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STUDY THE RATE OF FERTILITY AND RISK FACTORS OF SCHIZOPHRENIA IN NAJAF, IRAQ

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ABSTRACT

This study is designed to investigate the main risk factors, which increased the incidence of schizophrenia and the rate of fertility in patients measuring sex hormones (testosterone and estrogen) and prolactin hormone. The aim of study was to evaluate the fertility rate and risk factors of schizophrenia**.** Blood samples were collected for measuring the hormones from 108 individual divided groups: Patients' group that contain 78 patients and a control group, which included 30 healthy persons. The results showed that schizophrenia was higher in male than female. Tobacco smoking and family history have significantly risk for most patients which lived in urban areas. There was statistical significance ($P \leq 0.05$) in the testosterone hormones between patients group and control group. It is concluded that patients were suffering from hypogonadism, in contrasts with the prolactin hormone, which has been indicated significant increasing of schizophrenia.

Keywords: Schizophrenic Disorders, Fertility Determinants, Sex Steroid Hormones, Tobacco Smoking

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1. INTRODUCTION

450 Million People have been undergoing from mental and behavioral disorders worldwide. One person in four is developing of these diseases during lifetime [1]. Schizophrenia is a drastic mental illness featured by cognitive deficits as well as vocational impairment and

interpersonal hurdles. Individuals, who have schizophrenia also suffer from deficits in everyday and limits in alertness, focus and vigilance [2]. The illness has been affecting nearly 1% of world's population and accounts of 1-2% of national health care outlays in industrial countries [2,3]. The disease excessively impairs many of cognitive domains, including memory, attention and executive function, and usually causes a lifetime of disability and strict emotional distress for smitten persons [4]. Many disorder cases were first diagnosed at the age of 20 - 25 years. At this span of life people typically obtain emancipation from parents, engaging in significant romantic relationships, beginning to look for a job or career [5]. Improvement in schizophrenia has painfully tardy and limited via a number of factors, such as the heterogeneity of the schizophrenia phenotype and the absence of clear pathological lesions like the study of Alzheimer's disease, Parkinson's disease, and neurodegenerative disorders [6].

The best description of schizophrenia is a heterogeneous syndrome without any symptom or sign and it is unidentifiable with any recognized diagnostic laboratory tests [7]. This disorder has many factors may explain the etiology of it, with different susceptibility genes that have been interacted with environmental causes to produce a range of phenotypes in the series of schizophrenia [8]. Schizophrenia first steps during the reproductive period contain a relation between this disorder and the sudden brain changes and the body occurring in adolescence stage and throughout the fertility stage. In adolescence, these deviations take inactivation and amplification of the pulsed release of the gonadotropin-releasing hormone, an increase of 30-folds of the release of LH in boys while an increase of 100-folds occurs in girls. As for the gonads, a swift circulating estrogens and androgens are increased [9]. The aim of study is evaluating the fertility rate and risk factors of schizophrenia.

2. MATERIALS AND METHODS

The number of schizophrenia patients was 78 diagnosed by psychiatrists in the mental department, who were specialized in psychiatric disease in Alhakeem hospital that agrees with (DSM-IV) standards of the American psychiatric association (APA). Another 30 healthy have no suffering from any psychiatric or cardiovascular diseases and do not smoke, their ages ranging between 20 to 70 years as in the patient group. The study was carried out during July and September of 2014. The medical history of each patient was taken from their relatives, which include age, sex, family history, type of diet and smoking habit. Body index is detected by recording the weight of each patient and height. Blood samples were collected from the patients and healthy individuals to obtain serum for measuring hormones (testosterone,

prolactin, and estrogen). The measurement of hormones was done by using an enzyme-linked immunosorbent assay by ELISA instrument using commercial kits for each hormone (Monobind-USA).

Statistical Analysis

The statistical analysis of this study was done by using SPSS program (V. 17) and the statistical processes used here were means, standard deviations, one-way ANOVA, and Chi-square.

3. RESULTS

Figure 1 explains that schizophrenia was highly detected (41-50 years) (25 cases) followed by 24 cases (31-40 y), 16 cases (20-30 y), and nine cases (51-60 y). Whereas, only 4 cases were noted at interval (61-70 y).

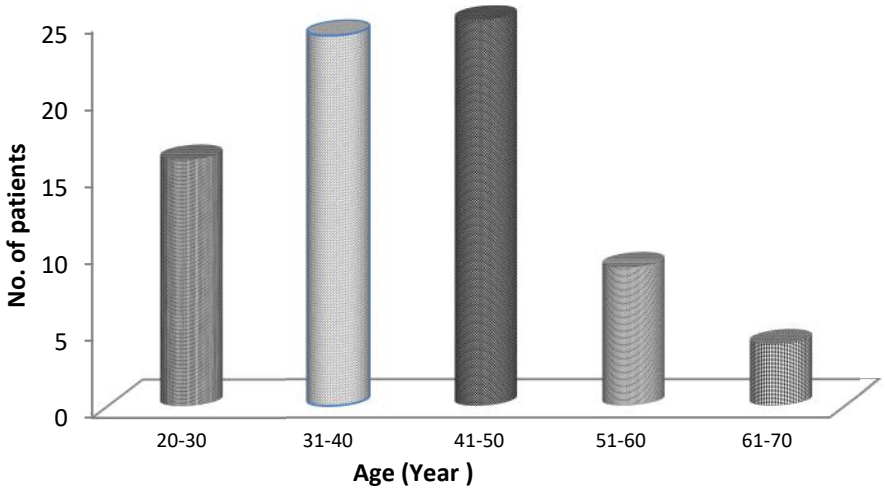

Fig.1. Distribution of age in schizophrenia patients

Fig.2. showed increased in the schizophrenia in a male with 59 cases. While, the incidence of this disease in female recorded 19 cases

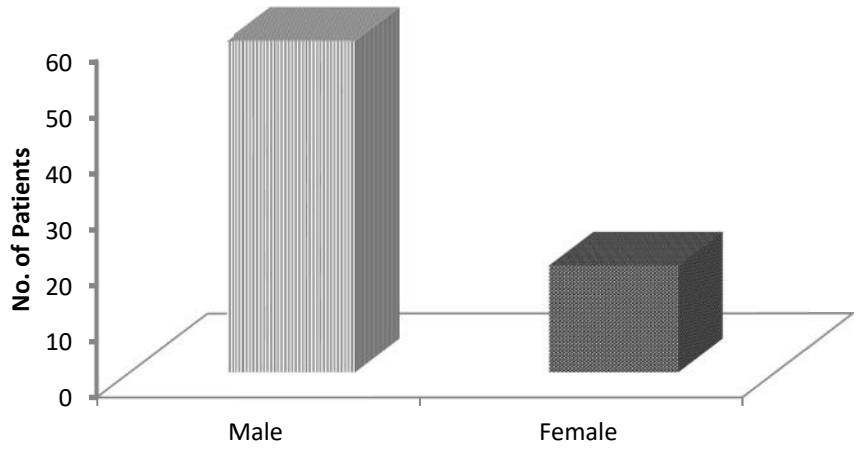

Fig.2. Distribution of schizophrenia according to sex

Table 1 clarifies significant increase in the number of patients (smoking; 79.5%) as compared to control group (no smoking).

Table 1. Distribution smoking among control and patient groups

Smoking	**Control group**		**Patients' group**		χ^2	***P* value**
	No.	**%**	**No.**	**%**		
Yes	0	0	62	79.5%		
No	30	100	16	20.5%	55.46[a]	0.000
Total	30	100	78	100		

a= significant differences when comparing with control groups at $P<0.05$ (statistical test is chi square)

The majority of patients live in the urban area as shown in Table 2. Whereas, the rest of subjects live in a rural area (23.3%) belongs to control group while, the percentage ratio increased in the patient group (24.4%).

Table 2 Distribution of control and patient groups according to the position of their living area

Residence	Control group		Patients' group		χ^2	P value
	No.	%	No.	%		
Urban	23	76.7%	59	75.6%		
Rural	7	23.3%	19	24.4%	0.012	0.91
Total	30	100	78	100		

The statistical test is chi square

The schizophrenia was characterized by increasing the value of Body Mass Index (BMI) (27.32±6.74) as compared with control group (22.91±3.17) with a highly significant difference (P<0.001) as shown in Table 3.

Table 3. BMI (kg m^{-2}) in control and patient groups

Studied groups	No.	Mean±SD	P value
Control group	30	22.91±3.17	
Patients' group	78	27.32±6.74	0.001
Total	108	26.01±6.23	

The statistical test is ANOVA one way

Table 4 shows that the testosterone hormone significantly P<0.05 decreased in patients group (1.46±2.49) as compared with control group (5.18±3.07).

Table 4. Serum testosterone hormone level ng ml^{-1} in control and patient groups

Studied groups	No.	Mean±SD	P value
Control group	30	5.18±3.07	
Patients' group	78	1.46±2.49	0.000
Total	108	2.49±3.13	

The statistical test is ANOVA one way

The number of schizophrenic, women in the patients group was 19; ten of them recorded decreases in the levels of estrogen hormone. While, nine had a normal value of this hormone as shown in Table 5.

Table 5. Evaluation of estrogen hormone of women

Women decreased estrogen levels		**Women normal estrogen levels**		**Total**	
No.	%	No.	%	No.	%
10	53	9	47	19	100

A statistical test is frequencies

Table 6 shows a significant difference $P \leq 0.033$ in the level of prolactin hormone among the studied groups. The hormone was elevated in patients (15.96±19.05) in comparison with controls (8.41±2.07).

Table 6. Serum prolactin hormone levels (ng ml^{-1}) in control and patient groups

Studied groups	**No.**	**Mean±SD**	***P* value**
Control group	30	8.41±2.07	
Patients' group	78	15.96±19.05	0.033
Total	108	13.86±16.54	

4. DISCUSSION

In the present study incidence of schizophrenia was increased at interval age of (41-50 y) and this result is approximately similar to what was reported by [10] who explained that schizophrenia defined as the symptoms beyond age 44 years and accounts for nearly 15-20% of all cases of schizophrenia. Schizophrenia is more common in male than female as in Figure 2, this result is quite similar to the findings of [11] who supposed that schizophrenia occurred about twice as higher for male than female regardless of the specific diagnostic criteria which is used for this purpose. The positive association of smoking with schizophrenia, which was recorded in Table 1 is supported by [12] who elucidated that the rate of smoking among schizophrenia patients could be increased when to compare with control. This is because tobacco contains nicotine, which is featured as highly addictive chemical and quickly absorbed by bloodstream. Nicotine in turn incentives dopamine production, a chemical associated with a pleasurable sensation [13]. Smokers fast develop regular smoking patterns, which guarantee release a stream of dopamine steadily. When the nicotine concentration in their blood drops less than a certain level, smokers have been beginning to crave a cigarette.

This craving gives a feeling of 'stress' till the craving is relieved [14]. This research assessed the association between obesity and schizophrenia by recording a significant increase in BMI for patients in comparison with healthy persons, this result is confirmed with [15] who reported that overweight has been affected patients taking antipsychotic treatment such as schizophrenia. Weight gain is a trendy collateral effect of several drugs, including antipsychotic agents. Patients dealing antipsychotics usually make use of drugs to remedy psychiatric symptoms and/or clinical events common in the gross population. When patients have been receiving multiple agents that bring about weight gain, the effects could be addictive and lead to obesity [16]. The results of testosterone hormone in this study showed significant decrease in hormone compared with control group. These results are supported by Taherianfard and Shariaty who found decreasing of this hormone in serum of male compared with healthy person [17]. The current findings provided a firm support for the concept abnormal levels of steroids in serum of schizophrenia and could be involved in the pathophysiological causes of schizophrenia, at least in male [18]. This study also found significant increase of prolactin hormone of patients versus control which is similar to Garcia-Rizo e al. 2012. It was noticed that antipsychotic-naïve patients newly diagnosed of schizophrenia have higher hormone than control [19]. Hyperprolactinemia does not happen because of the association of stress with the initiate of psychosis, but because of a pre-existing vulnerability. Pre-existing vulnerability of schizophrenia depicted previously in other metabolic areas that as well contribute to the secondary side effects of the antipsychotic drugs [20]. Prolactin-releasing peptide (PrRP), a factor that is released from the hypothalamus in mammals, could account for some of these findings, as its turmoil lead to metabolic disorders [21] identical to first-episode psychosis.

5. CONCLUSION

There was statistical significance ($P \leq 0.05$) in the testosterone hormones between patients and control group. This means that patients were suffering from hypogonadism, in contrasts with the prolactin hormone, which has been indicated significant increasing of schizophrenia.

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7. STATEMENT TO DECLARE

The author declares that his results were not published previously and not under submission elsewhere.

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