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Quality of life and comorbid anxiety disorder in persons with schizophrenia, schizo-affective and bipolar affective disorder under remission

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ABSTRACT
BACKGROUND: *Quality of life is considered in clinical psychiatry as an intermediate and distal outcome in the management of major mental disorders. Anxiety disorder is the commonest mental disorder which can be identified easily and can be treated easily. Treating co-morbid Anxiety disorders has multiple benefits of improving quality of life, reducing distress to the patient and family, and performance of the patient.*
AIM: *To assess the quality of life and comorbid anxiety disorder in persons with schizophrenia, schizoaffective and bipolar affective disorder under remission.*
METHODS: *Patients attending for review at Institute of Mental Health (IMH), Hyderabad, diagnosed with schizophrenia, schizoaffective disorder and bipolar affective disorder according to ICD-10 in the past and currently on treatment were all considered. Tools administered included - Mini international neuropsychiatric interview (MINI) to ascertain any other axis I diagnosis; Hamilton anxiety rating scale (HAM–A) to know the severity of anxiety symptoms and WHO QOL – BREF for assessing the quality of life*
RESULTS : *The mean physical health, psychological, social, and environmental domain of WHOQOL-BREF scale scores in schizophrenia, bipolar group and schizoaffective groups were found to be significant. HAM-A mean scores of schizophrenia group, bipolar group and schizoaffective group were 7.23, 7.83 & 5.23 respectively.*
CONCLUSION *In the present study sample, Schizophrenia group scored the highest on WHOQOL-BREF scale while bipolar scored the least. However there was no significant difference among three groups when compared. The most commonly reported anxiety symptoms on HAM-A scale was anxious mood and cardiovascular symptoms. There was no significant difference of anxiety levels among the three groups. In future, studies must be carried out on patients under remission over a period of time, preferably from a sample in the community.*
KEY WORDS: *Quality of life, comorbid anxiety disorder, schizophrenia, schizoaffective disorder, bipolar affective disorder.*

I. INTRODUCTION:

Quality of life is defined by the World Health Organization (WHO) as “Individuals' perceptions of their position in life in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards, and concerns.” [1] The concept of Quality Of Life (QOL) was introduced in psychiatry to draw the attention that not only cure and survival of patients is sufficient but wellbeing in all other aspects of life is important. Nowadays quality of life is broadly demanded by patients, families, clinicians and institutions and it is considered in clinical psychiatry as an intermediate and distal outcome. [2]

Quality of life in schizophrenia, schizoaffective disorder and bipolar affective disorders under remission:
People who are chronically ill like persons suffering from schizophrenia have profound influence on their existence and subjective well-being. This was proved in a study done by Ram Kumar Solanki et al (2003), [3] on the impact of schizophrenia on quality of life. It was found that quality of life (QOL) was poor in schizophrenia despite significant improvement with pharmacological treatment. Malm and colleagues [4] used the Quality of Life Checklist (QOLC; a 93-item semi-structured checklist) to describe the quality of life in 40 schizophrenic outpatients, 2 years after their last hospitalization. They found unsatisfactory ratings in almost all patients in the domains of knowledge, education, relationships, finances and leisure. It was concluded that the chronic mentally ill patients have an overall lower subjective life satisfaction than the general population and they were particularly dissatisfied in the interpersonal and financial domains of their lives. Many have poor resources and lifetime disability. Some patients have considerable family strain and may be disconnected from their parents and siblings. Due to the chronicity of illness and incomplete symptom resolution, significant number of patients do not reach adult milestones such as getting married, having children and being gainfully employed. These patients also have to deal with the stigma associated with the mental illness.

Bipolar patients also have poorer quality of life at a physical level. This could be due to 1) higher consumption of addictive substances such as alcohol and tobacco 2) the long-term secondary effects of pharmacological treatment and 3) more sedentary way of life.
In a study by Michalak E et al, [2] bipolar disorder had profoundly negative effect upon their quality of life, particularly in the areas of education, vocation, financial functioning and social and intimate relationships. In a study done by Maina G et al [5] (2007), the authors compared health-related quality of life (HRQoL) measures in euthymic patients with bipolar I and II disorder. 105 patients were enrolled in this study, of which 44 were Bipolar disorder I (BD I) and 61were with Bipolar disorder II (BDII). HRQoL was found to be low in both the groups of patients, more so in Bipolar II patients under remission. In a study done by Hema Tharoor et al [6] on disability and quality of life in patients of bipolar disorder and recurrent depressive disorder who were under remission, showed that significant disability and poor quality of life was associated with patients of bipolar disorder. According to World Health Organization (WHO) estimates, bipolar disorder (BD) was the 6th leading cause of disability worldwide among young adults at the turn of the century. If BD develops in a woman at the age of 25, she may lose 9 years in life expectancy (because of cardiovascular and other medical problems), 14 years of productivity and 12 years of good health. The lifetime suicide rates of patients with BD (treated or not) may be as high as 15%.
Sofia Brissosa et al [7] studied quality of life in remitted patients of bipolar type I disorder and schizophrenia by using WHOQOL-BREF instrument. In patients with schizophrenia, quality of life (QOL) was more strongly related to levels of psychopathology, whereas in bipolar disorder patients, both psychopathology and neurocognitive deficits were strongly associated with lower QOL. Bipolar disorder (BD) and schizophrenia patients demonstrated significantly lower scores on the physical, psychological, and social domains of the WHOQOL-BREF scale compared with controls, but there were no significant differences between the two patient groups on those domains.
In the last decade there have been significant developments in the quality of life research. It is now widely accepted that some consideration of the patient’s quality of life must be an integral part of optimal medical care.

Co-morbid anxiety disorders in schizophrenia, schizoaffective disorder and bipolar disorders under remission:
In a study done by Ciapparelli A et al [8] one or more comorbid anxiety diagnoses were made in 46.9% previously hospitalized patients of schizophrenia, schizoaffective disorder and bipolar disorder who were currently under remission. Schizophrenic patients had higher rate of social anxiety disorder than the others. Obsessive compulsive disorder, panic disorder and social anxiety disorders seem to be frequently comorbid in remitted psychotic patients. Anxiety disorders also have substantial impact on economy and incur a great deal of expenditure by society as a whole.
According to study done by Maina G et al [9] (2007), current and lifetime anxiety disorders comorbidities were 32.4% and 41.0% for all bipolar patients, 31.8% and 40.9% for bipolar disorder I (BD I) and 32.8% and 41.0% for bipolar disorder II (BD II). Young S et al [10] reported that the rates of anxiety disorders significantly differed among patients of schizophrenia (30.1%), schizoaffective disorder (30.1%) and bipolar disorder (22.4%). Panic disorders were significantly higher among patients with schizoaffective disorder.
In a study done by Keller MB [11] on prevalence and impact of comorbid anxiety on bipolar disorder, it was found that anxiety comorbidity appeared to be highly prevalent. Additional comorbid anxiety disorder has associated with intensified symptoms of bipolar disorder and negative impact on the course of illness. The presence of anxiety disorder in bipolar patients is associated with hampered patient response to treatment such as lithium, increased rates of suicide, lowered age of onset, substance abuse and decreased quality of life. Patients can experience work, family and social impairment and be made to contend with increased health care costs and strains on family support. Lifetime prevalence rates for all anxiety disorders grouped together as found in the NCS [12] (National Comorbidity Study) are 19.2% for men, 30.5% for women. Comorbidity with anxiety disorder is associated with more severe subtypes of bipolar illness, an earlier age at onset, mixed-state presentations, an intensification of symptoms, poor symptomatic and functional recovery, suicidality, diminished acute response to pharmacologic treatment and unfavourable course and outcome. Simon NM et al [13] studied anxiety comorbidity in patients of bipolar disorder and found that half of all patients had at least one anxiety disorder as comorbidity. It was associated with younger age at onset, decreased likelihood of recovery, poor role functioning and quality of life. In addition to above finding patients were euthymic for lesser time and had greater likelihood of suicide attempts.
As the severity of the acute psychotic illness required full diagnostic and therapeutic attention almost none of these comorbid anxiety disorders were treated primarily. Patients were generally discharged as soon as their psychotic episode was resolved, with little recognition of the presence of an anxiety disorder. Greater awareness of their comorbidity with psychosis should yield worthwhile clinical benefits. Anxiety disorders are relatively responsive to treatment.

AIMS AND OBJECTIVES

This study was aimed

- To assess the quality of life in patients of schizophrenia, schizoaffective disorder and bipolar disorders under remission.
- To identify co-morbid anxiety disorders among them.
- To assess the correlation between quality of life and anxiety disorders.
- To assess the correlation between various domains of WHOQOL – BREF scale.

II. MATERIALS AND METHODS

Recruitment of subjects:

Study subjects were recruited from the Institute of mental health, Hyderabad, India. Each group of 30 patients diagnosed as Schizophrenia, Schizoaffective Disorder and Bipolar Affective Disorder according to ICD-10 in the past, currently stable on treatment were recruited into the study.

Inclusion criteria:

- Age group: Patients above 18 and below 65 years
- Both sexes
- Eligible scores: Among them patients with BPRS SCORE <31 (brief psychiatric rating scale), YMRS<7 (Young mania rating scale), HAM-D <7 (Hamilton rating scale- depression) are included in the study.
- Informed consent

Exclusion criteria:

- Patients with any substance dependence, comorbid medical or surgical illness, pregnant women and mentally retarded persons were excluded from the study.

Tools used in the study:

- Socio-demographic proforma: Clinical and demographic details were assessed using a semi-structured proforma.
- WHO-QOL BREF Scale [14]: The quality of life of patients was assessed by WHO-QOL BREF scale. WHOQOL-BREF is a shorter version of the original instrument, WHOQOL and it is one of the best known instruments to assess quality of life. It is a 26-item instrument consisting of four domains: physical health (7 items), psychological health (6 items), social relationships (3 items) and environmental health (8 items). WHOQOL-BREF is a 5 point Likert scale, Self-administered. Higher scores denote better quality of life. The mean score of items within each domain is used to calculate the domain score. Mean scores are multiplied by 4 in order to make domain scores comparable with the scores in the WHOQOL-100.
- Mini International Neuropsychiatric Interview (MINI) [15]: Comorbid disorders were assessed by mini international neuropsychiatric interview (MINI): MINI is a short structured diagnostic interview, it screens for all major Axis I disorders including schizophrenia, anxiety disorders, mood disorders, eating disorders and substance dependence. It is easy to administer with good reliability and validity.
- Hamilton anxiety rating scale (HAM-A) [16]: HAM-A scale is a widely used and well-validated tool for measuring the severity of a patient's anxiety. It will assess both somatic and cognitive anxiety symptoms. It is a 14 parameter scale, each parameter scored on a 5-point scale, ranging from 0=not present to 4=severe, total score ranging from 0 to 56. It has good reliability and validity.

Procedure of recruitment: After obtaining informed consent, MINI screening tool is administered to know the presence of any other AXIS I diagnosis. WHOQOL-BREF is administered to assess quality of life. Presence of any anxiety disorders is diagnosed by ICD-10 and HAM–A was administered to know the severity of anxiety symptoms.

III. Results:

Table 1: Total number of patients, and gender of the three diagnostic subgroups.

			Gender		Total
			Female	Male	
Diagnosis	Bipolar	Count	17	13	30
		% within Diagnosis	56.7%	43.3%	100.0%
	Schizoaffective	Count	11	19	30
		% within Diagnosis	36.7%	63.3%	100.0%
	Schizophrenia	Count	7	23	30
		% within Diagnosis	23.3%	76.7%	100.0%
Total		Count	35	55	90
		% within Diagnosis	38.9%	61.1%	100.0%

In this study, 90 patients were taken for assessment after meeting initial inclusion criteria. It Includes 30 patients for each group with diagnosis of schizophrenia, schizoaffective and bipolar disorder. These 90 patients consisted of 55 male patient's i.e. 61.11% and 35 female patients i.e. 38.89%. (Table 1)

In the schizophrenia group 1 patient was suffering from generalized anxiety disorder (GAD), 2 patients had obsessive compulsive disorder (OCD) and 2 patients had panic disorder. These results were not statistically significant. (p=.327). In the schizoaffective group 2 patients were suffering from GAD, 1 patient had social phobia and 1 patient had panic disorder. Among the bipolar group, 3 patients were suffering from GAD, 3 patients had social phobia and 1 patient had panic disorder. (Table 3)

HAM-A mean scores of schizophrenia group, bipolar group and schizoaffective group were 7.23, 7.83 and 5.23 respectively. (Table 2)

Table 2: Mean HAM- A scores among three diagnostic subgroups

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
ham a	Schizophrenia	30	7.23	6.527	1.192	4.80	9.67	0	24
	Bipolar	30	7.83	5.972	1.090	5.60	10.06	0	20
	schizoaffective disorder	30	5.23	5.296	.967	3.26	7.21	0	20
	Total	90	6.77	5.991	.631	5.51	8.02	0	24

Table 3: Anxiety disorders among three diagnostic subgroups

			MINI					Total
			PANIC DISORDER	GAD	SOCIAL PHOBIA	OCD	NIL	
Diagnosis	Bipolar	Count	1	3	3	0	23	30
		% within Diagnosis	3.3%	10.0%	10.0%	.0%	76.7%	100.0%
	Schizoaffective	Count	1	2	1	0	26	30
		% within Diagnosis	3.3%	6.7%	3.3%	.0%	86.7%	100.0%
	Schizophrenia	Count	2	1	0	2	25	30
		% within Diagnosis	6.7%	3.3%	.0%	6.7%	83.3%	100.0%
Total		Count	4	6	4	2	74	90
		% within Diagnosis	4.4%	6.7%	4.4%	2.2%	82.2%	100.0%

The quality of life of patients in various domains of health among three groups was observed as follows. The mean physical health domain score in the schizophrenia, bipolar and schizoaffective group were 58.53, 53.53 and 53.80 respectively. The mean psychological health domain score in the schizophrenia, bipolar and schizoaffective group were 61.23, 49.40 and 57.07 respectively. The mean social relationships domain score in the schizophrenia, bipolar and schizoaffective group were 68, 56.27 and 56.20 respectively. The mean environment domain score in the schizophrenia group was 68.13, in the bipolar group is 62.03 and in the schizoaffective group it was 65.27. (Table 4)

Table 4: Mean WHOQOL domain scores among three diagnostic subgroups

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
physical health domain	Schizophrenia	30	58.53	10.156	1.854	54.74	62.33	38	81
	Bipolar	30	53.53	12.536	2.289	48.85	58.21	31	75
	schizoaffective disorder	30	53.80	11.631	2.123	49.46	58.14	38	81
	Total	90	55.29	11.586	1.221	52.86	57.72	31	81
Age	Schizophrenia	30	34.27	8.481	1.548	31.10	37.43	22	60
	Bipolar	30	31.83	7.648	1.396	28.98	34.69	20	54
	schizoaffective disorder	30	33.33	11.969	2.185	28.86	37.80	19	74
	Total	90	33.14	9.497	1.001	31.16	35.13	19	74
psychological health domain	Schizophrenia	30	61.23	10.884	1.987	57.17	65.30	31	81
	Bipolar	30	49.40	12.417	2.267	44.76	54.04	31	81
	schizoaffective disorder	30	57.07	13.253	2.420	52.12	62.02	31	81
	Total	90	55.90	13.052	1.376	53.17	58.63	31	81
social relationships domain	Schizophrenia	30	68.00	17.769	3.244	61.37	74.63	25	100
	Bipolar	30	56.27	18.981	3.465	49.18	63.35	25	100
	schizoaffective disorder	30	56.20	19.198	3.505	49.03	63.37	25	94
	Total	90	60.16	19.274	2.032	56.12	64.19	25	100
environment domain	Schizophrenia	30	68.13	16.379	2.990	62.02	74.25	38	94
	Bipolar	30	62.03	14.121	2.578	56.76	67.31	31	94
	schizoaffective disorder	30	65.27	15.125	2.761	59.62	70.91	25	88
	Total	90	65.14	15.271	1.610	61.95	68.34	25	94

ANOVA analysis was conducted for the above data. The findings were statistically significant for between groups in psychological health domain (F(2,27)=7.233,p=.001) and social relationships (F(2,27)=3.976,p=.022). (Table 5)

Table 5: ANOVA analysis for mean scores of WHOQOL-BREF domains and HAM-A among three diagnostic subgroups

		Sum of Squares	Df	Mean Square	F	Sig.
physical health domain	Between Groups	474.756	2	237.378	1.800	.171
	Within Groups	11471.733	87	131.859		
	Total	11946.489	89			
Age	Between Groups	90.422	2	45.211	.496	.611
	Within Groups	7936.700	87	91.226		
	Total	8027.122	89			
psychological health domain	Between Groups	2161.667	2	1080.833	7.233	.001
	Within Groups	13000.433	87	149.430		
	Total	15162.100	89			
social relationships domain	Between Groups	2769.156	2	1384.578	3.976	.022
	Within Groups	30292.667	87	348.192		
	Total	33061.822	89			
environment domain	Between Groups	558.822	2	279.411	1.204	.305
	Within Groups	20196.300	87	232.141		
	Total	20755.122	89			
ham a	Between Groups	111.200	2	55.600	1.569	.214
	Within Groups	3082.900	87	35.436		
	Total	3194.100	89			

Multiple comparison test shows that for physical health domain statistically significant results were not seen between schizophrenia and bipolar groups and bipolar and schizoaffective groups.

For psychological health domain there is a mean difference of 11.833 between schizophrenia and bipolar showing psychological health domain is better in schizophrenia, which was statistically significant. There was a mean difference of 7.667 between schizoaffective and bipolar depicting psychological health domain is better in schizoaffective disorder group. The result was statistically significant. (p=.017)

For social relationships domain there is a mean difference of 11.733 between schizophrenia and bipolar showing better results for schizophrenia, which was statistically significant (p=.017). Between schizophrenia and schizoaffective disorders also mean difference of 11.800 showing better results for social relationships domain which was statistically significant (p=.016).

For environmental domain there was no statistical difference seen between groups. (Table 6)

Table 6: Multiple Comparisons of domains of WHOQOL among three diagnostic subgroups.

Dependent Variable	(I) Diagnosis	(J) Diagnosis	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Physical health	Schizophrenia	bipolar disorder	5.000	2.965	.095	-.89	10.89
		Schizoaffective	4.733	2.965	.114	-1.16	10.63
	bipolar disorder	Schizophrenia	-5.000	2.965	.095	-10.89	.89
		Schizoaffective	-.267	2.965	.929	-6.16	5.63
	Schizoaffective	Schizophrenia	-4.733	2.965	.114	-10.63	1.16
		bipolar disorder	.267	2.965	.929	-5.63	6.16
Psychological health	Schizophrenia	bipolar disorder	11.833*	3.156	.000	5.56	18.11
		Schizoaffective	4.167	3.156	.190	-2.11	10.44
	bipolar disorder	Schizophrenia	-11.833*	3.156	.000	-18.11	-5.56
		Schizoaffective	-7.667*	3.156	.017	-13.94	-1.39
	Schizoaffective	Schizophrenia	-4.167	3.156	.190	-10.44	2.11
		bipolar disorder	7.667*	3.156	.017	1.39	13.94
Social relations	Schizophrenia	bipolar disorder	11.733*	4.818	.017	2.16	21.31
		Schizoaffective	11.800*	4.818	.016	2.22	21.38
	bipolar disorder	Schizophrenia	-11.733*	4.818	.017	-21.31	-2.16
		Schizoaffective	.067	4.818	.989	-9.51	9.64
	Schizoaffective	Schizophrenia	-11.800*	4.818	.016	-21.38	-2.22
		bipolar disorder	-.067	4.818	.989	-9.64	9.51
Environment	Schizophrenia	bipolar disorder	6.100	3.934	.125	-1.72	13.92
		Schizoaffective	2.867	3.934	.468	-4.95	10.69
	bipolar disorder	Schizophrenia	-6.100	3.934	.125	-13.92	1.72
		Schizoaffective	-3.233	3.934	.413	-11.05	4.59
	Schizoaffective	Schizophrenia	-2.867	3.934	.468	-10.69	4.95
		bipolar disorder	3.233	3.934	.413	-4.59	11.05

*. The mean difference is significant at the 0.05 level.

Correlation between QOL and HAM-A:
There is a negative correlation seen between HAM-A and all domains of WHOQOL-BREF depicting that if the scores of quality of life are better, there are less chances of anxiety features. The results were statistically significant in physical health domain and social relationship domain. Pearson's correlation was done among all the scales to find out the relation. HAM-A had negative correlation with all the four domains of WHOQOL-BREF but correlation was statistically significant for only 2 domains, they are physical health domain and social relationship domain. [HAM-A with physical health domain r= -0.391, p<.001 and with social relationship domain r= -0.393 p<.001.] (Table 6)
Correlation between the various domains of QOL:
Physical health domain had a positive correlation with its co domains and the results were statistically significant. Psychological health domain had a statistically significant positive correlation with environmental domain & social health domain. Social relationship domain had a statistically significant positive correlation with environmental health. (Table 7)

Table 7: Correlation between scores of HAM-A and among various domains of WHOQOL-BREF.

		ham a	physical health domain	psychological health domain	social relationships domain	environment domain
ham a	Pearson Correlation	1	-.391**	-.181	-.393**	-.174
	Sig. (2-tailed)		.000	.088	.000	.101
	N	90	90	90	90	90
physical health domain	Pearson Correlation	-.391**	1	.238*	.576**	.276**
	Sig. (2-tailed)	.000		.024	.000	.008
	N	90	90	90	90	90
Age	Pearson Correlation	.006	.017	.142	.046	.046
	Sig. (2-tailed)	.954	.875	.183	.666	.664
	N	90	90	90	90	90
psychological health domain	Pearson Correlation	-.181	.238*	1	.438**	.322**
	Sig. (2-tailed)	.088	.024		.000	.002
	N	90	90	90	90	90
social relationships domain	Pearson Correlation	-.393**	.576**	.438**	1	.302**
	Sig. (2-tailed)	.000	.000	.000		.004
	N	90	90	90	90	90
environment domain	Pearson Correlation	-.174	.276**	.322**	.302**	1
	Sig. (2-tailed)	.101	.008	.002	.004	
	N	90	90	90	90	90

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

IV. Discussion

In the present study anxiety disorders were seen in 23.3% (7) of the bipolar patients, out of which 3.3% (1) constituted the panic disorder 10% (3) constituted social phobia and generalised anxiety disorder each. In the study conducted by Simon NM et al [13] found that half of all patients had at least one anxiety disorder comorbidity. Present study results were in contrast to this.
In schizoaffective disorder 13.3% (4) constituted the anxiety disorder as comorbidity. Out of which panic disorder is 3.3% (1), generalised anxiety disorder is 6.7% (2) and social phobia is 3.3% (1). In schizophrenia 16.7% constituted the anxiety disorder, out of which OCD and panic disorder contributed 6.7% (2) each, while generalised anxiety disorder constituted 3.3% (1). In a study conducted by Young S et al [10] reported that the rates of anxiety disorders are in schizoaffective disorder is 30.1%, in Bipolar disorder is 22.4% and schizophrenia is 30.1%. Panic disorders were significantly higher among patients with schizoaffective disorder but present study was not showing these results.
In total, 16 cases had anxiety disorders with a totality of 17.7% of sample, out of these 4.4% (4) constituted panic disorder 6.7% (6) constituted generalised anxiety disorder, 4.4% (4) constituted panic disorder and the remaining 2.2% (2) are OCD patients.
For these findings ANOVA analysis was done to find out the difference between groups. The result had shown F(2,27)=1.569,df=2,p=.214. From this result it was learnt that difference between the groups was not statistically significant. On the whole the prevalence of individual anxiety disorder in three diagnostic groups was found to be not statistically significant (p=.188). But in the study conducted by Ciapparelli A et al [8] found that Schizophrenic patients under remission had a rate of social anxiety disorder higher than the others. In the study of Cosoff S J et al [17] it was found that the prevalence of social phobia (17%), obsessive-compulsive disorder (13%) and generalised anxiety disorder in schizophrenia were relatively high, as were prevalence of obsessive-compulsive (30%) and panic disorder (15%) in bipolar disorder. A study done on co morbidity of anxiety disorders in patients with remitted bipolar disorder by Zutshi A et al [18] shown that the most common lifetime anxiety disorder was obsessive-compulsive disorder (OCD) (35%). These studies were in contrast to the present study.

Among the 90 patients sample, most of them have anxiety symptoms but they were not severe enough to be quantified into anxiety disorder diagnosis. A study done by Kristyna Vrbova et al. [19] had shown that the most common anxiety disorder's like panic disorder, agoraphobia, social phobia, obsessive-compulsive disorder and posttraumatic stress disorder were commonly seen in schizophrenia than in the general population. Henry C, [20] also reported that patients with bipolar disorders often had comorbid anxiety disorders. Braga RJ et al [21] said that Comorbid anxiety disorder was found in 41.5% subjects with schizophrenia. These studies also were in contrast to the present study. In our study of anxiety disorder comorbidity in schizophrenia, schizoaffective and bipolar disorder did not show any statistical significance. In the present study sample the most commonly reported anxiety symptom on HAM-A scale is anxious mood and cardiovascular symptoms. Coming to individual diagnosis, in the bipolar patients, tension symptoms were more frequently reported. Somatic complaints and anxious mood symptoms were commonly seen in schizophrenia group. In the schizoaffective group anxious mood and cardiovascular symptoms were commonly seen. Keller MB [11] said that Anxiety symptom comorbidity appears to be highly prevalent in bipolar disorder. Present study also depicts a similar picture.

In this study the total average mean value on the WHO-QOL-BREF scale for all the disorders was 59.12, the total average mean value for schizophrenia, schizoaffective and bipolar group are 63.97, 55.31 and 58.01 respectively. Schizophrenia scored the best of the three disorders on WHO-QOL-BREF scale while bipolar scored the least. Among the 4 domains the least mean score was for physical health domain with mean value of 55.29, while the highest scoring was seen for environmental domain with a mean value of 65.14. These results were similar to study done by Michalak E et al, [2] which stated that bipolar disorder has a profoundly negative effect upon their quality of life, but in a study Vibha P et al, [22] it was found that schizophrenics who are under remission had a poor quality of life as compared to that of those with bipolar patients. Michalak E et al [2] also found that bipolar disorder patients scored less on social relationship domain.

Schizophrenia and schizoaffective groups scored the least in the physical health domain of WHOQOL-BREF scale with a mean value of 58.53 and 53.80 respectively, and these two disorders scored high in environmental health domain i.e. 68.00 and 65.27 respectively.

Bipolar disorder scored poorly in psychological health domain i.e. 49.40 and higher in environmental health domain i.e. 62.03. Similar results were seen in the study done by Sofia Brissosa et al, [7] in which they found that schizophrenia patients scored significantly lower scores on the physical, psychological, and social domains of the WHOQOL-BREF scale compared with controls. Ram Kumar Solanki et al [3] also had shown similar results i.e. schizophrenia patients scored significantly low in social health domain of WHOQOL BREF scale.

Summary and Conclusions:

- The average mean of WHO-QOL-BREF scale domains i.e. physical health, psychological health, social relations, and environmental health was 55.29, 55.90, 60.16 & 65.14 respectively. These values were less and pointed towards poor quality of life in schizophrenia schizoaffective disorder and bipolar disorder.
- Schizophrenia scored the best of the three disorders on WHO-QOL-BREF scale while bipolar scored the least.
- On the whole the prevalence of individual anxiety disorders in three diagnostic groups was not found to be statistically significant.
- HAM-A had a negative correlation with all the four domains of WHO-QOL-BREF scale but correlation was statistically significant for only 2 domains i.e. physical health domain and social relationship domain.
- In our study all the 4 domains of WHO-QOL-BREF were almost equally affected by the illness among the three groups.

Limitations:

Study proportion was mostly from lower and middle socioeconomic group and it was hospital based cross sectional study on a small group of patients. So the results cannot be generalized for higher economic groups and the population in general. The other factors that influence quality of life like duration of illness, other comorbid psychiatric illnesses except anxiety disorders were not taken into account.

Future Directions:

This is a cross sectional study and more prospective studies are needed in further understanding of comorbidity of anxiety disorders and quality of life in remitted schizophrenia, schizoaffective and bipolar patients.

Treating the comorbid anxiety disorder is likely to improve the quality of life as the HAM-A scores were found to be negatively correlated with the scores of WHO-QOL-BREF. Future longitudinal interventional studies must address the treatment of comorbid anxiety to improve quality of life among the patients of schizophrenia, schizoaffective and bipolar disorder.

Authors' contributions: Dr. Vivaswan Boorla and Dr. Siva prasad kasimahanti conceptualized and designed the study. Dr. Vivaswan Boorla was involved in acquisition of data, analysis and interpretation of the data. Both authors drafted the article, and revised it critically for important intellectual content. Both authors gave final approval of the version to be published; and take responsibility for the accuracy and integrity of any part of the work. Dr. Vivaswan Boorla is the guarantor for this study.

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