

Effectiveness of Occupational Intervention Program on Cognitive Functions and General Well-Being for Male Schizophrenic Patients

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Abstract: Cognitive functioning in schizophrenia is strongly correlated with social functioning and other functional outcomes. It is important to improve cognitive impairment in schizophrenia via psychosocial treatment. This study aimed to evaluate the effect of occupational intervention program on cognitive functions and general well – being for male schizophrenic patients. Sub – hypotheses:H1: Male schizophrenic patient who receive occupational intervention program high scores regarding cognitive function by the end of the program. H2: Male schizophrenic patient who receive occupational intervention program will have high scores of general well- being scale by the end of the program. The selected design for the current study is quasi – experimental design A sample of convenience of 30 institutionalized male schizophrenic patients was recruited. The study was carried out at in-patient Psychiatry Department and Addiction Prevention Hospital- El Manial University Hospitals, Cairo University. socio – demographic data sheet, the mini mental state examination and the general well-being schedule. Occupational intervention program sessions were 12 sessions, 1 session weekly hold 90-120 min., for a total of 12 weeks. Main results: there was a significant differences were found between pre and post program regarding mini mental state examination and general well-being scale, also a significant correlation between educational level and their cognitive functions. *Conclusions:* there is a positive influence of occupational intervention program on male schizophrenic patients and resulted in improvement, especially in cognitive functions and general well being It was recommended that designing occupational and similar psychosocial interventions in the treatment of schizophrenic patients, performing these interventions along with other treatments is recommended.

Key words: Occupational intervention program • Cognitive functions • General well – being • Male schizophrenic patients

INTRODUCTION

Schizophrenia is a disturbing disorder characterized by positive symptoms, including auditory hallucinations and delusions and negative symptoms, including blunted affect, anhedonia and cognitive deficits. Adequate psychosocial intervention beside psycho-pharmacologic treatment is needed to maintain recovery. Although studies have been conducted to explain the underlying mechanism of the disease, the main cause and patho-physiology of schizophrenia still remains indefinable since there is considerable heterogeneity in symptoms and longterm clinical courses differ substantially from patient to patient [1].

Gender differences were reported in the symptoms of schizophrenia, men with schizophrenia appear to have more negative symptoms and more severe clinical features than females, particularly in social withdrawal and blunted or incongruent affects than female patients. Interestingly, such gender-specific symptoms in male schizophrenia patients were also observed in subjects with high risk for this disease [2].

Most studies that link cognitive deficits to functional outcome in schizophrenia support the notion that neuro-cognitive function predicts social and occupational function. Measures of immediate memory, delayed memory and executive function have been found to predict functional outcome with small to medium effect

size. Moreover, cognitive function has been found to be a better predictor of functional outcome than symptom levels [3].

Cognitive deficits is a core feature of schizophrenia and previous studies have demonstrated that cognitive functioning in schizophrenia is strongly correlated with social functioning and other functional outcomes [4]. Because of the importance of cognitive impairment in schizophrenia, it has been proposed as an appropriate target for intervention [5]. Antipsychotic treatment reduces symptoms of schizophrenia, but it does little to improve cognitive impairment [6]. Therefore, it is important to improve cognitive impairment in schizophrenia via psychosocial treatment [6, 7].

Other cognitive impairment include confused or disturbed thinking processes, disorientation, problems with attention and memory, difficulty in problem solving, difficulty in identifying a situation and responding appropriately, lack of awareness and executive function deficits (i.e., difficulty initiating and planning activities, difficulty in organization and in self-analysis of activity performance [8].

Well-being is considered as “an umbrella term for different valuations that people make regarding their lives, the events happening to them, their body and minds and circumstances in which they live [9]. Diener [10] conceptualized subjective well-being as a broad construct, encompassing four specific and distinct components including (a) pleasant or positive well-being (e.g., joy, elation, happiness, mental health); (b) unpleasant affect or psychological distress (e.g., guilt, shame, sadness, anxiety, worry, anger, stress, depression); (c) life satisfaction (a global evaluation of one’s life); and (d) domain or situation satisfaction (e.g., work, family, leisure, health, finance, self).

Well-being in patients with schizophrenia is important because it is recognized as an important shift in the evaluation of treatment goals. Schizophrenic patients’ well-being is an important index in evaluating the treatment course and is being widely used in clinical settings. Well-being is closely associated with the patients’ quality of life and is a predictive factor of complying with antipsychotics as well as of remission and recovery from symptoms [11].

Occupational intervention is designed to remediate cognitive impairment and utilize compensatory strategies for reducing the influence of cognitive impairment on daily functioning and prompting adaptive behaviors are important to pursue in maximizing functional

outcomes for patients with schizophrenia [12]. Occupational intervention requires enhancing activities to improve short-term inpatient care for schizophrenia as part of its management [13].

Significance: The World Health Organization (WHO) estimates that more than 21 million people worldwide are living with schizophrenia [14]. The median incidence of schizophrenia is estimated at 15.2 cases per 100,000 of the general population with lifetime prevalence estimated at 7.2 per 1000 of the general population. Prevalence is higher in males compared to females (rate ratio 1.4:1) [15].

The focus of management of schizophrenia is slowly taking a turn from medical management to functional recovery. Occupational intervention program can influence socio occupational function and well being and can have important clinical relevance in improving outcome of schizophrenia [16].

It seems obvious that psychiatric nurses are in an ideal position to become the agent for the delivery of occupational intervention. Psychiatric nurse role in occupational therapy intervention is to enable the patient to achieve life satisfaction, manage daily occupations and relations to others in a context they find meaningful. It is important that the psychiatric nurse takes the patients’ volitional choices into consideration and gives adequate support to achieving participation in occupations.

Psychiatric nurse role in psychiatric care practices should support the patients in developing satisfying and valued daily occupations. Nursing practices should continue to be mindful of the humanistic ideals on which the profession was founded: the belief in the therapeutic value of occupation and the need for satisfying interpersonal relationships and balance in the daily routines of work, self-care and leisure. Nursing research strengthened when occupational therapy research proves that occupation promotes health and well-being.

Aim of the Study: This study aimed to evaluate the effect of occupational intervention program on cognitive functions and general well – being for male schizophrenic patients.

Hypothesis

Main Hypothesis: The male schizophrenic patient who receive occupational intervention program will have better scores post-program than pre- program and will be measured by using MMSE.

Sub-Hypotheses:

H1: Male schizophrenic patient who receive occupational intervention program will have high scores regarding cognitive function by the end of the program.

H2: Male schizophrenic patient who receive occupational intervention program will have high scores of general well- beingscale by the end of the program.

Design: The selected design for the current study is quasi – experimental design; such design fit the nature of the problem under investigation. This type of research design involves one or more group of subjects observed before and after the implementation of an investigation [17].

Sample: A sample of convenience of 30 institutionalized male schizophrenic patients was recruited for the conduction of this study according to the following criteria: male diagnosed with schizophrenia according to Diagnostic and Statistical Manual V [18] by the treating psychiatrist, aged between 20- 55 years old, participants were excluded if they had another neurological disease or sever physical illness, substance abuse, or severe cognitive deficits (less than 23 measure by MMSE).

Setting: The study was carried out at in-patient Psychiatry Department and Addiction Prevention Hospital- El Manial University Hospitals, Cairo University. It is one of the largest university psychiatric hospital in Egypt as it serves about 1000 patients, it includes 10 out-patient clinics with special room for ECT and related services provided by social workers and psychologist; it also includes in-patient departments for both male and female with psychiatric disorders in addition to special departments for those with substance abuse. Tools:

- Socio – demographic data sheet: it is designed by researches and it includes personal data such as patients' age, occupation, educational level and marital status
- The Mini Mental State Examination (MMSE)[19]: is a tool that can be used to systematically and thoroughly assess mental status. It is an 11 -question measure that tests five areas of cognitive function: orientation, registration, attention and calculation, recall and language. The maximum score is 30. A score of 23 or lower is indicative of cognitive impairment. The MMSE takes only 5 to 10 minutes to administer and is therefore practical to use repeatedly and routinely.

- The General well-being scale [20]: is a self-administered questionnaire that focuses on one's subjective feelings of psychological well-being and distress. The scale assesses how the individual feels about his/ her "inner personal state". It consists of 18 items covering six dimensions of anxiety, depression, general health, positive well-being, self-control and vitality. The scale includes both positive and negative questions and each item has the time frame "during the last month". The first 14 questions use six-point response scales representing intensity or frequency. The remaining four questions use 0-to-10 rating scales defined by adjectives at each end. There is a total score running from 0 to 110 with lower scores indicating more severe distress. The three levels of distress are sectioned accordingly: 0 to 60 reflect "severe distress"; 61 to 72 "moderate distress"; and 73 to 110 "positive well being". Scores can be narrowed further into severe, serious, distress, stress problem, marginal, low positive and positive well-being.

Procedures: An official permission was granted for the director of Psychiatric Medicine and Addiction Prevention Hospital – El Manial University Hospitals. After explaining the aim of the research the investigators obtain participants oral agreement to participate in this study. Baseline assessment was carried out by using the selected tools, each participant was interviewed individually in semi- structured interview for about 20- 30 min., the questionnaire were read and explained and the choices were recorded by researches. Subjects were divided into two groups applied to the program for 12 week. Evaluation of the occupational intervention program was done by applying the selected research tools post program.

Occupational Intervention Program Implementation: Occupational intervention program sessions were 12 sessions, one session weekly hold 90-120 min., for a total of 12 weeks. The occupational intervention program include the following tasks: physical fitness group (stretching exercise, relaxation and breathing exercises), handicrafts activities group; in which participants choose and participate in desired activities, food preparation group, a music group (music appreciation, playing instruments and singing); a recreation activities; and psycho-education group. The participants voluntarily selected any desired activity among theses and participate at an individualized rate. These tasks were held in either hospital ward halls or occupational therapy rooms.

Pilot Study: A total of 10% of the sample were recruited for the pilot study. All subjects included in the pilot study met the criteria for inclusion, no further modification were done for all utilized tools.

Ethical Consideration: All participants who met the inclusion criteria were informed orally that participation in the current study was voluntary and the data collected will be used only for research purpose and anonymity and confidentiality of each participant was protected by a location of a code number for each response. The participants were informed that they can withdraw at any time during the study without giving reasons. At each session, participants were reminded that information disclosed in program sessions should not be discussed outside group sessions because information was confidential.

Statistical Design: Data was analyzed using statistical package for the social sciences windows version 22.0 (SPSS 22). Numerical data were expressed as mean ± SD and range. Qualitative data were expressed as frequency and percentage. For qualitative data comparison between two variables was done using student t-test for test. Relations between different numerical variables were tested using Pearson correlation. Probability, (P- value) less than 0.05 was considered significant and less than 0.001 was considered as highly significant.

RESULTS

Table 1 reveals that, majority of the studied sample (83.3%) were single, while nearly half of them (46.7%) were secondary school education and more than one third of them (36.7%) were university level education. In addition, more than half of them (56.7%) were not working. Moreover, the study results show that mean age and standard deviation was (35.16 ± 10.92).

Table 2 reveals that, (50 and 30%) of the studied sample reported that they have stress problem and distress in pre -program respectively and (3.4%) reported having low positive and positive well - being, compare to post- program, (3.4%) reported having serious and distress levels while (46.6%) reported having low positive and positive well- being levels.

Table 3 reveals that, there is a statistically significant correlation between educational level and mini mental state post program where (r. = 0.36 at p. = 0.04) among the studied sample.

Table 4 reveals that, there is a statistically significant correlation between age and general well being levels pre program where (r. = 0.40 at p. = 0.02). Also, there is a statistically significant correlation between educational level and general well being levels post program where (r. = 0.39 at p. = 0.03) among the studied sample.

Table 5 shows that there is a highly statistically significant difference between pre and post program in relation to mini mental state examination where (t. = 6.17 at p. = 0.000)

Table 6 shows that there is a highly statistically significant difference between pre and post program in relation to general well – being level where (t. = 10.25 at p. = 0.000)

Table 1: Distribution of the studied sample in relation to socio – demographic characteristics: (n=30)

	No	%
Marital status		
Single	25	83.3
Married	5	16.7
Educational level		
Can read and write	4	13.3
Preparatory	1	3.3
Secondary	14	46.7
University	11	36.7
Occupation		
Working	13	43.3
Not working	17	56.7
Age	Mean ±SD (35.16 ± 10.92)	

Table 2: Distribution of the studied sample in relation to general well – being levels (n=30)

Levels	Pre – program		Post - program	
	No	%	No	%
Serious	1	3.4	0	0
Distress	9	30	1	3.4
Stress problem	15	50	6	20
Marginal	4	13.2	9	30
Low positive	1	3.4	7	23.3
Positive well - being	0	0	7	23.3

Table 3: Correlation between socio – demographic characteristics and mini mental state of the studied sample:

Items	Pre program MMSE		Post program MMSE	
	r.	p.	r.	p.
Age	0.07	0.69	0.11	0.55
Marital status	0.20	0.28	0.16	0.39
Occupation	0.10	0.59	0.05	0.37
Educational level	0.23	0.21	0.36	0.04*

(*Correlation is significant at the P = 0.05)

Table 4: Correlation between socio – demographic characteristics and general well- being of the studied sample:

Items	Pre program GWS		Post program GWS	
	r.	p.	r.	p.
Age	0.40	0.02*	0.34	0.06
Marital status	0.23	0.20	0.32	0.07
Occupation	0.23	0.21	0.21	0.25
Educational level	0.26	0.15	0.39	0.03*

(* Correlation is significant at the P = 0.05)

Table 5: Difference between mean scores and standard deviations of mini mental state examination pre and post the program among the studied sample (n=30.)

	Mean ± SD	t.	p.
Pre program MMSE	25.36 ± 3.94	6.17	0.000*
Post program MMSE	27.18 ± 3.6		

(** Significant level at p < 0.01)

Table 6: Difference between mean scores and standard deviations of general well- being levels pre and post the program among the studied sample (n=30).

	Mean ± SD	t.	p.
Pre program GWS	2.83 ± 0.83	10.25	0.000*
Post program GWS	4.43 ± 1.16		

(** Significant level at p < 0.01)

DISCUSSION

Results of the current study showed that mean age was (35.2 ± 10.9) and that may be related to including the middle adulthood in study sample inclusion criteria and this age group is highly presented in the Egyptian society as having schizophrenia. That is contradicting to Belli, [21], who stated that mean age of male schizophrenics was (23.7 ± 4.9). In the same line with a study done by El Ghonemy *et al.* [22], who reported that the mean age was 30.76±6.87 years and ranged between 18 to 45 years.

Regarding occupation, more than half of them were not working and that might contribute to being hospitalized many times, in addition to social stigma they faced in the community that makes them unable to find jobs. This is in agreement with Kilian and Becker, [23] and Marwaha and Johnson [24] who reported that people with schizophrenia encounter one of the highest unemployment rates among all vocationally disadvantaged groups. Also, El-Ghonemy *et al.* [22] indicated that the majority of schizophrenic patients were unemployed 25 (35.7%).

Similarly, a large international study combining data from 37 different countries found that on average, 19 percent of people diagnosed with schizophrenia were in paid employment, with figures ranging from 16.2 to

22.6%, against an average employment rate in the general population of 75-80% [25].

In terms of the educational level among the studied group was representing secondary school level as the highest level of education, followed by university level. That explains why their mini mental state scores were higher than 23 in pre program. Contradictory to a study done by Zortéa and Belmonte-de-Abreu [26] who concluded that functional and neuropsychological deficits are found in the majority of schizophrenic patients and they have a strong relationship with low education levels, severity of extra-pyramidal symptoms and major cognitive deficits.

Similarly El-Ghonemy *et al.* [22] found that most of the patients either had technical education or had a university degree, 22 (31.4%), 14 (20%) patients had completed secondary school education, five (7.1%) patients had completed either primary or preparatory school education and the rest of the patients, two (2.9%), had a postgraduate degree.

Cognitive deficits are common among schizophrenic patients but results had been shown that the scores of mini mental pre program were (25.36 ± 3.94), that may be related to the exclusion criteria of mini mental state score less than 23, additionally, there was a statistically significant difference between the pre – post program scores. That may achieved the first sub - hypothesis that the scores of mini mental state will be enhanced after applying the occupational intervention program. That goes congruent with Shimada *et al.* [13] who reported that the results provide preliminary support for the effectiveness of the individual occupational therapy in improving neuro-cognition and symptoms in patients with schizophrenia or schizoaffective disorder. Patients who participated in the individual and group occupational therapy demonstrated significant improvements in several areas of cognitive functioning, including verbal memory, working memory, verbal fluency, attention, executive function and composite cognitive functioning score.

Shimada *et al.* [13] added that one intriguing finding is that participants in the individual and group occupational therapy group demonstrated significant improvements in the broad areas of cognitive functioning compared to those in the group occupational therapy alone. Several different factors could account for this. Although it is difficult to verify with this study design whether handicraft activities could improve the cognitive impairment associated with schizophrenia, it was characteristic of the individual occupational therapy group to use the handicraft activities for improving the cognitive impairment of patients with schizophrenia [27].

The use of handicraft activities with individualized coaching by occupational therapists is believed to contribute to the improvement of cognitive impairment for patients with schizophrenia. Occupational performance focusing on aspects of cognitive functioning such as vigilance, attention, executive function and matching function through the implementation of handicraft activities, may activate patients' brain function. In addition, the involvement of occupational therapists in promoting these cognitive activities may enhance cognitive improvements [8].

The current study results revealed that there was a significant statistical correlation found between level of education and mini mental state pre program and that may account to the majority of the studied group level of education was secondary and university level which may indicate having higher cognitive functioning than low level of education. Studies conducted in different populations found that MMSE scores were influenced by socio-demographic factors such as age and education in Portuguese healthy adults [28] and ethnic differences in Singapore community-living elderly population. Maltais *et al.* [29] reported that age and level of education were two prominent socio-demographic factors associated with MMSE in patients with schizophrenia and gender differences were also found in cognitive performance among older adults in Korea [30].

Younger age and higher education level were found to be associated with better MMSE scores. Education was found to be the best predictor of MMSE scores, followed by age and gender in elderly Koreans [31]. Similarly, a recent study conducted by Feng *et al.* [32] found positive relationship between the level of education and cognitive performance in schizophrenic population.

General well being levels differs statistically from pre program to post program in a positive way and that achieves the second sub – hypothesis that the occupational intervention program will enhance the general well being scores. That is may contribute to that the program may have promoted independence within its tasks, thus improving motivation and sense of achievement and psychological well being.

Previous studies have reported that intrinsic motivation and meta- cognition are factors that affect cognitive and social functioning [33]. The promotion of these improvements through motivational interviewing and self-monitoring programs may have led to cognitive impairment improvements of greater magnitude for participants in the individual and group occupational therapy compared to those in the Group occupational therapy alone.

CONCLUSION

The current study has shown that there was a positive influence of occupational intervention program on male schizophrenic patients and resulted in improvement, especially in cognitive functions and general well being. Also there was a significant positive correlation between educational level and cognition; and general well being.

Recommendation: In the light of these results:

- Designing occupational and similar psychosocial interventions in the treatment of schizophrenic patients, performing these interventions along with other treatments.
- Additional study is warranted to replicate and extend the effects of other occupational tasks and activities.
- Evaluate longer-term effects of occupational intervention program during a hospital stay.

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