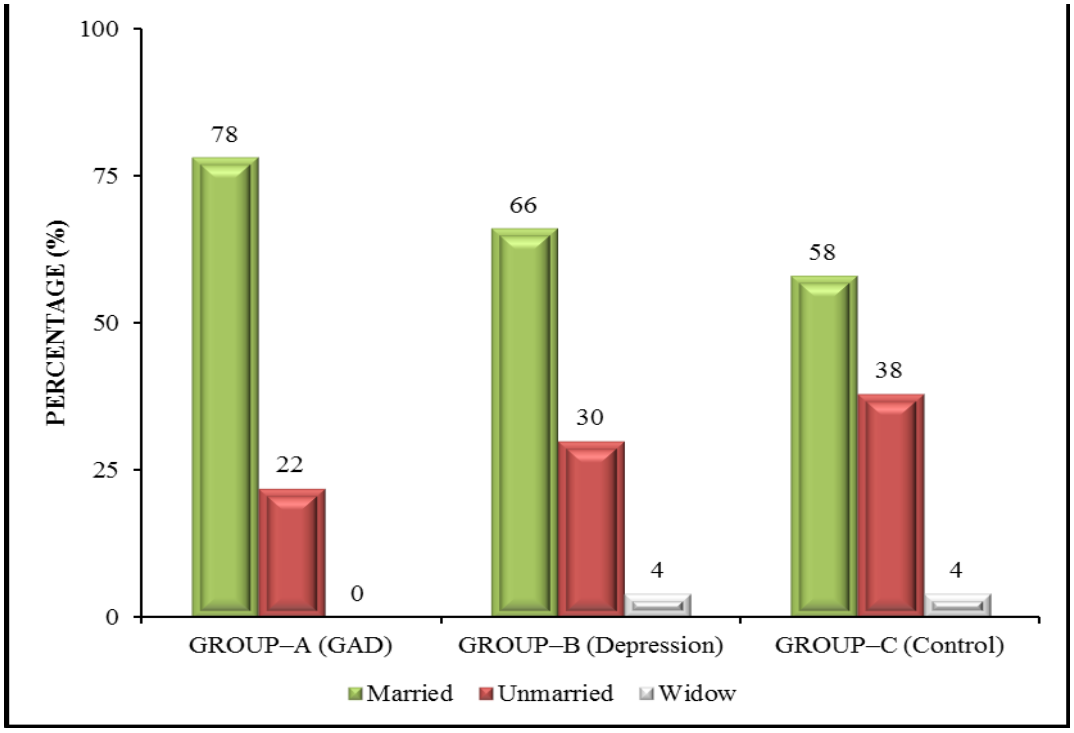

FIG-3.2

Majority of the GAD (86%), depression (84%) and control (76%) groups were from nuclear family. Only 14% of GAD cases, 16% of depression cases and 24% of control group belonged to joint family. Statistically no significant difference was found between the two groups according to their type of family (*Chi-square (χ^2) = 1.897 and p value >0.05*).

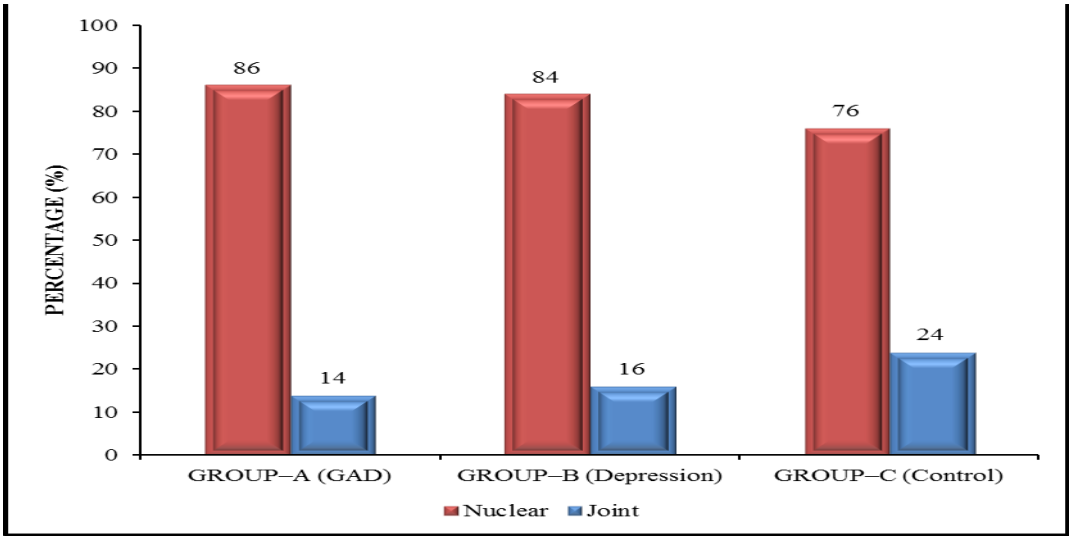

FIG-3.3

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In both GAD and Depression patients, 64% were from rural background whereas 36% belonged to urban locality. But in control group, the people from rural and urban background were equal in number (50% each). The distribution of domicile of participants was statistically insignificant (*Chi-square (χ^2) = 2.7077 and p value >0.05*) among all the groups.

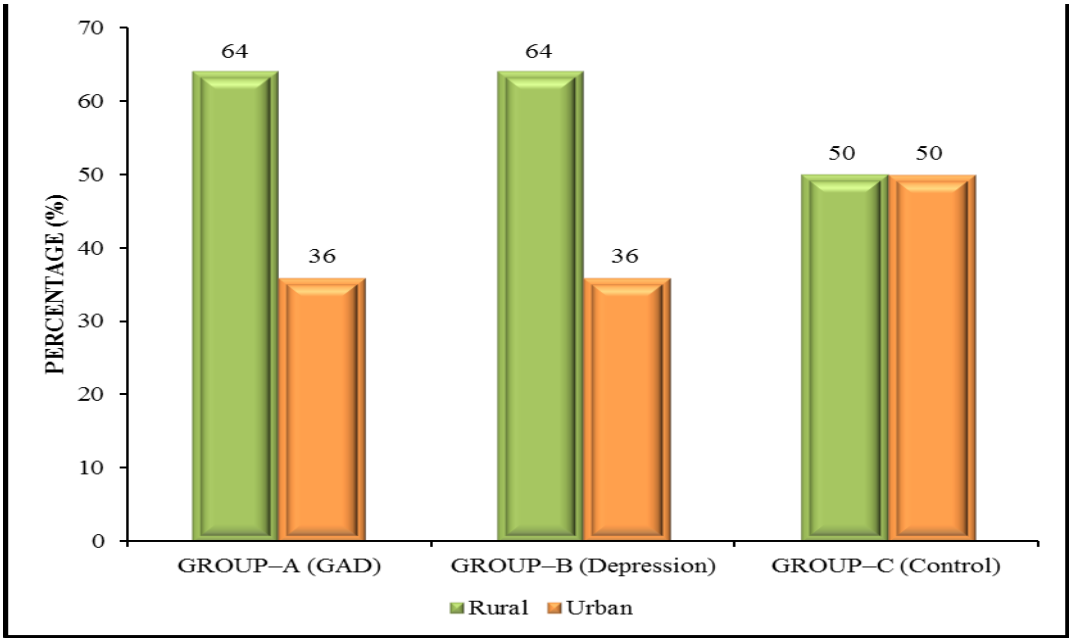

FIG-3.4

Most of the GAD patients (44%) were from Upper Lower (IV) socioeconomic status and 26% each belonged to Upper Middle (II) and Lower Middle (III) socioeconomic status whereas only 4% were from Upper (I) socioeconomic status. Among depression cases, 34% each were from Lower Middle (III) and Upper Lower (IV) socioeconomic status. 20% belonged to Upper Middle (II), 10% belonged to Upper (I) and only 2% were from Lower (V) socioeconomic status. In control group majority (34%) were from Upper Lower (IV) socioeconomic status, 32% belonged to Lower Middle (III) and 26% were from Upper Middle (II) socioeconomic status whereas only 8% belonged to Upper (I) none were from Lower (V) socioeconomic status. The difference of socioeconomic status among GAD, depression and control groups were statistically insignificant (*Chi-square (χ^2) = 5.2308 and p value >0.05*).

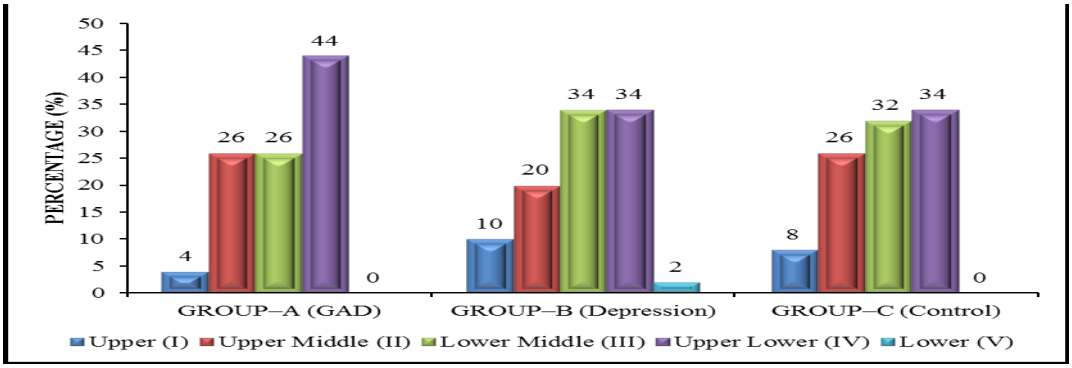

FIG-3.5

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TABLE–3

SOCIO-DEMOGRAPHIC VARIABLES BETWEEN CASE AND CONTROL

VARIABLES	GROUP–A (GAD)		GROUP–B (Depression)		GROUP–C (Control)		Chi-square (χ^2)	*p value*
	n	%	n	%	n	%		
Religion:								
◆ Hindu	43	86.00	44	88.00	46	92.00		
◆ Islam	3	6.00	5	10.00	3	6.00		
◆ Christian	4	8.00	0	0.00	1	2.00		
◆ Others	0	0.00	1	2.00	0	0.00	8.0325	0.236
Total	50	100.00	50	100.00	50	100.00		
Marital Status:								
◆ Married	39	78.00	33	66.00	29	58.00		
◆ Unmarried	11	22.00	15	30.00	19	38.00		
◆ Widow	0	0.00	2	4.00	2	4.00	5.6383	0.228
Total	50	100.00	50	100.00	50	100.00		
Family Type:								
◆ Nuclear	43	86.00	42	84.00	38	76.00		
◆ Joint	7	14.00	8	16.00	12	24.00	1.897	0.387
Total	50	100.00	50	100.00	50	100.00		
Locality:								
◆ Rural	32	64.00	32	64.00	25	50.00		
◆ Urban	18	36.00	18	36.00	25	50.00	2.7077	0.258
Total	50	100.00	50	100.00	50	100.00		
Socioeconomic Status:								
◆ Upper (I)	2	4.00	5	10.00	4	8.00		
◆ Upper Middle (II)	13	26.00	10	20.00	13	26.00		
◆ Lower Middle (III)	13	26.00	17	34.00	16	32.00		
◆ Upper Lower (IV)	22	44.00	17	34.00	17	34.00		
◆ Lower (V)	0	0.00	1	2.00	0	0.00	5.2308	0.733
Total	50	100.00	50	100.00	50	100.00		

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Comparison of Perceived Stress (As Per Pss Score) In Patients of Gad, Depression and Control:

Perceived stress was compared among patients with GAD, depression and control groups as per Perceived Stress Scale (PSS) score in Table–4. Mean PSS score was found to be highest in Depression (28.66 ± 7.82) followed by GAD (25.46 ± 6.11) and Control group (21.22 ± 5.77). By performing ANOVA test, the higher perceived stress in both GAD and Depression cases compared to control group was statistically found to be significant (p value <0.001). By applying post-hoc Bonferroni test, these differences in perceived stress among the 3 individual groups were also found to be statistically significant (p value <0.05).

TABLE–4

COMPARISON OF PERCEIVED STRESS (AS PER PSS SCORE)

IN PATIENTS OF GAD, DEPRESSION AND CONTROL

PSS SCORE	GROUP–A (GAD)	GROUP–B (Depression)	GROUP–C (Control)
Mean ± S.D.	25.46 ± 6.11	28.66 ± 7.82	21.22 ± 5.77
Range	13–37	14–44	13–34
p value	<0.001		
GAD Vs. Depression	0.0247100345		
GAD Vs. Control	0.0005540820		
Depression Vs. Control	0.0000004355		

DISCUSSION

It was found that majority of the patients (42%) of GAD belonged to 30-39 years age group but Tanja *et al.*, 2007[36] found that the average first manifestation of GAD was between 25 and 30 years which was slightly lower than that of our finding. In our study, depression was most common among 20-29 years age group (34%). As per DSM-5 the most common age of depression is 18-29 years age group which is similar to our finding[37]. Mean age of the GAD cases was 37.96 ± 10.70 years and Depression cases was 36.82 ± 12.49 years. These findings support the observation of Chaudhury *et al.*, 2006[12] where they found that the mean age of the GAD patients was 35.5±10.54 years and the mean age of Depression patients was 39.87±11.03 years.

It was found that majority of the GAD (54%) cases were female. This finding was consistent with that of Wittchen *et al.*, 2002[6], Reddy and Chandrashekhara (1998)[10].As per DSM-5 females are more prone to GAD than males which is in agreement with our study finding. In our study, depression was more common in males (60%) which was contradictory to the various previous findings where depression was found to be more common in females.[14,15,21, 38,39]

Most of the participants were Hindu by religion (86% of GAD patients and 88% of depression). In contrary to our finding Nandi *et al.*, 1979[14] found more prevalence of depression among Muslims. Our finding might reflect the predominance of Hindu population in our study area 78% of GAD cases and 66% of depression cases in our study were married. In contrast only 22% of GAD cases and 30% of depression cases and 38% of control group were unmarried. 4% of depression patients were widow. So, marriage did not seem to be a protective factor against the development of psychiatric morbidities like GAD and Depression.

Majority of the GAD (86%) and Depression (84%) patients were from nuclear family. Sethi *et al.*, 1980[40] observed similar finding in case of depression. Lower rate of psychiatric morbidity like GAD and depression in joint family might be explained in terms of better social support and good interpersonal relationship among family members in joint family.

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Regarding domicile, in both GAD and Depression patients, 64% were from rural background whereas 36% belonged to urban locality. Overall, it was seen that the majority of the study population in both the groups had come from rural background. This might be because of the location of the hospital which mainly caters to the rural population in the vicinity.

Most of the GAD patients (44%) were from Upper Lower (IV) socioeconomic status and 26% each belonged to Upper Middle (II) and Lower Middle (III) socioeconomic status. Higher prevalence of GAD in lower socio-economic status was also observed by Tanja *et al.*, 2007[36]. Among depression cases, 34% each were from Lower Middle (III) and Upper Lower (IV) socioeconomic status. Our findings replicated the findings of many previous studies where depression was found to be more common in subjects from poor socioeconomic background [15, 21, 41] Thus, majority of the cases in our study belonged to the lower socio-economic groups. This could be because the place of study is a government hospital where the facilities are almost free and as such mostly poor people come here.

In our study mean perceived stress scale score of GAD (25.46 ± 6.11) was significantly (p value <0.001) higher than control group (21.22 ± 5.77). This finding is consistent with the finding of Pidgeon *et al.*, 2014[42] where perceived stress was found to be a significant predictor of anxiety. Our finding also strengthens the observations of Connor *et al.*, 2007[43] and Ghorbani *et al.*, 2008.[44]

We have also found that mean Perceived Stress Scale (PSS) score of Depression (28.66 ± 7.82) patients were significantly (p value <0.001) higher than control group (21.22 ± 5.77). This finding is in agreement with the finding of Pidgeon *et al.*, 2013[42], Liu *et al.*, 2016[45] and Katherine Skipworth (2011)[46]. We have also compared the perceived stress between GAD and Depression cases and found that mean perceived stress scale score of Depression (28.66 ± 7.82) patients were significantly (p value <0.001) higher than GAD (25.46 ± 6.11). This finding replicated the finding of Bergdahl, J. and Bergdahl, M. (2002)[47] where they reported that Low and moderate stress were associated with the State and Trait Anxiety Inventory (STAI) and high stress with the Beck Depression Inventory (BDI).

Limitations

(1) The study involved one-time cross sectional assessment and lacked follow up.

(2) The sample size of the study was relatively small and this study is a hospital based study. So, the findings cannot be generalized to a larger community population.

(3) Cases were restricted to only those patients who were admitted in Department Of Psychiatry, AMCH in the specified period of time.

Conclusion

Perceived stress was found to be highest in Depression followed by GAD and control group. Our study findings are consistent with the role of perceived stress in GAD and Depression. The association between GAD, Depression and perceived stress raises the possibility of a tantalizing line of future theories and treatment options. As we have found that perceived stress was significantly higher in patients with GAD and Depression compared to healthy controls, various stress management techniques may become the next tool to prevent GAD and Depression.

Acknowledgement

We sincerely acknowledge the support of all the faculty members, post graduate colleagues and other staff members of the Department of Psychiatry, AMCH and cooperation of all the participants of the study.

Conflict of Interest

Nil

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