COGNITIVE IMPAIRMENT AND SOCIAL ADAPTIVE FUNCTIONING IN PATIENTS WITH DEPRESSIVE EPISODE

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ABSTRACT

Introduction: Depressive episodes are characterized by feeling low consistently with reduced interest in previously pleasurable activities and easy fatigability along with memory disturbances, pessimistic thoughts and suicidal ideas along with altered biological functions. In this study the cognitive components that are commonly impaired is elicited and along with the impairment in social functioning. Methods: A cross sectional study was conducted in the Psychiatry Department of Chettinad Hospital and Research Institute between the period from October 2017 to March 2019 for a period of 1.5 years. Results: The presence of cognitive impairment was 27.06% based on in DSST and 69.4% based on BGT. The proportion of subjects with cognitive impairment was very higher in moderate, severe and very severe depression and this difference was statistically very significant (P value <0.001). The social functioning was markedly involved in depression with statistically significant difference in the proportion of subjects with domestic skills, community skills, social skills, responsibility, and the social functioning as a whole across the severity of depression (P value <0.05). Conclusion: This study has shown the presence of cognitive impairment in Depression along with social functioning dysfunction.

KEY WORDS: Cognitive impairment, Depression, ICD-10

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INTRODUCTION

Depressive Episode is characterized by the presence of pervasive low mood, with loss of interest and enjoyment, and increased fatigability due to reduced energy levels along with: impaired attention and concentration; altered self-esteem and self-confidence; guilt and feelings of unworthiness; pessimistic/negative thoughts about the future; self-harm acts/thoughts, altered biological functions such as poor sleep reduced appetite and impaired self care (1).

SOCIAL FUNCTIONING: Defines an individual's interaction with their environment and the ability to fulfil their role within such environments as work, social activities, and relationships with partners and family (2).

Impairment of social functioning is a significant aspect of depression distinct from the symptoms of depression. Since social factors are importantly involved in the pathogenesis and consequences of depression, this study will contribute to better diagnostic assessments and concepts, treatments and preventative strategies at diagnostic levels. Depression and cognitive impairment: Many earlier studies have demonstrated that the presence of depression is associated with impaired performance on cognitive tests (3). Many patients with depression complain of difficulty in concentrating and remembering, and this subjective phenomenon is explained by objective studies showing that cognitive deficits markedly present in depression. The most Common cognitive Impairment observed in Depression is attention, working memory, executive functions, processing speed.

JUSTIFICATION: In patients of depression although clinical improvement is achieved with pharmacotherapy, there is residual cognitive impairment and social functioning dysfunction. Thus, a holistic approach towards the treatment of depression by providing cognitive behavioral therapy and social therapy along with pharmacological therapy their overall quality of life can be improved (4). This inadequacy in the overall functional outcome in the patients of Depression has pivoted this study towards the other dimensions of Depressive disorders such as Cognitive impairment and social functioning. In addition, also tried to find the association between the cognitive impairment and social adaptive functioning in Depressive episodes.

MATERIALS AND METHODS: Study design: This is a Cross-sectional study and was conducted in the department of Psychiatry at Chettinad Hospital, and Research Institute, Kelambakkam. Study population: Patients with ICD -10 diagnosis of Depressive episode, both outpatients and inpatients(5). The date collection for the study was done from October 2017 to March 2019 for a period of 1.5 years.
Sampling method: All the study subjects were recruited consecutively by convenient sampling, till the sample size was attained. Study procedure: Study will be conducted on patients after obtaining the written informed consent. Patients diagnosed with Depression based on ICD-10 diagnostic criteria were taken for the study.

ASSessment Scales Used: MINI- The Mini International Neuropsychiatric Interview6.0 (MINI 6.0) The M.I.N.I is a questionnaire used by the psychiatrist worldwide as a structured diagnostic interview tool. It is available in many languages and it is quite comprehensive and easy to administer with good validity and reliability. The questions in the tool are divided into modules which are identified by the alphabets A-P according to the category of diagnosis. It covers all major psychiatric conditions like substance abuse, psychotic disorders, mood disorders, anxiety, eating disorders and covers briefly on suicidality too. The client is instructed to tell a simple “Yes” or “No” to the questions in the tool. This was used to rule out other psychiatric illnesses. Patients were diagnosed with Depression based on ICD-10 diagnostic criteria and HAM-D was being applied to them to assess the severity of depression.

The cognitive functions were evaluated by the following tests:

- Wechsler Adult Intelligence Scale (WAIS) Digital Symbol Substitution Test- for attention, concentration and processing Speed (6).
- Bender Gestalt Test-to evaluate visual motor integration skills (7).
- Wechsler Adult Intelligence Scale (WAIS) Digit Span Test-For Working Memory (8).

The Social Functioning was evaluated by: Social Functioning Questionnaire: The Social Functioning Questionnaire (SFQ), an eight-item self report scale (score range 0–24), was developed from the Social Functioning Schedule (SFS), a semi-structured interview which has been used primarily with non-psychotic patients and has good test-retest and inter-rater reliability as well as construct validity (9).

Ethical clearance:

The Institutional Human Ethics Committee approved the study. Informed written consent was obtained from all the participants, after explaining the risk and benefits. Confidentiality of study participants was maintained throughout the study.

Statistical analysis: Cognitive Functions based on DSST,BGT and Digit Span Test and the Social functioning domains, were considered as outcome variables.
The Explanatory Variables were:

- The severity of Depression based on HAM D.
- Socio-demographic profile, family History, treatment history etc.

Descriptive analysis was carried out by mean and standard deviation for quantitative variables, frequency and proportion for categorical variables. Non-normally distributed quantitative variables were summarized by median and interquartile range (IQR). Data was also represented using appropriate diagrams like bar diagram, pie diagram and box plots.

For normally distributed Quantitative parameters the mean values were compared between study groups using ANOVA (>2 groups). Categorical outcomes were compared between study groups using Chi square test /Fisher's Exact test (If the overall sample size was < 20 or if the expected number in any one of the cells is < 5, Fisher's exact test was used.) P value < 0.05 was considered statistically significant. IBM SPSS version 22 was used for statistical analysis.

**DISCUSSION:** Impairment of social functioning is a significant aspect of depression distinct from the symptoms of depression. Social functioning defines an individual's interactions with their environment and the ability to fulfill their role within such environments as work, social activities, and relationships with partners and family. Patients suffering from major depression (MD) present some cognitive disturbances, such as impairment in attention, working memory, and executive function, including cognitive inhibition, problem- and task planning. Depression, cognitive impairment and dementia are all common in older adults. The relationship between them is bidirectional and complex. Many patients with depression complain of difficulty in concentrating and remembering. The most Common cognitive Impairment observed in Depression is attention, working memory, executive functions, processing speed. In patients of depression although clinical improvement is achieved with pharmacotherapy, there is residual cognitive impairment and social functioning dysfunction. Thus, a holistic approach towards the treatment of depression by providing cognitive behavioral therapy and social therapy along with pharmacological therapy their overall quality of life can be improved. So, this study was carried out to determine the prevalence of cognitive impairment and factors affecting it in depression and the association of social functioning parameters with depression.
BASELINE SOCIODEMOGRAPHIC VARIABLES:

Impairment of social functioning often persists long after the resolution of symptoms by pharmacotherapy, and is not extensively assessed by the traditional scales to measure the intensity of depressive symptoms. Depression is associated with impaired performance on cognitive tests (13-15). A cross sectional study was done on 85 subjects presenting to the outpatient department of Psychiatry, Chettinad Hospital & Research Institute based on ICD-10 diagnostic criteria and HAM-D was applied to them to assess the severity of depression. Cognitive functions and social functioning was evaluated. Cognitive impairment was the primary outcome variable. The mean age of the subjects was 34.89 years and majority (68.24%) were females. Manit and his team (16) did their multi-country, multi-centre, cross-sectional study on 664 adults with a current episode of Major depressive disorder with objectives similar to our study. In their study also majority were (66.3%) females. The mean age was 46.5±12.5 years in their study which was higher than our study which could be due to the fact there is alarming increase in the proportion of people with depression in the younger age groups in the past few years. In their study 51.5% of patients were having their first depressive episode; 82.2% had a current episode duration >8 weeks. 36.47% had graduate or postgraduate qualification in our study while 24.71% had a high school certificate. 32.94% were skilled workers, 24.71% were unemployed in our study while Manit’s study (16) had 84.6% employed study population. 74.12% were from nuclear family while 25.88% were from joint family in our study. 63.53% were married, 22.35% were unmarried while 7% were divorced in the study. With regards to socio economic status, majority (40.00%) were from upper lower class and 24.71%) were from upper middle class. 22.35% were from lower middle class while 12.94% were from upper class.

DEPRESSION

The mean age of onset of depression was 32.5 years in the study population with 95% CI 30.45 to 34.64. In the study, depression was assessed based on ICD-10 diagnostic criteria and the severity was based on HAM-D. Majority of subjects (44.71%) had moderate depression, 32.94% had mild depression. 7.06% of subjects had very severe depression while only 1.29% had severe depression. The mean duration of depression was 2.41 years. In the study conducted by Manit (16) it was observed that 51.5% of patients were having their first depressive episode and 82.2% had current episode duration > 8 weeks. 54.12% had only 1 episode of depression while 18.82% had only 2 episodes. Only one subject (1.18%) had 10 episodes of depression. Among the co-morbidities, 4(4.71%) had acid peptic disease, 5 (5.88%) had hypothyroidism, 4 (4.71%) had DM. 49.41% had family history of depression.
**DSST, BGT-Z SCORE**

The mean DSST was 38.52 with 95% CI of 35.20 to 41.84 while the mean BGT-Z score was 69.96 with 95% CI of 65.07 to 74.86. The mean digit span forward was 4.75 with 95% CI 4.52 to 4.99 while the mean digit span backward was 3.36 with 95% CI 3.12 to 3.61. The difference in digit forward across severity of depression was statistically not significant. (P value 0.713). The difference in digit backward across severity of depression was also statistically not significant. (P value 0.229).

**COGNITIVE IMPAIRMENT**

In this study, 27.06% had cognitive impairment in DSST while 69.4% had cognitive impairment in BGT. The DSST is sensitive to the presence of cognitive dysfunction as well as to change in cognitive function across a wide range of clinical populations but has low specificity to determine exactly which cognitive domain has been affected. However, the DSST offers a practical and effective method to monitor cognitive functions over time in clinical practice. Performance on the DSST correlates with real-world functional outcomes (e.g., the ability to accomplish everyday tasks) and recovery from functional disability in a range of psychiatric conditions including schizophrenia and major depressive disorder. Stress and mental health problems impede social functioning. The other findings of the Manit study was that Asian patients with MDD reported perceived cognitive dysfunction. They assessed depression severity (Patient Health Questionnaire-9 items, PHQ-9), perceived cognitive dysfunction (Perceived Deficit Questionnaire -Depression, PDQ-D) and functional disability (Sheehan Disability Scale, SDS). In their study, patients reported perceived cognitive dysfunction (PDQ-D=22.6±16.2) and functional disability (SDS=11.3±7.9). PHQ-9, PDQ-D and SDS were moderately-to-highly correlated (PHQ-9 and SDS: r=0.72; PHQ-9 and PDQ-D: r=0.69; PDQ-D and SDS, r=0.63). ANCOVA showed that after controlling for patient-reported depression severity (PHQ-9), perceived cognitive dysfunction (PDQ-D) was significantly associated with functional disability (SDS) (p<0.001).

Cognitive impairment is more difficult to determine as a certain amount of change, particularly in the speed of information processing, is seen with normal aging. On being given the same test year after year, with practice, there may not be any change or not even an initial improvement in performance concealing the mild loss of ability occurring in the background. It can be quite challenging to differentiate between the minimal cognitive changes of normal aging and those of early dementia. Depression also has a negative effect on processing speed, in a way exaggerating the effect of normal aging. Two major types of cognitive dysfunction can be identified in depressive disorders: cognitive biases, understood as distorted information processing leading to...
depressive thinking errors, and cognitive deficits encompassing areas such as attention, memory and learning, executive functions and drive\(^{(19)}\). Clinically, cognition has been classified into four sub domains: learning and memory, attention and concentration, executive function, and processing speed. Patients presenting with Major depressive disorder commonly experience impairments in each of the principal sub domains of cognition\(^{(17)}\).

ASSOCIATION OF SEVERITY OF DEPRESSION WITH COGNITIVE IMPAIRMENT:

Cognitive dysfunction may be a primary mediator of functional impairment in Major depressive disorder. In this study there was a statistically significant association between cognitive impairment, determined by BGT and severity of depression based on HAMD. Depression was graded as mild, moderate, severe and very severe based on HAMD scores. Presence or Absence of Cognitive impairment was determined by DSST and BGT separately. With increase in the severity of depression, the proportion of subjects with cognitive impairment was increasing on categorization with DSST, but this difference was not statistically significant (P value = 0.076). In categorization with BGT, the proportion of subjects with cognitive impairment was very higher in moderate, severe and very severe depression and this difference was statistically very significant (P value 0.05). MarazzitiD\(^{(12)}\) in their review also observed that those patients suffering from major depression (MD) present some cognitive disturbances, such as impairment in attention, working memory, and executive function, including cognitive inhibition, problem- and taskplanning. If the results of short-term memory assessment in depressed patients are equivocal, a general consensus exists that memory problems are secondary to attentional dysfunctions, and reflect the inability to concentrate. Moreover, both unipolar and bipolar patients show evidence of impaired verbal learning that has been commonly interpreted as reflecting an inability to transfer information from short-term to long-term storage.

This study highlights the presence of cognitive dysfunction amongst patients with Depression. Physicians should consider the evaluation of cognitive dysfunction as an integral part of Depression management, particularly in light of treatment goals encompassing functional recovery beyond remission of clinical symptoms. This study has a few limitations. Conclusive interpretation of causality is questionable as it is only a cross sectional study with a small sample size.

SOCIAL FUNCTIONING:

Impairment of social functioning is a significant aspect of depression distinct from the symptoms of depression. Depression is associated with social risk factors, social impairments and poor social functioning. Social factors
are importantly involved in the pathogenesis and the consequences of depression\(^{(20,21)}\). The social processes can be dysfunctional at the behavioural, neuroanatomical, neurochemical and genetic levels. Patients with MDD report many unmet needs, including residual cognitive symptoms, lack of improvement in psychosocial functioning and life satisfaction, even during mood symptom remission\(^{(21)}\). Hudson and team \(^{(22)}\) in their meta-analysis also observed that improvements in depressive symptoms were associated with moderate improvements in social function \(\beta=-0.55, 95\% \text{ confidence interval } -0.82 \text{ to } -0.28\).

**CONCLUSION:** In this study the mean age of onset of depression was 32.5 years with majority of the subjects (44.71\%) having moderate depression, 32.94\% had mild depression, 1.29\% had severe depression while 7.06\% of subjects had very severe depression. The mean duration of depression was 2.41 years. The prevalence of family history of depression in our sample was found to be 49.41\%. Cognitive Impairment: The mean DSST was 38.52 with 95\% CI of 35.20 to 41.84 while the mean BGT-Z score was 69.96 with 95\% CI of 65.07 to 74.86. The mean digit span forward was 4.75 with 95\% CI 4.52 to 4.99 while the mean digit span backward was 3.36 with 95\% CI 3.12 to 3.61. The difference in digit forward and digit backward across severity of depression was statistically not significant. 27.06\% had cognitive impairment in DSST while 69.4\% had cognitive impairment in BGT. There was a statistically significant association between cognitive impairment, determined by BGT and severity of depression based on HAMD. With increase in the severity of depression, the proportion of subjects with cognitive impairment was increasing on categorization with DSST, but this difference was not statistically significant \(P \text{ value } = 0.076\). In categorization with BGT, the proportion of subjects with cognitive impairment was very higher in moderate, severe and very severe depression and this difference was statistically very significant \(P \text{ value } < 0.001\). Social Functioning: The mean total social functioning score in our study was 3.61 ± 0.28 with 95\% CI of 3.56 to 3.68. The mean self-care skill score was 3.59 with 95\% CI of 3.52 to 3.67 while the mean domestic skill score was 3.65 with 95\% CI of 3.57 to 3.72. The mean community skill score was 3.76 with 95\% CI 3.70 to 3.82 while the mean social skill score was 3.43 with 95\% CI 3.31 to 3.55 and the mean responsibility score was 3.63 with 95\% CI 3.56 to 3.71. There was statistically significant difference in the proportion of subjects with domestic skills, community skills, social skills, responsibility, and social functioning total score across severity of depression \(P \text{ value } < 0.05\) in our study. But there was no statistically significant difference in self-care skills across severity of depression \(P \text{ value } > 0.05\). Thus the study has revealed that there is cognitive impairment in Depression along with social functioning dysfunction and the severity of the illness corresponds to the presence of impairment. The following are recommended:
It may be important to evaluate the aspect of cognition in depression in larger samples from many centers to overcome the cultural differences which can alter the social functioning.

Evaluation the patient during the acute episodes and during remission can yield better results about the strength of association between the cognitive impairment and the social functioning.

REFERENCES


