Frequency of Cognitive Decline in Major Depressive Illness

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ABSTRACT

Objective: To determine the frequency of cognitive decline among patients with major depressive illness and analyze the associated socio-demographic factors.

Study Design: Cross-sectional study.

Place and Duration of Study: Psychiatry Department of Tertiary Care Hospital in Islamabad, from Jan to Jun 2018.

Methodology: The sample population comprised 190 patients with major depressive illness presenting at a Tertiary Care Hospital in Islamabad, Pakistan. A consultant psychiatrist diagnosed depression using the ICD-10 criteria for a depressive episode. Cognitive decline was assessed by using the British Columbia cognitive complaints inventory (BC-CCI).

Results: Out of 190 patients with depressive illness screened through BC-CCI, 133 (70%) showed the presence of cognitive decline, while 57 (30%) patients had no cognitive decline. We found that the female gender had a significant association with cognitive decline among the patients with depression (p<0.001).

Conclusion: This study showed a high frequency of cognitive decline among patients with depressive illness in Pakistan. Routine screening for cognitive decline should be done at the psychiatric clinics for the patients with depression, and special attention should be paid to the female patients suffering from this illness.

Keywords: British columbia cognitive complaints inventory (BC-CCI), Cognitive decline, Depression, Socio-demographic factors.

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INTRODUCTION

Many medical, neurological and psychiatric illnesses affect the cognition of an individual. Endocrino pathies, brain tumours, chronic renal disease, illicit substance use and depression are some of the diseases linked with the decrease in cognition of the individual.[1,2]

Previous research highlights the presence of cognitive decline among patients suffering from a major depressive disorder.[3] One study concluded that cognitive impairment is present among the patients with depression and more in the patients admitted to the wards. Another recent study also revealed similar findings.[4] A study done in Canada to devise a sensitive tool to assess cognitive decline in depression patients concluded that a large percentage of these depressed patients suffer from cognitive impairment.[5] Cognitive decline among depression patients not related to dementia is a widely discussed phenomenon nowadays. Problems related to cognition, if they persist for an extended period, can lead to decreased compliance to treatment and compromised quality of life which increases the chance of increased psychosocial impairment among the patients who already had a devastating illness like depression.[6]

The mechanism by which depression causes cognitive impairment is complex and multidimen-sional.[7] Depression leads to vascular cognitive impair-ment by causing lesions on the hippocampus and white matter. Pro-inflammatory changes and alteration in nerve growth factors can also account for cognitive problems in depressive patients.[8] Depression also contributes to Alzheimer's disease aetiology by increasing the amyloid plaques. All these factors, when combined, lead to cognitive impairment among patients with major depressive disorder.[9]

Multiple risk factors are associated with cognitive decline among patients with depression. Some of these include gender, the severity of depressive illness, treatment response and socio-demographic profile of the patient suffering from the depressive illness.[10]

Studies are available on depression in older adults and chronically ill patients, but little work has been conducted to evaluate the presence of cognitive decline among these individuals. This study was planned to assess the frequency of cognitive decline among patients with depression and analyze the associated

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socio-demographic factors linked with the presence of cognitive decline among these patients.

METHODOLOGY

This cross-sectional study was conducted at the Psychiatry Department of Tertiary Care Hospital, Islamabad, from January to June 2018. The sample size was calculated by using the WHO sample size calculator.[11] Non-probability consecutive sampling technique was used. Ethical approval for the study was obtained from the Ethical Review Board Committee of the hospital.

Inclusion Criteria: Patients of either gender, with age >18 to <65 years presenting with major depressive illness were included in the study.

Exclusion Criteria: Patients with a past or current history of any other psychiatric illness, dementia or delirium or with a past or current history of substance use, patients who were pregnant or had a recent history of stroke, brain tumour or brain damage due to any other medical, neurological or autoimmune illness or could not read or perform the questionnaire were excluded from the study.

The screening was performed on all the patients with a depressive illness diagnosed by a consultant psychiatrist on ICD-10 criteria for depressive illness. British Columbia cognitive complaints inventory (BC-CCI) was used to assess the cognitive decline. It is a standardized screening tool for measuring the cognitive decline of individuals. BC-CCI is a 6-item self-rating scale that takes less than 5 minutes. A score greater than four by Likert scoring is the cut-off score. For assessing the severity of cognitive decline, the following classes were made; normal 0-4, mild cognitive decline 5-9, moderate cognitive decline 9-14 and severe cognitive decline 15-18.[12,13] After written informed consent, subjects were provided with a detailed description of the study and were inducted into the study. Subjects with confounding variables like the presence of chronic mental or neurological illness or substance use were identified by detailed history taking and excluded from the study. Patients with depressive episodes, regardless of duration and severity, were included in the study.

Patients were asked to answer the questions according to their condition in the last month. Socio-demographic variables in the study included age, gender, marital status, education and tobacco smoking. People answering "yes" to the question "do you smoke or have you smoked tobacco products regularly, daily or nearly daily?" were classified as smokers. Marital status was classed as married and single or divorced or widowed. Education was classed as patients having education of fewer than ten years or ten years and more. The socio-demographic data of the total sample of subjects participating in the research was entered in the structured proforma.

Statistical Package for Social Sciences (SPSS) version 23.0 was used for the data analysis. Characteristics of participants and the distribution of the BC-CCI score were described using descriptive statistics. Chi-square test was applied to find out the association. The *p*-value of ≤0.05 was considered statistically significant.

RESULTS

A total of 205 patients with depressive illness were approached to participate in the study. Five patients refused participation or were unable to follow up and 9 were ineligible due to exclusion criteria (3 gave a history of psychoactive substance use, 2 had autoimmune disease with a positive autoimmune profile, 3 were diagnosed with cases of panic disorder and one patient was pregnant). After giving consent, one patient did not provide complete data at baseline, leaving 190 participants who had completed BCC-CI. The mean age of the patients was 39.5 ± 4.59 years. 81 (42.6%) patients were females while 109 (57.4%) were males, 100 (52.6%) patients were married, 90 (47.4%) were unmarried/widowed, 116 (61.1%) patients had <10 years education, 139 (73.1) patients were- smokers as shown in Table-I.

Table-I: Demographic Characteristics of patients.

Study Parameters	n (%)
Age (Years)	
(Mean ± SD)	39.50 ± 4.59 years
Gender	
Male	81 (42.6)
Female	109 (57.4)
Marital Status	
Married	100 (52.6)
Unmarried/Widowed	90(47.4)
Education	
<10 Years	116 (61.1)
10 Years or More	74 (38.9)
Smoking	
Non Smoker	139 (73.1)
Smoker	51 (26.9)

133 (70%) patients showed a cognitive decline, while 57 (30%) had no cognitive decline. Table–II showed the distribution of the patients with respect to the severity of the cognitive decline. Female gender, education and marital status had significant associa-tion with cognitive decline (p<0.05).

Table II: Association of Socio Demographic factor with the BCC-CI scores.

Socio Demographic factor	No Cognitive (BC-CCI 0–4)	Mild Cognitive decline (BC-CCI 5–9)	Moderate decline (BC-CCI 9–14)	Severe Cognitive decline (BC-CCI 14–18)	*p*-value
Total	n (%)	n (%)	n (%)	n (%)	
	57 (30)	37 (19.5)	48 (25.3)	48 (25.3)	
Age					
<50 years	36 (63.1)	17 (45.9)	32 (66.6)	25 (52.1)	0.172
50-65	21(36.9)	20 (54.1)	16 (33.4)	23 (47.9)	
Gender					
Male	40 (70.2)	12 (32.4)	07 (14.6)	22 (45.8)	<0.001
Female	17 (29.8)	25 (67.6)	41 (85.4)	26 (54.2)	
Marital Status					
Married	23 (40.3)	28 (75.7)	22 (45.8)	27 (56.2)	0.006
Unmarried/widowd	34 (59.7)	09 (24.3)	26 (54.2)	21 (43.8)	
Education					
<10 years	42 (73.7)	23 (62.2)	21 (43.8)	30 (62.5)	0.019
10 years or more	15 (26.3)	14 (37.8)	27 (56.2)	18 (37.5)	
Smoking					
Non Smoker	51 (89.5)	31 (83.8)	43 (89.6)	44 (91.7)	0.705
Smoker	06 (10.5)	06 (16.2)	05 (10.4)	04 (8.3)	

DISCUSSION

Using BCC-CCI, we found that more than 70% of our sample population showed the presence of cognitive decline. This was similar to the other studies on the patients of depressive illness regarding their cognition in other parts of the world.[5,11,14] We used a screening tool, the result may show a higher reflection and needs some diagnostic tool to ascertain the problem among the positive individuals. In addition, longitudinal studies and repeated assessments are required to differentiate cognitive impairment from full-blown dementia.

Some of the factors that may affect the cognition of these patients have been reported as vascular damage, lesions in the areas of the brain responsible for cognition and enhanced neuro-degenerative process.[15] Other co-morbidities and psychological disorders like post-stroke depression and anxiety also contribute to the cognitive decline.[10,16]

Various studies showed mixed results regarding the association of gender with cognitive impairment in depression.[17-19] Results in our study showed a strong association between the female gender with the cognitive decline in depressed patients. The reason might be other psychological issues predominantly found among females, especially in developing countries like ours. More studies are needed to ascertain this association.

When chi-square was applied, low education was significantly associated with cognitive decline in our study. Past studies have also supported this association.[19,20] Various surveys demonstrated that increasing age was not a risk factor for cognitive decline in depressed patients.[19] Our study revealed similar results as age was related to the cognitive decline on any statistical test.

Tobacco smoking was not related to high BCC-CI scores in our study. Kuczmarski *et al*, showed in their study that smoking was related to cognitive decline. However, caffeine was unrelated.[21] Western population has a high prevalence of alcohol and other recreational substance use compared to our population, which might be because of the difference in results.

Longitudinal studies involving more sample size and sophisticated study design are suggested to ascertain the association between depressive illness and cognitive decline and the associated risk factors among our population.

LIMITATIONS OF STUDY

Our study has a few limitations as well. A randomized selection of study subjects from all the patients with depressive illness was not made. Therefore, the results of the present study cannot be generalized. We used the cross-sectional study method. Therefore, the cause and effect relationships remain unclear and further studies to look into these associations using longitudinal epidemiological data

are suggested. BCC-CI is a self-reported screening tool in which there is always a chance of over or under-reporting the symptoms. The severity of depression was not assessed and correlated with the severity of the cognitive decline.

CONCLUSION

This study showed a high frequency of cognitive decline among patients with depressive illness in Pakistan. Routine screening for cognitive decline should be done at the psychiatric clinics for the patients with depression, and special attention should be paid to the female patients suffering from this illness.

Conflict of Interest: None.

Authors' Contribution

AK: Manuscript Writing, UBZ: Data collection, RT: Interpretation of data, KHSB:, AY:, NUSK: Data analysis.

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