DOI: 10.7860/JCDR/2016/18123.7652

Original Article

Psychiatry Section

Study of Life Events and Personality Dimensions in Generalized Anxiety Disorder

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ABSTRACT

Introduction: Life events, recognized as stressors, due to their unanticipated nature, can cause psychiatric illness. Also there is some line of continuity between neurotic illness and antecedent personality traits.

Aim: To study generalized anxiety disorder in relation to Life events and personality dimensions.

Materials and Methods: Certain hypotheses were tested in two groups, namely 30 Generalized Anxiety Disorder patients (GAD) and 30 matched controls, by utilizing assessment tools. These include: GAD patients experience more undesirable Life events than normal; GAD patients with high level of anxiety experience more undesirable Life events; Neuroticism is related to the severity of anxiety; Extroverts experience more anxiety; Level of anxiety in females is higher; GAD patients with higher education level experience more anxiety, while those with lower education level somatize more. The group differences were examined using Chi-Square test, Student t-test and ANOVA. Pearson's Correlation Co-efficient was used to find the correlation between anxiety and the undesirable Life events. The level of statistical significance was set at $p<0.05$.

Results: GAD patients experienced significantly more undesirable Life events than the matched controls. Patients with high level of anxiety experienced more undesirable Life events, with the coefficient of correlation being quite high. A significant association between Neuroticism scale and GAD was observed.

Conclusion: The study suggests a possible causative link between the undesirable Life events and GAD; and a significant association between Neuroticism dimension and the anxiety disorder. Role of environmental stressors and personality traits in treatment outcome among GAD patients awaits further, prospective studies.

Keywords: Correlation, Neuroses, Retrospective, Stress, Trait

INTRODUCTION

Generalized Anxiety Disorder (GAD), a psychiatric diagnosis as per the International Statistical Classification of Diseases and Related Health Problems (ICD)-10th Revision; is characterized by a pattern of frequent persistent worry for at least 6 months, and feelings of apprehension about day-to-day events; compounded by physiological arousal symptoms, that collectively impairs social and occupational functioning [1].

The life time prevalence rate varies from 4-7% that makes it a relatively common disorder [2]. What does seem certain is that GAD is not caused by a sole factor; the aetiology may be attributed to heritability, environmental stressors and the generalized biological vulnerability. Recently, polymorphic variation at serotonin 1-A receptor gene has been found to be associated with the clinical presentation of GAD comorbid with major depression [3,4]. The chronic nature of the disorder increases the subsequent risk for psychiatric co-morbidity, self-medication with alcohol, somatic complications and suicide [2,5].

Life events may be regarded as a neuro-hormonal activation trailing an action [6], the activation being dependent on the abrupt and unanticipated nature of the event. These occurring either singly or in succession have been acknowledged as stressors causing psychiatric and physical illnesses. As proposed by Eysenck, the two main dimensions describing human personality are Neuroticism and Extraversion-introversion [7]. Studies have reported higher Neuroticism scores in patients with anxiety neuroses; thus defining some line of continuity between neurotic illness and antecedent personality traits [8-11].

Extensive literature exists determining the impact of Life events on the depression, as opposed to GAD [12-14]. The reasons for the relative neglect are ascribed to the lack of presence of a single pathognomic symptom and ubiquitous nature of the anxiety experienced in GAD, that often obscures its boundaries. Also, the anxiety response to a stressful Life event is considered to be transient in nature immediately following the occurrence of the event; thus posing difficulty in establishing the causal relationship between the two [15]. Furthermore, studies on anxiety disorder highlighting their distribution among the various socio-demographic variables including the personality traits are few [8,16].

With this aforementioned points in mind, an attempt was made to study GAD in its modern classification in relation to the Life events and personality dimensions.

Based on the existing literature [10] and our clinical experience, following hypotheses were framed: i) GAD patients experience more Life events than normal; ii) GAD patients experience more undesirable Life events than normal; iii) GAD patients with high level of anxiety experience more undesirable Life events; iv) Neuroticism dimension (N) is related to the severity of anxiety; v) Extroverts experience more anxiety symptoms than introverts; vi) Level of anxiety in females is higher than that in males; vii) GAD patients with higher education level experience more anxiety than those with lower education level; viii) GAD patients with lower education level somatize more than those with higher education level.

MATERIALS AND METHODS

The present retrospective study conducted during the period 1998-2001, enrolled first visit of 30 GAD patients (experimental group) of either sex, ranging in age from 15 to 46years. The respondents were thoroughly screened and diagnosed for GAD using ICD-10 criterion [1] by one of the authors; at the Out-patient Department of Psychiatric centre, Govt. Rajaji Hospital, Madurai, Tamilnadu. These were compared with 30 normal individuals, matched with experimental group with regard to age, sex, education level, domicile and marital status, and marked as control group.

Inclusion criteria include respondents without any psychiatric illness in the past and at the time of interview and absence of any major physical illness. Exclusion criteria include respondents with the family history of psychiatric illness, and H/O substance use.

Written informed consent was obtained from each respondent prior to an interview that included recording the socio-demographic characteristics and the scores obtained after rating the questionnaire; compiled on a structured proforma.

Assessment Tools: a) Hamilton Anxiety Rating Scale (HAM-A) assessed the severity of anxiety symptoms of the respondents with GAD. HAM-A consists of 14 items, each defined by a series of symptoms; rated 0 to 4 on an unanchored severity scale, with a total score range of 0-56 [17]. A cut off score of 14 or above has been suggested as threshold for clinically significant anxiety. The scale yields HAM-A psychic, HAM-A somatic and HAM-A total scores.

b) Presumptive Stressful Life Events Scale (PSLES) elicited the Life events experienced by the respondents of both the groups. The scale consists of list of 51 items that have been assigned weights -0-100 and ranked according to the perceived stress of each event [18]. Each event listed in the scale was enquired for unless it was not clearly applicable. The time period covered for the Life events was 12 months preceding the onset of illness for the GAD patients and preceding the date of interview for the control group. The Life events reported were categorized into desirable, ambiguous and undesirable; and the scores were obtained.

c) Eysenck Personality Inventory (EPI) measured the personality dimensions of the respondents of both the groups. The EPI is a 57 item 'yes-no' self rated questionnaire assessing Neuroticism and Extraversion (24 items each); that also includes 9 items Lie scale [7]. For the present study, Tamil version of the Inventory contributed by the Institute of Mental Health, Madras (India) was utilized. A Score of >7 on the Neuroticism was considered significant. Respondents scoring ≥12 on Extraversion scale were taken as extroverts, while those scoring ≤7 were taken as introverts. Further, a score of >5 on Lie scale was considered unreliable.

STATASTICAL ANALYSIS

To test the hypotheses, the data collected was analysed using SPSS software trial version 16 and Sigma Stat (version 3.5) for windows. Quantitative variables were expressed by Mean±S.D and qualitative variables by percentages. The group differences were examined using Chi-square test, Student t-test and ANOVA. Pearson's Correlation Co-efficient was used to find the correlation between anxiety and undesirable Life events. The level of statistical significance was set at $p<0.05$.

RESULTS

To study GAD through Life events and personality dimensions; certain hypotheses were tested in two groups through an open-ended interview, utilizing conventional and time tested assessment tools. [Table/Fig-1] indicates distribution of the respondents in each group according to the socio-demographic characteristics. The group differences examined using chi-square analyses showed no significant differences with regard to the age (p=0.814), sex (p=0.823), education level (p=0.948), domicile (p=0.941), and marital status (p=0.881).

[Table/Fig-2] shows Neuroticism dimension (N) on EPI in both the groups. In the experimental group, 70% respondents scored on 'N' in comparison to 23.3% respondents in the control group. On chi-square analyses, statistically significant difference (p=0.048) was observed between the two groups with regard to their neurotic status.

[Table/Fig-3] indicates Extraversion dimension on EPI in both the groups. Majority of the respondents i.e. 76.7% in the experimental group and 73.3% in the control group were scored as introverts on EPI; whereas 23.3% and 26.7% respondents were scored as extroverts in the experimental and control group respectively. Analysing the group difference using chi-square test, no significant difference (p=0.933) was observed.

[Table/Fig-4] depicts the mean number of Life events experienced by the respondents. With regard to the undesirable Life events, the respondents in the experimental group reported a mean of 3.13 events over a period of 12 months prior to the inception of their illness; while an equal number of controls had a mean of 1.33 events during the corresponding period. Analysing the group difference utilizing Student t-test; it was observed that GAD patients had experienced significantly higher (t=9.15, p<0.001) number of undesirable Life events than the controls during the specified period of time. Although, controls reported higher mean Life events total score (4.43) as compared to the GAD patients (4.16); but no significant difference (t=1.00, p=0.321) was observed.

[Table/Fig-5] illustrates association of mean HAM-A total score and mean Life events total score with socio-demographic variables (domicile, sex, and marital status), Neuroticism dimension

S. No.	Variables	Experimental Group (n=30)		Control Group (n=30)		Significance
		n	%	n	%	
1.	Age (y)					
	< 20	3	10	3	10	p>0.05
	21-25	5	16.7	5	16.7	
	26-30	13	43.3	13	43.3	
	31-35	7	23.3	7	23.3	
	36 and above	2	6.7	2	6.7	
2.	Sex					
	Male	15	50	15	50	p>0.05
	Female	15	50	15	50	
3.	Education Level					
	Below 5th Std	6	20	4	13.3	p>0.05
	6-8 Std	11	36.7	10	33.3	
	9-10 Std	1	3.3	4	13.3	
	11-12 Std	9	30	6	20	
	Degree	3	10	6	20	
4.	Domicile					
	Urban	15	50	14	46.7	p>0.05
	Rural	15	50	16	53.3	
5.	Marital Status					
	Married	23	76.7	20	66.7	p>0.05
	Unmarried	7	23.3	10	33.3	

[Table/Fig-1]: Socio-demographic characteristics of the respondents.
Chi-Square test, Non Significant (p>0.05)

S. No.	Neuroticism dimension (N) on EPI†	Experimental Group (n=30)		Control Group (n=30)		Significance
		n	%	n	%	
1	Neurotics	21	70	7	23.3	p<0.05*
2	Non-Neurotics	9	30	23	76.7	

[Table/Fig-2]: Neuroticism dimension (N) on EPI in both the groups.
†EPI: Eysenck Personality Inventory
Chi Square test; *Significant (p<0.05)

S. No.	Extraversion dimension on EPI†	Experimental Group (n=30)		Control Group (n=30)		Significance
		n	%	n	%	
1	Introverts	23	76.7	22	73.3	p>0.05
2	Extroverts	7	23.3	8	26.7	

[Table/Fig-3]: Extraversion dimension on EPI in both the groups.
†EPI: Eysenck Personality Inventory
Chi Square test; Non Significant (p>0.05)

and Extraversion dimension among the experimental group respondents. The observation was tested using Student t-test. A statistically significant difference was observed on comparing the mean HAM-A total score between the respondents from urban and rural background (t=4.45, p<0.001), and neurotics and non-neurotics (t=3.90, p<0.001). However, comparison between males and females (t=1.29, p=0.207), married and unmarried respondents (t=1.17, p=0.252), and introverts and extroverts (t=0.35, p=0.728) did not reveal any significant differences.

Introverts reported higher mean Life events total score as compared to extroverts; the difference being statistically significant (t=2.29, p=0.030). But the respondents from urban and rural background (t=0.51, p=0.611), males and females (t=0.51, p=0.611), neurotics and non-neurotics (t=1.78, p=0.086), and married and unmarried respondents (t=0.33, p=0.748) do not differ in relation to the mean Life events total score with p value >0.05.

[Table/Fig-6] depicts the association of mean HAM-A total score and mean Life events total score with other socio-demographic variables among the respondents of the experimental group. The observation tested using ANOVA (Analysis of Variance) revealed no statistically significant differences on comparing the mean HAM-A total score between the respondents of different age group (F=1.03, p=0.410) and those with different education level (F=1.64, p=0.197). With regard to the mean Life events total score, comparing the respondents of different age group (F=1.49, p=0.236) and those with different education level (F=1.47, p=0.242), no significant differences were found.

[Table/Fig-7] compares mean HAM-A psychic, HAM-A somatic and HAM-A total scores of the GAD patients with lower education level to that with higher education level. The observation was tested using ANOVA. Although, GAD patients with lower education level experienced more anxiety in comparison to those with higher education level; no statistically significant differences were observed with p-value >0.05.

Furthermore, the correlation between HAM-A total score with Undesirable Life events within the GAD group was analysed using Pearson Correlation test. A positive correlation was found (r=0.62, p=0.0002) which is statistically significant up to 0.05 level [Table/Fig-8].

S. No.	Life Events	Experimental Group (n=30)	Control Group (n=30)	t-value	Significance
		Mean ± S.D†	Mean ± S.D†		
1	Life events Desirable	0.46 ± 0.50	1.63 ± 0.55	8.62	p<0.001**
2	Life events Undesirable	3.13 ± 0.47	1.33 ± 0.97	9.15	p<0.001**
3	Life events Ambiguous	0.56 ± 0.56	1.46 ± 0.57	6.17	p<0.001**
4	Life events Total	4.16 ± 1.05	4.43 ± 1.04	1.00	p>0.05

[Table/Fig-4]: Life Events experienced by the respondents of both the groups.
†S.D: Standard Deviation
Student t-test; **Highly Significant (p<0.001), Non Significant (p>0.05)

S. No.	Variables		Mean ± S.D†	t-value	Significance
¶HAM-A Total Score					
1.	Domicile	Urban (n=15)	21.80 ± 2.00	4.45	p<0.001**
		Rural (n=15)	16.60 ± 4.06		
2.	Sex	Male (n=15)	17.93 ± 3.86	1.29	p>0.05
		Female (n=15)	19.93 ± 4.59		
3.	Marital Status	Married (n=23)	19.43 ± 4.30	1.17	p>0.05
		Unmarried (n=7)	17.28 ± 4.11		
4.	Neuroticism dimension	Neurotics (n=21)	20.57 ± 3.50	3.90	p<0.001**
		Non-Neurotics (n=9)	15.11 ± 3.55		
5.	Extraversion dimension	Introverts (n=23)	19.08 ± 4.42	0.35	p>0.05
		Extroverts (n=7)	18.42 ± 4.11		
Life Events Total Score					
1.	Domicile	Urban (n=15)	4.06 ± 1.16	0.51	p>0.05
		Rural (n=15)	4.26 ± 0.96		
2.	Sex	Male (n=15)	4.06 ± 0.88	0.51	p>0.05
		Female (n=15)	4.26 ± 1.22		
3.	Marital Status	Married (n=23)	4.13 ± 1.10	0.33	p>0.05
		Unmarried (n=7)	4.28 ± 0.95		
4.	Neuroticism dimension	Neurotics (n=21)	4.38 ± 1.02	1.78	p>0.05
		Non-Neurotics (n=9)	3.66 ± 1.00		
5.	Extraversion dimension	Introverts (n=23)	4.39 ± 1.03	2.29	p<0.05*
		Extroverts (n=7)	3.42 ± 0.78		

[Table/Fig-5]: Association of HAM-A and Life events total score with socio-demographic variables, Neuroticism dimension and Extraversion dimension in GAD patients.
¶ HAM-A: Hamilton Anxiety Rating Scale; †S.D: Standard Deviation
Student t-test; **Highly Significant (p<0.001), *Significant (p<0.05)

DISCUSSION

In the present study, the finding that the total number of Life events experienced was nearly identical among the GAD patients and the controls refutes the first hypotheses. Congruent to this finding, the authors studying life changes in depressed patients and matched controls reported that, though numerically both the

S. No.	Variables		Mean ± S.D†	F Ratio	Significance
¶ HAM-A Total Score					
1.	Age (yrs)	< 20 (n=3)	18.00 ± 3.46	1.03	p>0.05
		21-25 (n=5)	19.80 ± 2.77		
		26-30 (n=13)	20.15 ± 4.31		
		31-35 (n=7)	16.28 ± 5.28		
		36 and above (n=2)	19.50 ± 3.53		
2.	Education Level	Below 5th Std (n=6)	17.83 ± 5.45	1.64	p>0.05
		6-8 Std (n=11)	21.00 ± 3.92		
		9-10 Std (n=1)	18.00 ± 0.00		
		11-12 Std (n=9)	18.66 ± 3.87		
		Degree (n=3)	14.66 ± 0.57		
Life Events Total Score					
1.	Age (yrs)	< 20 (n=3)	4.33 ± 1.52	1.49	p>0.05
		21-25 (n=5)	4.40 ± 0.89		
		26-30 (n=13)	3.76 ± 0.92		
		31-35 (n=7)	4.28 ± 1.11		
		36 and above (n=2)	5.50 ± 0.70		
2.	Education Level	Below 5th Std (n=6)	4.66 ± 0.81	1.47	p>0.05
		6-8 Std (n=11)	3.63 ± 1.02		
		9-10 Std (n=1)	5.00 ± 0.00		
		11-12 Std (n=9)	4.44 ± 0.88		
		Degree (n=3)	4.00 ± 1.73		

[Table/Fig-6]: Association of HAM-A and Life events total score with socio-demographic variables (age and education level) in GAD patients.
¶ HAM-A: Hamilton Anxiety Rating Scale; †S.D: Standard Deviation
ANOVA (Analysis of Variance) Test; Non Significant (p>0.05)

S. No.	¶HAM-A Score	<5th Std (n=6)	Degree (n=3)	F Ratio	Significance
		Mean ± S.D†	Mean ± S.D†		
1	HAM-A Psychic	9.16 ± 2.99	8.00 ± 0.00	0.42	p>0.05
2	HAM-A Somatic	8.66 ± 2.80	6.66 ± 0.57	1.40	p>0.05
3	HAM-A Total	17.83 ± 5.45	14.66 ± 0.57	0.94	p>0.05

[Table/Fig-7]: Comparison of mean HAM-A psychic, HAM-A somatic and HAM-A total scores of the GAD patients with lower education level to that with higher education level.
¶ HAM-A: Hamilton Anxiety Rating Scale; †S.D: Standard Deviation
ANOVA (Analysis of Variance) test; Non Significant (p>0.05)

HAM-A Total Score	Life Events Undesirable Score	HAM-A Total Score	Life Events Undesirable Score
16	2	20	4
8	1	16	3
30	4	20	3
20	3	16	4
18	3	18	3
20	3	22	4
30	4	14	1
16	3	16	3
24	4	18	3
22	4	20	4
16	3	22	4
18	4	18	2
16	1	20	4
15	4	18	2
20	4	21	3

[Table/Fig-8]: Pearson product moment correlation between ham-a total score and undesirable life events among the gad patients.
¶ HAM-A: Hamilton Anxiety Rating Scale
Pearson's Correlation Co-efficient test
Coefficient of correlation, r=0.62; Significance: High

groups were similar in experiencing Life events; the depressed patients suffered more distressing events as indicated in the mean distress scores [12].

Contrary to these findings, in a study investigating Life events and the onset of neurotic illness in general practice, the index group was found to have experienced significantly more Life events when compared to the control group [19]. Therefore, it is worth stating that there may be dramatic variability among the individuals with regard to the perception of a particular event. Some individuals may suffer from severe psychological distress on experiencing what seems to be a relatively low level stress; while other individuals with their ability to make use of adaptive mechanisms may not suffer from such distress in a similar situation.

The finding that GAD patients experienced significantly more undesirable Life events than the controls supports the second hypotheses. This sheds light on the possible role of such events in the causation of anxiety disorder. In agreement to this, others have found neurotic patients to be prone to experience more stressful Life events as compared to the normal individuals [11,20]. The reason may be attributed to the presence of psychiatric illness itself that predisposes the patients to experience more stressful Life events; or perhaps the distressing quality of the Life events may be accountable for neurotic impairment.

In the present study, family conflict emerged out as the most frequently occurring undesirable Life event experienced by the respondents with GAD; followed by marital conflict, trouble with neighbors and sexual problems. While, Life events like retirement, trouble at work, change in sleeping habits, suspension from the job, death of the pet, and marital separation were not at all reported. Such a finding is consistent with a study investigating the relationship between stressful Life events and neurosis, albeit not completely analogous [20].

Within the experimental group, the respondents with higher anxiety score experienced more number of undesirable Life events; with the coefficient of correlation being quite high. Such an observation supports the third hypotheses. The finding is in agreement to a study that reported significantly higher depression and anxiety scores having positive correlation to the number and impact of stressful Life events in neurotic patients [20]. In another study, the association between Life events and the onset of new cases of generalized anxiety syndrome was found to vary across demographic subgroups and type of Life event measure. Males reporting ≥4 Life events had a risk of generalized anxiety syndrome 8.5 times that reporting 0-3 Life events. Both males and females reporting ≥1 unexpected, negative, very important Life events had a threefold increase in the risk of developing generalized anxiety [15].

In the present study, a higher proportion of respondents in the experimental group scored on EPI 'N' as compared to the control group; the result being statistically significant proves the fourth hypotheses. Such a finding is in agreement with a study that reported higher percentage of neurotics than controls scoring on EPI Neuroticism dimension [11]. Further, a study that aimed to link personality traits and GAD in Nepalese context, observed a significant association between the neuroticism scale of EPQ (Eysenck Personality Questionnaire) and GAD [8].

Neuroticism dimension includes traits like instability in terms of emotions, low self-esteem, depression, over-reactiveness etc., [21]. Therefore, the respondents scoring on this dimension are more vulnerable to develop psychiatric disorders including GAD. It is often contested that neurotic manifestations are ascribed to the underlying neurotic personality. Considering the statement in context to the present study, all the respondents in the experimental group should have scored on EPI 'N' dimension. But such a finding was not observed. Based on the results of the present study, it may be concluded that the patients with anxiety disorder need not possess a definite Neuroticism dimension and even an individual in the absence of any psychiatric illness can score on this dimension.

Extraversion being a stable and highly temperamental dimension; the respondents scoring on this dimension tend to be outgoing, energetic, enthusiastic, assertive, and have preference for social interactions. In contrast, introverts are distinct in being introspective, reserved and take matters of day-to-day life seriously. Accordingly, one expects a significant difference in the anxiety levels between extroverts and introverts. In the present study, on comparing the mean HAM-A total score with Extraversion dimension on EPI among the respondents of the experimental group; introverts exhibited more anxiety symptoms than extroverts refuting the fifth hypotheses.

In the present study, females were observed to experience more anxiety symptoms as compared to the males, as depicted by their mean HAM-A total score; supporting the sixth hypotheses. Although the difference was statistically non-significant, such an observation is in confirmatory with that reported in the literature [2].

Within the experimental group, the respondents with lower education level experienced more anxiety and somatic symptoms in comparison to those with higher education level as indicated by the mean values of HAM-A total and HAM-A somatic scores. Such a finding refutes the seventh hypotheses, but supports the framed eighth hypotheses.

LIMITATION

Some of the limitations of the present study need to be mentioned here. The study was limited to the patients reporting to Govt. Hospital; thus mainly individuals of lower socio-economic status were studied. The study of Life events in the present investigation is a retrospective one. This retrospection is subject to errors of omission, distortion and falsification. Also, it is often hard to define a clear cut onset of a neurotic episode or a well defined exacerbation. Furthermore, the control group (normal) included in the study was given importance only in few aspects. If the individuals with dissociative (conversion) disorder have been selected as the control; the findings would have been more informative in highlighting the differences between the two groups in many aspects.

CONCLUSION

In summary, the present investigation suggests a possible causal link between undesirable Life events and generalized anxiety disorder. But, understanding the implication of personality factors in GAD awaits further, prospective study. With the coefficient of correlation between the depth of anxiety and undesirable life events being quite high, a further probe is called for; since it is relatively untreaded field.

ACKNOWLEDGEMENT

Sincere gratitude is extended to (Late) Dr. D.R Govarthanan, Formerly Professor & Head, Department of Psychiatry, Govt. Rajaji Hospital, Madurai Medical College, Madurai, Tamil Nadu, for his painstaking guidance and support to conduct this study.

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FINANCIAL OR OTHER COMPETING INTERESTS: None.

Date of Submission: **Dec 01, 2015**
Date of Peer Review: **Jan 29, 2016**
Date of Acceptance: **Feb 24, 2016**
Date of Publishing: **Apr 01, 2016**