Intellectual Functioning of Individuals with Mental Disorders on Wechsler Adult Intelligence Scale –Revised (WAIS –R)

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Received: October 19, 2010 Accepted: January 12, 2011 doi:10.5539/ijps.v3n1p43

Abstract

The purpose of present research was to evaluate the intellectual functioning of individuals suffering from Major Depressive Disorder, Obsessive Compulsive disorder and Schizophrenia. After detailed literature review it was hypothesized that the mean full scale IQ score of adults with Obsessive Compulsive disorder will be higher than the mean full-scale IQ score of adults with (i) Schizophrenia and (ii) Depression. Since the previous century research work has been started on intelligence investigating how it is related to psychiatric disorders e.g Goodman and Graham, (1996) found psychiatric problems as the strongest consistent predictor of intelligence quotient (IQ). Further several other researchers found the effects of psychological disorders on intellectual functions (Tallis et al. 1999; Savage et al. 2000; Zitterl et al, 2001; Tuna et al. 2005). Through purposive sampling technique; considering the independent group design, a sample of 90 (30 in each group) was selected from different psychiatric clinics and hospitals of Karachi- Pakistan. The age range was from 16 to 50 years (mean age=31.5 years).Their education level was Intermediate to Masters. After taking the consent from the authorities their diagnoses were taken from the concerned files. The Wechsler Adult Intelligence Scale (WAIS-R, Wechsler, 1981) was administered to assess the intellectual functioning of the patients, followed by Intake card and Case History Sheet of Institute of Clinical Psychology, University of Karachi. In order to interpret the results in statistical terminology t-test and ANOVA were computed. It was indicated that there is a significant difference between mean Full scale IQ scores of adults with Obsessive compulsive disorder (OCD) and schizophrenia. However an insignificant difference was found between mean full scale IQ scores of adults with Major Depressive disorder and Obsessive compulsive disorder (OCD).Implication of the findings have also discussed.

Keywords: Intellectual functioning, Major depressive disorder, Obsessive compulsive disorder, Schizophrenia

1. Introduction

It is well known fact that IQ functioning is lower in individuals with schizophrenia as compared to general population(Larry et al,2006),however factors associated with cognitive deficits are not well established (Amminger et al.,2002). Several researches are available and reflect the cognitive and intellectual deficits in psychiatric patients. Neuro cognitive deficits suggesting disturbances in the prefrontal cortex that have been reported in both schizophrenia and major depression (Sweeney e tal.1993 cited in Clark, et al. 2003). Goldberg et al (1993) and Merriam et al (1999) found that clients with major depression showed significant deficits on Wisconsin Card Sorting Test however these deficits were less severe than those in patients with schizophrenia. Some studies have suggested intelligence quotient (IQ) decline after the onset of psychosis (Nelson et al. 1990). Generally speaking these researchers support the neuro developmental hypotheses of disease such as

schizophrenia and depression (Murray & Lewin, 1987; Heaton et al., 1994; Aleman et al 1999; Fucetola et al 2000; Aylward et al 2005; Shabbir & Ali,2009).

Amminger et al (2002) further suggested that untreated psychoses compromise some aspects of cognitive functions. Later Joyce et al (2005) revealed that half of people with schizophrenia in this study had preserved IQ in normal range after the onset of disorder but there was evidence of a specific impairment in special working memory even in those with high/average IQ; (40%) had generalized cognitive decline, similar results were also revealed by Lesson, et al (2009).

Persons with schizophrenia demonstrated significant impairment on vocabulary and block design at the age of 35 years (Seidman et al., 2006). Besides several mental illness like schizophrenia other researcher showed cognitive decline even in anxiety patients e.g. Castaneda et al (2008) investigated that both clients with major depression and anxiety disorder have cognitive impairment although their nature remains partly unclear. It has been observed during our clinical experience that clients with depression and anxiety disorders often have reality contact and their social, occupation and daily functioning is much better then people with schizophrenia because it is more severely disturbed mental disorder. Lesson, et al (2009) also showed that IQ at psychosis onset rather than premorbit IQ predicts a more severe illness.

After reviewing the literature, the present research was designed to ascertain the degree and specificity of intellectual functioning between the individuals with schizophrenia, major depressive disorder and obsessive compulsive disorder in our culture. In our culture people don't have much awareness about intellectual functioning and how it could affect after the development of psychiatric disorders. Sometimes they are misdiagnosed with intellectual disabilities if the client is not educated and treated by unskillful professionals. Considering current scenario present study would answer to the question that whether individuals with Obsessive Compulsive disorder score higher than other disorders on test of intellectual functioning. Findings of this research would definitely be helpful for clinicians in estimating prognosis and applying suitable interventions for mentally ill patients. As Amminger et al (2009) suggested early treatment of psychoses could help to reduce the prominent cognitive deficit in first episodes of schizophrenia. It also determines that how does mental disorders affecting person's cognitive, analytic, executive functions and memory. This would further enhance the understanding in the areas of personality and useful in making treatment plans.

2. Hypotheses

The mean full-scale I.Q score of adults with obsessive compulsive disorder would be higher than the mean full-scale I.Q score of adults with (i) schizophrenia and (ii) Major Depressive disorder.

3. Method

3.1 Sample

Through purposive sampling technique; considering the independent group design, a sample of 90 (30 in each group) was selected from different psychiatric clinics and hospitals of Karachi- Pakistan. The age range was from 16 to 50 years (31.1 years mean age); .where as mean age of patients of OCD was 32 years, schizophrenia and depression was 36 years. When we compare all male samples with female sample, the mean age of male group was 33 years and female group was 35 years. There was a difference between OCD male patient whose age mean age was 29 years where as male and females of other groups was ranged from 34 years to 38 years.

After taking the consent from the authorities their diagnoses were taken from the concerned files. They were diagnosed by qualified psychiatrists and psychologists according to the criteria of DSM-IV-TR (APA, 2000). Only those adult clients were selected for research purpose who has been suffering from major depressive disorder (without psychotic features) for the minimum period of one month and maximum period of one year. They may be on medication further only those adult clients were taken who has been diagnosed with schizophrenia with out the history of having electroconvulsive therapy; minimum period of onset was 6 months and maximum one year. They were taking antipsychotic drugs as well. The clients with obsessive compulsive disorder were under psychiatric treatment with the minimum duration of one month and maximum one year.

The entire sample was drawn from the Institute of Clinical psychology (University of Karachi), Liaqat National Hospital, Faran Hospital, Azghar Hospital, and Baqai Hospital of Karachi, Pakistan. In these hospitals clients are coming from urban, suburbs, and rural areas of Karachi which is a metropolitan city where people have multiethnic and multilingual back ground. None of subject had a history of head injury, or substance dependency. Their minimum educational level was Intermediate to Masters and only those were taken as sample that belongs to middle socio economic class.

3.2 Measures

3.2.1 Intake card and Case History Sheet

Intake card and case history sheet of Institute of Clinical Psychology University of Karachi, Pakistan is comprised of client's history, history of complaints, sex, education, socio economic status, duration of illness, type of disorder, medication, history of addiction and physical illness, perception , memory, concentration, history of work, history of family and friends etc. This Interview form was used to take demographic information and to further confirm the diagnosis.

3.2.2 Wechsler Adult Intelligence Scale –Revised (1981)

The WAIS battery (Wechsler, 1981) consists of 11 diverse subtests that measures a variety of verbal and non-verbal mental abilities that contribute to general intelligence(g factor). The WAIS full-scale IQ score (FSIQ) is based on performance on all 11 subtests (according to age-based norms). *Scoring:* The WAIS-R consists of six verbal subtests and five performance subtests. The verbal tests are: Information, Comprehension, Arithmetic, Digit Span, Similarities, and Vocabulary. The Performance subtests are: Picture Arrangement, Picture Completion, Block Design, Object Assembly, and Digit Symbol. The scores derived from this test are a Verbal IQ (VIQ), a Performance IQ (PIQ), and a Full Scale IQ (FSIQ). The FSIQ is a standard score with a mean of 100 and a standard deviation of approximately 15. *Reliability:* WAIR – R is a very reliable measure of general Intelligence, its corrected split-half reliability coefficients for Full Scale IQ ranges from .96 to .98, for Verbal IQ ranges from.95 to .97; moreover for Performance IQ is excellent, averaging .93.

3.3 Procedure

The entire sample was approached through different psychiatric hospitals of Karachi and Institute of Clinical Psychology University of Karachi-Pakistan. The sample was selected on the basis of detailed clinical interview and diagnoses of Major depressive disorder, Obsessive Compulsive disorder and Schizophrenia made by respective Psychiatrists and Clinical psychologists. Initially the researcher took the written permission from the directors of all Hospitals and Institutions then the confidentially was assured and they were told that if they want to withdraw from test they could. Data was collected from patients individually. After the development of rapport and informed consent from the patients and their care takers, they were further required to respond on a demographic data form such as (Interview form) i.e. Intake card and Case history sheet of Institute of Clinical Psychology University of Karachi. After giving 10 min break Wechsler Adult Intelligence Scale-R (Wechsler, 1981) was administered.

3.4 Scoring and Statistical Analysis

After data collection Items of WAIS R were scored according to the standard procedure given in the manual, raw score were converted into scale scores and IQ scores. IQ score were taken for statistical analyses. t-test and one way ANOVA were applied (through the use of SPSS version 12.0) to determine the significance difference between the scores obtained by the individuals with obsessive compulsive disorder, Major Depressive disorder and Schizophrenics on the variables of IQ scores.

3.5 Ethical Consideration

The present study was conducted under the principles of ethical standards of APA. Confidentiality, anonymity of identification and findings were strictly followed. All participants were given full regards for their willingness to participate and withdraw during study. Rules for copy rights and permissions were also followed. All concerning organizations and participants were thanked for their cooperation.

3.6 Operational Definition of different term

3.6.1 Intelligence

"The global capacity of a person to act purposefully, to think rationally, and to deal effectively with his/her environment" (weshsler, 1939, p. 229).

3.6.2 Individual with mental disorder

In present study individual with mental disorder are those participants of the study who are diagnosed with Major Depressive disorder, obsessive compulsive disorder and schizophrenia according to DSM IV-TR criteria (APA, 2000).

4. Results

Findings from resent research showed that there is a significant difference between the mean IQ scores of individual with obsessive compulsive disorder and schizophrenia, (see table I)but there is an insignificant

difference between obsessive compulsive disorder and major depression (see table II). Additional findings showed that there is a significant difference between Full scale, verbal and performance IQ scores of three groups (see Table III).

5. Discussion

The present research showed very promising results and somewhat consistent with previous findings, it indicated that all three psychiatric group of patients such as individual with schizophrenia ,major depression and obsessive compulsive disorder have lower FSIQ functioning on WAIS-R(see table III), this is comparative study among three psychiatric group. Over all it is indicated that Obsessive compulsive showed much less cognitive decline than depressive clients, though the difference is not significant (see table 2) and schizophrenia the difference of FS IQ is significant (see table 1).

As far as the results of One-Way Analysis of variance (ANOVA) is concerned it is showed that the mean score of full scale IQ, Verbal IQ and Performance IQ scores are significantly different between these three groups(see table 3). It is further indicated that individuals with OCD have decreased performance than average IQ range that is given by (Wechsler 1981), its 5 points lower, where as individuals with depression have 6 point lower IQ than average range and individuals with schizophrenia have 20 points lower IQ than normal range. It is may attributed to impairment in different areas that are related to cognitive perception, concentration, memory and executive function of psychotic patients as according to DSM criteria schizophrenic have disturbances in cognitions and thoughts, and has poor reality contact. WAIS-R is Intelligence test which requires full concentration if person mental status is disturbed; they cannot perform according to their capacities. In the present study we did not include any neurological test; but previous findings does relate IQ performance of psychiatric group to neuropsychological dysfunctions (Moritz et al., 2002).

Several researches suggest that higher cognitive reserve would results in better functional outcome because greater insight would lead to improve treatment adherence (Barnett et al., 2006; see Lesson et al., 2009).

Findings of Moritz (2002) showed that better performance of OCD clients, when their performance on WCST was compared to schizophrenia and depressive. Previously most of the literature focused on investigating the cognitive deficits in schizophrenia and depressive (Shabbir, & Ali, 2009), very few researches have focused on anxiety disorder regarding IQ, although some researchers have intensively studied executive functioning of OCD (Ji Lee et al., 2009).

In the view of the neuropsychological aspects there is an extensive literature indicated that poor motivation or negative symptoms occurring in chronic schizophrenia are not the major causal factors of the neuro cognitive deficits, but they may impact assessment. There is a relationship between low premorbid IQ and a preponderance of negative symptoms (Andreasen and Olsen, 1982; Tamminga et al., 1998; see Nelson et al., 1990)). Voruganti et al. (1997; see Nelson et al., 1990) suggested that patients with predominantly negative symptoms exhibit more severe neuro cognitive deficits. Low IQ may be a confounding variable in the reporting of positive symptoms.

A vast literature on cognitive functioning showed that frontal dysfunctions play a vital role in the geneses of schizophrenia (Liddle, 1999, see Moritz, 2002) depression (Rogers et al, see Moritz et al., 2002) and Obsessive compulsive disorder (Purcell,1998, see Moritz et al.,2002, Spitznagel, & Suhr, 2002); Moritz et al further showed in their research suggested that healthy control showed superior performance relative to patients suffereing from depression and schizophrenia who exhibited comparatively deficits in all tasks where as OCD patients revealed dysfunctions in Trail-making Test and fluency tasks. As far as depression is concerned it is described by literature review that neurobiological system is involve in depression , people who are depressed tend to have low social support and low social support may lesson the person's ability to perform(Keltner & Kring, 1998).

Previously Anastasi (1988) suggested it is likely that pathological deterioration, as from brain damage or psychotic disorders, does not affect all intellectual functions uniformly. For example some functions are believed to remain relatively unaffected, while others are considered to be more sensitive to particular pathological influences. Likewise, severe anxiety may seriously interfere with concentration, while leaving performance on other tests unimpaired.

5.1 Conclusion

Our data indicate independent ability of general intelligence although these findings require replication in larger samples. The present study provides an important step in showing how psychiatric illness affects intellectual performance. Moreover, these findings demonstrate psychometrically derived information about intellectual performance on both verbal and performance tasks; they suggested that such information can be valuable in identifying and clarifying the confusing explanations for some of the associations that have been observed in prior

studies. It is clearly indicated that persons with mental illness do score lower on intelligence tests thus a clinician should very careful while drawing any diagnostic conclusion especially with intellectual disability. In Pakistani culture WAIS –R is equally useful for evaluating intellectual functioning. As far as the psycho therapeutic treatment of these clients is concerned, the administration of psychometric tools is essential, because due to awareness about the treatment, usually people are coming for psychotherapy. Mostly psychiatrists refer clients for cognitive behavior therapy for which the intellectual assessment is very useful.

5.2 Implication and Recommendations

It is clear that every mental illness comprises some sort of strengths regarding social, emotional, physical aspect, hence clinician should focus to developed more tests and inventories that could identify theirs strengths on the bases of which better treatment plans can be implemented. Several researches suggest that higher cognitive reserve would results in better functional outcome because greater insight would lead to improve treatment adherence (Barnett et al 2006; see Lesson et al 2009). Thus it is strongly suggested that early identification of intellectual functioning should be practices in clinical setting in order to establish better rehabilitation programs and other therapeutic strategies.

Acknowledgement

We are extremely thankful to the authorities of Institute of Clinical Psychology, Liaquat National Hospital, Asgher Hospital, Faran Hospital Karachi -Pakistan. We are highly thanks to clients who have participated and their caretakers who cooperated for their participation in this lengthy and project.

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Note

Note 1. This paper has been presented in "Pacific Rim Objective Measurement Symposium" held at International Islamic University, Kuala Lumpur- Malaysia on June 29 – July 1, 2010. The participation was sponsored by Higher Education Commission, Islamabad-Pakistan.

Table 1.Mean Full Scale IQ scores of Adult with Obsessive Compulsive Disorder and Schizophrenia

Groups	N	M	SD	df	t	Sig.
FSIQ of OCD	30	85.26	14.33	58	4.18	P<.05
FSIQ of Ind. Schizophrenia	30	70.00	10.03			

Note: it shows that there is significant difference between FSIQ of adults with Obsessive Compulsive Disorder(OCD) and Schizophrenia (p<.001), adults with OCD showed 5 points lower than average IQ whereas Adults with Schizophrenia showed 20 points lower than average IQ (P<.000)

Table 2. Mean Full Scale IQ scores of Adult with Obsessive Compulsive Disorder and Major depressive disorder

Groups	N	M	SD	df	t	Sig.
FSIQ of Ind. OCD	30	85.26	10.03	58	.497	P>.05
FSIQ of Ind. Depression	30	83.93	10.72			

Note: it shows that there is an insignificant difference between FSIQ of adults with Obsessive Compulsive Disorder and Major Depressive Disorder (p>.05)

Table 3. One way ANOVA showing the Comparison of Intellectual Functioning (FSIQ,VIQ and PIQ) of Adults with Obsessive Compulsive Disorder, Major Depression and Schizophrenia

variables	SS	MS	df	F	Sig.
FSIQ scores of 3 groups				7.54	P<.001
Between group	3288.68	1644.34	2		
Within group	18949.76	27.813	87		
Total	22238.456		89		
VIQ scores of 3 groups				8.99	P<.000
Between group	1831.66	915.83	2		
Within group	8858.43	101.82	87		
Total	10690.10		89		
PIQ scores of 3 groups				9.17	P<.000
Between group	1831.66	1339.811	2		
Within group	8858.43	146.025	87		
Total	10690.10		89		

Note: it showed significant difference between three groups such as Adults with Obsessive Compulsive Disorder, Major Depression and Schizophrenia on the variable of full scale IQ score, Verbal IQ scores and Performance IQ scores.