MEMORY IMPAIRMENT IN PATIENTS OF SCHIZOPHRENIA

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ABSTRACT:
Background: Cognitive deficits have become an important focus for psychiatric research in major psychiatric disorders. There has been a great interest in the patients with Schizophrenia on a broad range of neuropsychological tests in the last two decades. These deficits involve usually memory, attention and executive function.

Objectives: To study the socio-demographic profiles of Schizophrenic patients and normal control and to assess and compare cognitive functions among the patients of Schizophrenia disorder and normal control.

Material and Methods: 100 schizophrenic patients as per ICD 10 who came to Psychiatry OPD and 100 normal controls of Jawaharlal Nehru Medical College, Aligarh Muslim University, Aligarh, India were recruited for the study.

Results: Schizophrenic patients were found to be having significant level of cognitive impairment as compared to normal controls.
Inclusion Criteria
Both genders, Age range between 18 to 60 years, Patients of Schizophrenia as per criteria of ICD-10, First episode of illness, Duration of illness less than 2 years, Patients speaking English or Hindi fluently, Patient having education of at least primary level (minimum 8th standard), On the maintenance doses of anti-psychotic medication, Having moderate grade of illness severity, Who gave written consent

Exclusion Criteria
Patients with severe psychopathology who had problem in comprehending instructions, Patients with Sensory and motor deficit, Clinical evidence of mental retardation, organic pathology, substance abuse or significant physical illness, History of significant head injury, Non-cooperative patients, Patients having mild or very severe grade of illness, Patients/ patient’s family member who did not gave the consent, Patients with other co morbidity of physical or mental illness, Patients those who had undergone electroconvulsive therapy in the past 6 month

Tools
The following tools were used in the present study.
A. Socio- demographic and Clinical Data Sheet:
It is a semi structure Performa especially designed for this study. It contains information about Socio demographic variables like age, sex, religion, marital status, domicile and occupation, family type, monthly income. Clinical details like age of onset, mode of onset, course, duration, medication and side effects, history of alchohol or substance abuse, any history of significant head injury, seizure, mental retardation and family history of mental illness along with it pre morbid and Personal history.
B. Positive and Negative Syndrome Scale (PANSS)
PANSS is a severity symptom scale for Schizophrenia. It is a 30-item, seven point rating instrument for assessing positive, negative and other symptoms in Schizophrenia (Kay 1987). Each item on the PANSS is accompanied by a complete definition as well as detailed anchoring criteria for all seven rating points, which represent increasing levels of psychopathology : 1= absent, 2= minimal, 3= mild, 4= moderate, 5 = moderately severe, 6 = severe, and 7 = extreme. It has high internal reliability, homogeneity among items (.73-.83 for each scale), good split–half reliability for general pathology scale (.80) (Rector N.A,2011).
C. PGI-Memory Scale (PGI-MS)
PGI-MS initially developed by Prashad (1977, Pershad and Wig, 1988) is based on the conceptualization of memory as the ability to retain and reproduce impressions once learned intentionally. It includes 10 subtests standardized on adult subjects in the age range of 20-45 years. Separate norms are available for three educational levels i.e. 0 to 5th, 6th to 9th and above 10th years of schooling. The test material consists of 10 subtests i.e Remote Memory, Recent Memory, Mental Balance, Attention and Concentration, Delayed Recall, Immediate Recall, Verbal Retention for similar pairs, Verbal Retention for dissimilar pairs, Visual retention and Recognition. Scoring is based on different norms are used for different items. Test-retest reliability for the ten subtests ranges from 0.69 to 0.85. Construct validity was established by correlating the test with Bostono Memory scale (0.71) and the Wechsler Memory scale (0.85) (Fujii D.E. 2011)

Statistical Analysis
The data obtained from this study was analyzed with the help of statistical package for social science- 20 (SPSS-20), by using following statistical methods. For socio- demographic variables, chi-square test was applied. Series of Non-parametric test were used for analysing the data as it was not normally distributed. Mann Whitney test was applied to data for between group analysis for neurocognitive measures of schizophrenia and normal control.

Results

Table 1: Showing Socio demographic profiles of Schizophrenic patients in Experimental and Control groups

<table>
<thead>
<tr>
<th>Variables</th>
<th>Schizophrenic N=100</th>
<th>Normal Control N=100</th>
<th>χ²</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>44 (44)</td>
<td>41 (41)</td>
<td>.416</td>
<td>.937</td>
</tr>
<tr>
<td>30-39</td>
<td>20 (20)</td>
<td>20 (20)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-49</td>
<td>23 (23)</td>
<td>23 (23)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-60</td>
<td>13 (13)</td>
<td>16 (16)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>66 (66)</td>
<td>60 (60)</td>
<td>.772</td>
<td>.580</td>
</tr>
<tr>
<td>Female</td>
<td>34 (34)</td>
<td>40 (40)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>59 (59)</td>
<td>62 (62)</td>
<td>.194</td>
<td>.856</td>
</tr>
<tr>
<td>Unmarried</td>
<td>39 (39)</td>
<td>36 (36)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Widowed</td>
<td>02 (02)</td>
<td>02 (02)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Religion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hindu</td>
<td>49 (49)</td>
<td>51 (51)</td>
<td>1.27</td>
<td>.619</td>
</tr>
<tr>
<td>Muslim</td>
<td>46 (46)</td>
<td>47 (47)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christian</td>
<td>15 (15)</td>
<td>12 (12)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 1: Compares socio demographic profile of Schizophrenic patients and Normal control. Both the groups were matched on all socio-demographic variables i.e. age, gender, marital status, religion, residence, family type, socio economic status. There was no significant difference found between both the groups on socio-demographic variables at 0.05.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Schizophrenic</th>
<th>Healthy Control</th>
<th>$\chi^2$</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residence</td>
<td>45 (45)</td>
<td>40 (40)</td>
<td>.512</td>
<td></td>
</tr>
<tr>
<td></td>
<td>55 (55)</td>
<td>60 (60)</td>
<td>.474</td>
<td></td>
</tr>
<tr>
<td>Family Type</td>
<td>35 (35)</td>
<td>42 (42)</td>
<td>3.58</td>
<td>.167</td>
</tr>
<tr>
<td></td>
<td>47 (47)</td>
<td>34 (34)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>18 (18)</td>
<td>24 (24)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SES</td>
<td>41 (41)</td>
<td>40 (40)</td>
<td>2.96</td>
<td>.431</td>
</tr>
<tr>
<td>Upper</td>
<td>56 (56)</td>
<td>54 (54)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower Middle</td>
<td>03 (03)</td>
<td>04 (04)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Socio economic status: it was determined using Kuppuswamy’s Socio Economic status scale. Education, occupation and income are included in it.

Figure I shows level of memory impairment in schizophrenic patients. 58% of Schizophrenic patients were having moderate to severe level of attention impairment which was followed by 22% of very severe level of attention impairment patients and 5% of patient reported of having mild level of cognitive impairment whereas 22% were not having cognitive impairment.

Figure II shows level of memory impairment in normal control. 92% of Normal control were having no memory impairment, 7% were having mild attention impairment whereas 1% were having moderate to severe level of attention impairment.

Table 2: Showing severity of cognitive impairment in schizophrenic patients and normal control.

<table>
<thead>
<tr>
<th>Category</th>
<th>Schizophrenic N (n%)</th>
<th>Healthy Control N (n%)</th>
<th>$\chi^2$</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>22 (22)</td>
<td>92 (92)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild</td>
<td>5 (5)</td>
<td>7 (7)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The study was drawn from the psychiatry department of Jawaharlal Nehru Medical College and Hospital, a tertiary care hospital of Aligarh district in Uttar Pradesh, India. This was a time bound study and more over many centers around Aligarh were not having trained therapist. Hence the study was carried out in single center. Single center study in this context have an upper hand of meeting better control over homogeneity of setting, sample and the intervention being carried out by the single therapist.

Demographic characteristics of the sample
The present study showed that majority of the sample were in 20-29 years of age, were males, married, hailing from rural and belonged to upper middle class in Schizophrenic and control group. India has the world’s largest youth population despite having a smaller population than China. The report titled ‘the power of 1.8 billion: 2017’ reported that 28% of India’s population i.e. 356 million are youth population. Females were found to be less as compared to males; India being male dominant society, where females are still underprivileged and are given less priority. The reason could be because the hospital where this study was conducted is in district head quarter hence greater number of urban patients visited there. In other socio-demographic characters no significant findings was found.

Cognitive Measure of the sample
The cognitive measure which was assessed in our study was Memory. Memory function plays a crucial role in many cognitive tasks, such as reasoning learning and understanding. The PGI-Memory Scale was used for measuring Memory. Memory has been regarded as one of the major areas of cognitive deficit in schizophrenia (McKenna et al., 1995). Although the pioneers of schizophrenia research, Kraepelin (1919) and Bleuler (1911), considered memory functions to be relatively preserved in schizophrenia, numerous studies conducted in the second half of this century have shown that patients with schizophrenia perform poorly on a wide range of memory tasks (Goldberg & Gold, 1995; Landro, 1994; Stip, 1996). Studies indicate memory impairment in schizophrenia to be common and disproportionate to the overall level of intellectual impairment (Gold et al., 1992; Rund, 1989). McKenna and colleagues (McKenna et al., 1990) have even suggested existence of a schizophrenic amnesia. However, other authors consider the memory impairment to be relatively small in magnitude or secondary to attentional dysfunction (Cutting, 1985; Nuechterlein et al., 1984; Gjerd., 1986). In addition, the specificity of memory impairment in schizophrenia is unclear. It has been suggested that, in schizophrenia, some aspects of memory may be affected to a greater extent than others. This would be the case, for example, in active retrieval (free recall) of declarative information from long-term memory, which would be significantly more impaired in individuals with schizophrenia than retrieval from short-term memory—e.g., digit span (Koh, Marusarz, & Rosen, 1980). Also, some authors have proposed that encoding of information may be more affected than memory processes such as retrieval and recognition (Heaton, 1994; McClain, 1983). In contrast, other studies report that the memory deficit in schizophrenia encompasses a broad range of memory processes, as evidenced by poor scores in multiple task paradigms (Calev et al., 1983; Saykin et al., 1991).

The results of the present study confirm the hypothesis that patients with chronic schizophrenia have a general memory deficiency. These results are in accordance with consistent evidence of attention disorders in this clinical population (Filbey, Russell, Morris, Murray, McDonald, 2008; Kurtz, Moberg, Gur, Gur, 2001; Nieuwenstein, Aleman, de Haan, 2001; Luck & Gold, 2008). The importance of these results is based on the fact that memory is a central cognitive function enabling precision, rapidity and continuity to information processing (Berge, 1995) and interacts with other cognitive functions such as sensory perception, language, executive functions, among others. This could explain the existence of generalized failures in different cognitive functions.

Limitation
The current study was relatively modest in terms of sample size so future studies should use larger samples. No relation between clinical symptoms and neuro-cognitive measures were evaluated.
Future Duration and Suggestion
Future studies should also examine the factors that lead to cognitive impairment, relation between cognitive impairment and clinical symptoms, which was not currently conducted because of the restrictive sample size.

References
[22] Kraepelin, E: Dementia Praecox and Paraphrenia (1919). Translated by Barclay RM; edited by Robertson GM. New York, Robert E Krieger,


