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Research Paper

A Comparative Study of Cognitive Impairment between Patients with Unipolar and Bipolar Depression

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ABSTRACT

Introduction: Mood disorders fall into the basic groups of elevated mood, such as mania or hypomania; depressed mood, of which the best-known is major depressive disorder commonly called unipolar depression and moods which cycle between mania and depression, known as bipolar disorder. Cognitive impairment in unipolar and bipolar depression has been the focus of intensive investigation during the past decade. Aim:1) To access cognitive impairment in patients with unipolar depression and bipolar depression 2) To find out the difference in cognitive impairments between patients with unipolar and bipolar depression 3) To find out the correlation between severity of depression and cognitive impairment between patients of unipolar and bipolar depression. ***Methodology:*** Sample comprises of 100 patients of which 58 patients were of unipolar depression and 42 patients of bipolar depression. Patients were taken according to DSM-IV TR Criteria and those who were fulfilling our inclusion criteria. ***Tools:*** Tools used were Hamilton Depression Rating Scale and PGI Memory Scale and Cognitive Symptoms Checklist. ***Result and Discussion:*** Impairment in memory and cognitive symptoms was found in patients of unipolar and bipolar depression as compared to control group and results indicates that with the increase in depression memory decreases and cognitive impairment increases.

Keywords: *Unipolar Depression, Bipolar Depression, Cognitive Impairment*

The concept of mood is complex and difficult to establish. It is highly subjective concept. In Psychiatry, mood is defined as a pervasive and sustained emotional tone that when extreme, can color ones whole view of life. It is considered as group of persisting feelings associated with evaluative and cognitive states which influence all the future evaluations, feelings and actions. Mood can affect perceived health, personal confidence, ones perception of the words around us and our actions based on those perceptions. Chronic periods of any mood state may

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be an indicator of a disorder. People with mood disorder experience disturbances in mood that are severe and impair their ability to function in meeting their responsibilities.

Mood disorders are psychiatric conditions characterized by ongoing mood regulation problems. Mood disorders aggravate human experiences to larger than life proportions. Their symptoms include exaggerations of normal sadness and fatigue, joy and exuberance, sensuality and sexuality, irritability and rage, energy and creativity. In depressive states mood is bleak, pessimistic and despairing. A deep sense of futility is often accompanied by belief that behaviour. At the outset, manic states are typically characterized by heightened mood, more and faster speech, quick thoughts, more energy with decreased need for sleep, irritability, perceptual acuity, paranoia, heightened sexuality and impulsivity. There are two types of mood disorder

1) Depressive disorders
2) Bipolar disorders

Depressive disorder is also known as clinical depression, major depression, or unipolar depression. Unipolar refer to the presence of one pole, or extreme of depressed mood as compared with bipolar depression which has two pole of depressed mood and mania. According to DSM-TR diagnosis of major depressive disorder (MDD) requires depressive symptom to be present for at least 2 weeks, which include either depressed mood or loss of interest and pleasure and at least four additional symptom must be present such as changes in sleep, appetite, concentration or decision-making, feelings of worthlessness, suicidality, or psychomotor retardation or agitation. People with this may become focused on their flaws and deficit. They have difficulty in absorbing what they read and hear. They view things in negative light and tend to lose hope. Fatigue, low energy, physical aches and pains are also common physical symptoms of depression. Some people with depression find it hard to fall asleep exhausted, at the same time other person sleep throughout the day.

As symptoms tend to be present for a period of time and then clear, MDD is also called an episodic disorder. The depression becomes chronic for small percentage of people the person does not completely come back to prior level of functioning. Once a given episode clears, person is likely to experience another episode. Even among those who improve enough that they no longer meet the criteria for diagnosis of MDD, some people experience subclinical depression for years.

Bipolar Disorder also called as manic-depression marked by extreme change in mood, thought, energy and behaviour. DSM-IV-TR recognizes three forms of bipolar disorder (Davison & Neale). The defining feature of each of the bipolar disorders are manic symptom and symptom and these are differentiated by long-lasting and how severe the manic symptom are. These are called ‘bipolar’ because a person’s mood can alternate between the ‘poles’ of mania and depression. Most people seeking treatment for bipolar I disorder are likely to have experienced depressive episodes.

Mania is a period of an abnormally and presently elevated, expansive, or irritable mood lasting for at least 1 week. People become louder, full of puns, jokes rhymes etc. Their remarks are difficult to interrupt & shift rapidly from one topic to another reflecting flight of ideas. They may become excessively self-confident. Their behaviour includes sexual activities, overspending and reckless driving. They stop sleeping but stay energetic.

Cognition can be defined as mental activities which are involved in acquisition, processing, storage and retrieval of information. It refers to mental processes involved in gaining knowledge and comprehension. These processes include attention, memory, producing and understanding language, solving problems and making decisions. Cognitions are higher levels of functions of the brain and encompasses language, imagination, perception and planning and cognition is a faculty for processing of information, applying knowledge and changing preferences. Cognition can be tested separately, and is divided into different domains of ability, of which most important are orientation, memory, executive functioning and language.

Cognitive impairment is described as any characteristic that acts as a barrier to the cognition process (Cohen Stanley; Lawrence M. Ward; James T. Enns1999). Cognitive impairment is when a person has trouble or difficulty in remembering, learning new things, concentrating, or making decisions that affect their everyday life. Cognitive impairment ranges from mild to severe. With mild impairment, people starts noticing changes in cognitive functions, but able to their everyday activities. Severe impairment may lead to losing the ability to live independently. The symptoms and characteristics of cognitive impairment depend on the specific type of impairment. The most common symptoms and characteristics include: avoidance of eye contact, difficulty understanding the motivation, perspectives or feelings of others, difficulty coping with changes, decreased ability to learn new skills, difficulty with reading, writing, spelling and comprehension, co-ordination problems. Verbal memory, attention and executive functions impairments are the most significance findings patterns of cognitive deficits have been reported among patients with bipolar disorders (Dickerson et al, 2004a; Daban et al, 2006).

Aim of Study

1) To assess cognitive impairment in patients with unipolar depression and bipolar depression.
2) To find out the difference in cognitive impairments between patients with unipolar and bipolar depressions.
3) To find out the correlations between severity of depression and cognitive impairment between patients of unipolar and bipolar depression.

METHODOLOGY

Participants

Sample was recruited from Department of Psychiatry, JNMCH, AMU. Sample comprises of 100 patients, of which 58 were patients of unipolar depression and 42 were of bipolar

depression. 98 normal participants were also included in the study. Patients consent was taken from the patient or family members and were taken according to DSM IV-TR Criteria.

Inclusion Criteria

- Patients who were fulfilling the criteria of depression as per DSM IV-TR .
- Patients having age range 18-60.
- Those who had given informed consent.

Exclusion Criteria

- Those do not confirm the diagnosis.
- Age below 18 years of age.
- Those who did not given informed consent.
- Patient having any co morbid psychiatric illness were excluded.

Measures

1. **Hamilton depression rating scale (HAMD):** The Hamilton Depression Rating scale **(**HDRS) is widely used to measure / access the level of depression. Initially it was designed to score based on 17 to 21 items, about many investigators have used all items. Only first 17 items are scored for severity. Score for 4 additional items (18 -21) are included to provide information relevant not to the severity but to ancillary symptom that might required specific treatment. Decimal variation (melancholia), depersonalization, paranoia and obsessions (Hamilton, 1960).
2. **PGI Memory Scale:** PGI – Memory Scale (Pershad, 1977 and Pershad and Wig, 1988) is included in Battery O Brain Dysfunction. The PGI-Memory scale (PGIMS) provides a comprehensive and simple scale to measure verbal and non verbal memories on the basis of neurplogical theory; very short term, short term and long term memories on the basis of experimental basis of clinical practice of evaluation of memory. Scale consists of ten test variables and all of them were included here on the basis of past experience. It includes verbal and non verbal material and measures remote, recent and immediate, short term, very short term, intermediate term and long term memories. Its test-retest reliability over a period of one week ranges from .69 to .85 for ten subtests (N=40) and for the total test about .90 (tets-retest splithalf). Correlation of PGIMS with Boston's Memory Scale and Weschler's Memory Scale were found to be .71 and .85 respectively. Elderly subjects obtained significantly lower score than the younger subjects. Cases suffering from organic brain pathology and functional psychotic conditions obtained significantly less score than normal and neorotics. It had significantly high correlation with education and low correlation with IQ. Separate norms are provided for three education levels i.e., '0 to 5', '6 to 9', and ' 10 above' years of schooling.
3. **Cognitive Symptoms Checklists:** Cognitive symptom checklists was developed by O' Hara et, al; (1993). The CSS were developed to assist in the identification and treatment of problems in five basics cognitive areas: attention / concentration,

memory, visual processing, language and executive functions. It provides valuable information about day-to-day problem which clients may have that may otherwise be overlooked. The CSS can be either self-administered or technician administered, with further inquiry and interpretation performed by appropriately trained clinicians.

The five checklists may be used either individually or in various combinations, depending upon the needs of the client or clinicians. Each checklist was designed to elicit information about difficulties in daily living that the client may be experiencing as result of impaired cognitive functioning in one or more of five areas. The CSC was developed for use within a treatment model that focuses on identifying cognitive problems, teaching strategies and generalizing strategies and skills to real-life situations.

Statistical Analysis

The statistical analysis is done by using Statistical package for social sciences (SPSS) 21.0 version. T-test was used to compare the two groups and correlation was used to correlate severity of depression and cognitive impairment.

RESULT

Table 1 shows difference between normal and unipolar patients on PGI memory scale

	Diagnosis	N	Mean	SD	t	Sig.
PGI Memory Scale	Normal	98	83.53	7.86	8.79	<.001
	Unipolar	58	70.31	10.82		

Table 1 showing the difference between normal and unipolar depression patients on PGI memory scale and found that there is a significant difference between the two groups (t= 8.79, p=>.001).

Table 2 shows difference between normal and bipolar patients on PGI memory Scale

	Diagnosis	N	Mean	SD	t	Sig.
PGI Memory Scale	Normal	98	83.53	7.86	13.83	<.001
	Bipolar	42	58.33	13.47		

Table 2 showing results of normal and bipolar patients on PGI Memory Scale and found the significant difference both the groups (t=13.83, p= >.001).

Table 3 shows difference between unipolar and bipolar patients on PGI memory scale

	Diagnosis	N	Mean	SD	t	Sig.
PGI Memory Scale	Unipolar	58	70.31	10.82	4.92	<.001
	Bipolar	42	58.33	13.47		

Results in table 3 indicate the difference between the two groups i.e unipolar and bipolar depressive patients and showed the significant difference between the two groups and indicate that bipolar patients are more impaired on PGI Memory Scale.

Table 4 shows difference between normal and unipolar patients on Cognitive symptom Checklist

Cognitive Symptom Checklist	Diagnosis	N	Mean	SD	t	Sig.
Attention/Concentration	Normal	98	6.26	6.15	23.33	<.001
	Unipolar	58	29.38	5.67		
Executive Functioning	Normal	98	2.57	3.67	19.53	<.001
	Unipolar	58	29.67	12.9		
Memory	Normal	98	3.31	4.14	16.92	<.001
	Unipolar	58	24.28	11.03		
Visual Processing	Normal	98	0.91	1.56	11.12	<.001
	Unipolar	58	9.41	7.31		
Language	Normal	98	0.98	2.91	8.00	<.001
	Unipolar	58	9.24	9.51		

Table 4 indicates the difference on Cognitive Symptoms Checklists between the patients of unipolar depression and normal participants and showed the significant difference between both the groups on all the five checklists.

Table 5 shows difference between normal and bipolar patients on Cognitive symptom checklist

Cognitive Symptom Checklist	Diagnosis	N	Mean	SD	t	Sig.
Attention/Concentration	Normal	98	6.26	6.15	38.03	<.001
	Bipolar	42	46.83	4.79		
Executive Functioning	Normal	98	2.57	3.67	65.69	<.001
	Bipolar	42	54.21	5.40		
Memory	Normal	98	3.31	4.14	46.71	<.001
	Bipolar	42	47.4	6.89		
Visual Processing	Normal	98	0.91	1.56	10.92	<.001
	Bipolar	42	13.19	10.92		
Language	Normal	98	0.98	2.91	8.39	<.001
	Bipolar	42	10.74	10.65		

Table 5 showing the difference between normal and bipolar depressive patients on Cognitive Symptoms Checklists and indicates the significant difference between the two groups on all five checklists.

Table 6 shows difference between unipolar and bipolar patients on Cognitive symptom checklist

Cognitive Symptom Checklist	Diagnosis	N	Mean	SD	t	Sig.
Attention/Concentration	Unipolar	58	29.38	5.67	16.18	<.001
	Bipolar	42	46.83	4.73		
Executive Functioning	Unipolar	58	29.67	12.90	0.738	<.001
	Bipolar	42	54.21	5.40		
Memory	Unipolar	58	24.28	11.03	2.07	<.001
	Bipolar	42	47.4	6.89		
Visual Processing	Unipolar	58	9.41	7.31	11.98	<.001
	Bipolar	42	13.19	10.92		
Language	Unipolar	58	9.24	9.51	11.60	<.001
	Bipolar	42	10.74	10.65		

Table 6 shows the difference between unipolar and bipolar patients on CSC and indicates the significant difference between the two groups.

Table 7 shows correlation between depression and memory in unipolar depression patients

	Mean	SD	N	R	Sig.
HAMD	29.79	5.80	58	-0.392	0.002
PGI Memory Scale	70.31	10.89	58		

The above table showed the correlation between HAMD and PGI Memory Scale. There was a negative correlation (-0.392) between depression and memory of unipolar depressive patients.

Table 8 shows correlation between depression and memory in bipolar depression patients

	Mean	SD	N	R	Sig.
HAMD	31.78	3.85	42	-0.399	0.009
PGI Memory Scale	58.33	13.87	42		

The above table shows the correlation between HAMD and memory of bipolar depressive patients on PGI Memory Scale. There was a negative correlation(-0.399) between depression and memory.

Table 9 shows correlation between depression and cognitive symptoms in unipolar depression patients

	Mean	SD	N	R	Sig.
HAMD	29.75	5.80	58		
Attention/Concentration	29.38	5.67	58	0.415	0.001
Executive Functioning	29.67	12.90	58	0.480	0.000
Memory	24.28	11.03	58	0.259	0.49
Visual Processing	9.41	7.31	58	0.443	0.001
Language	9.24	9.51	58	0.360	0.006

The above table shows the correlation between HAMD and cognitive symptoms of unipolar depressive patients on CSC. There was positive correlation (0.415, 0.480, 0.259, 0.443, 0.360) between depression and cognitive symptoms including attention/concentration, executive functioning, memory, visual processing and language.

Table 10 shows correlation between depression and cognitive symptoms in bipolar depression patients.

	Mean	**SD**	**N**	**R**	**Sig.**
HAMD	31.78	3.25	42		
Attention/Concentration	46.83	4.79	42	0.279	0.74
Executive Functioning	54.21	5.40	42	0.141	0.372
Memory	47.40	6.83	42	0.53	0.741
Visual Processing	13.19	10.92	42	0.184	0.243
Language	10.74	10.65	42	0.339	0.28

The above table shows the correlation between HAMD and cognitive symptoms of bipolar depressive patients. There was a positive correlation between the depression and cognitive symptoms on CSC which includes attention/ concentration, executive functioning, memory, visual processing and language.

DISCUSSION

Cognitive impairment in the acute phase of illness has been frequently reported. Research during the past decade has mainly focused on cognitive functioning in the severe phase of depression, and today it is widely accepted that the disease is characterised by cognitive impairment in the acute state (Austin et al, 2001; Taylor Tavares et al, 2003; Castaneda et al., 2008). Results shown in table 1 indictes the difference in control group and unipolar depression patients and impairment was seen in unipolar depression group. These results was supported by other studies which also shows the impairments in memory of depression patients. Several recent studies showed an association between memory impairment and Major Depressive Disorder (Egeland et al, 2003b., Porter et al., 2003; Airaksinen et al, 2004; Campbell and MacQueen, 2004; Vythilingam et al., 2004; Mathews et al., 2008). Results in table 2 shows the difference between control subjects and bipolar depressive patients. Many studies shows the impairment in memory of bipolar depressive patients. It is associated with neurocognitive impairment, deficits in attention, memory, executive function and working memory (Torres, Solé, Vieta& Martinez-Aran, 2012). Table 3 of the study reveals the difference between unipolar and bipolar depressive patients on memory. It was seen that bipolar patients had more impairement in memory as compared to unipolar depressive patients. bipolar depressed subjects were more impaired across all cognitive domains than unipolar depressed subjects on tests assessing verbal memory, verbal fluency, attention and executive functions (Suciu., Paunescu., Miclutia (2016). Results in table 4, 5 and 6 shows the difference between normal and unipolar depressive patients, normal and bipolar depressive patients and between unipolar and bipolar depressive groups. It was seen that there is impairment in unipolar and bipolar depressive depressive patients as compared to controls

and bipolar group found to be more impaired than unipolar depressive patients on CSC including attention/concentration, executive functioning, memory, visual processing and language. These results were in consonance with other studies. Several studies have shown that MDD patients to show deficits on attention related tasks (Cohen et al., 2001; Landro et al, 2001; Kostsier et al, 2002; Liu et al, 2002; Ravnkilde et al., 2002; Hammer et al, 2008; Simons et al, 2009). There are reports of findings in different cognitive domains, attention, memory and psychomotor speed (Austinct et al; 2001, Castareda et al; 2008). Several other recent studies showed an association between memory impairment and Major Depressive Disorder (Egeland et al, 2003b., Porter et al., 2003; Airaksinen et al, 2004; Campbell and MacQueen, 2004; Vythilingam et al., 2004; Mathews et al., 2008). In acute phase of illness, the impairment in EF has been frequently reported (Harvey et al; 200). The findings are shown in different cognitive domains, such as executive functions, attention, memory and psychomotor speed (Asa Hammar and GuroArdal 2009). There is cognitive dysfunction in patients with bipolar or unipolar disorder.

Further results of this study shows the correlation between HAMD scores and memory of unipolar depression group. Results showed that increase in depression scores leads to decrease in memory. This study also compares the correlation between HAMD scores and memory of bipolar depression patients and results indicates that increase in depression leads to decrease in memory. These results were supported by the studies conducted in the recent literature regarding depressive cognition it was also find consistently implicated working memory, attention and executive dysfunction and processing speed (Doumas et al. 2012, Elderkin Thomson et al. 2010, Rosenberg et al. 2010, Marazziti et al. 2010, Nakano et al. 2008, Weiland-Fiedler et al. 2004).

Other aim of my study was to correlate the depression and cognitive symptoms of unipolar and bipolar depression patients. Results indicate that with the increase in depression the cognitive symptoms also increase. These results were supported by various studies. Several evidences have suggested that depression increases the risk of cognitive impairment and functional disability (Lebowitz et al. 1997, Charney et al. 2003).

CONCLUSIONS AND SUGGESTIONS

Cognitive impairment present in unipolar and bipolar depressive patients. Bipolar depressive patients have more cognitive impairment when compared to unipolar depressive patients. There is negative correlation between depression and memory on PGI Memory Scale. There is a positive correlation between severity of depression and cognitive impairment in both unipolar and bipolar depression patients on cognitive symptoms checklists.

As the present study was only hospital based, future study should be done in the community so the results can be generalized to larger population. Several other parameters can be taken in the future study. More tests/tools can be used to check the cognitive functions. Future research can involve other mood disorders to compare with depression.

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