

Prevalence of Anemia among Schizophrenic Patients in Palestine

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Abstract

Complete blood count (CBC) test is one of the recommended tools to demonstrate the prevalence of unhealthy lifestyle and poor diet. The objective of this work was to employ the hemoglobin level as a tool to evaluate the quality of lifestyle and diet of schizophrenic patients in Palestine. Cross sectional study was conducted at governmental primary psychiatric health care centers in northern West-Bank of Palestine. Two hundred and fifty patients were selected by convenience sampling method. The components of CBC were evaluated using blood samples donated by schizophrenic patients. A pretested self-administered questionnaire was used to retrieve personal information of participants. Descriptive statistical methods and regression analysis were used to analyze the data. Data have shown that 55.9% of female patients and 13.7% of the male patients suffered from anemia. Regression analysis showed that gender was a significant factor associated with the prevalence of anemia among schizophrenic patients. On the other hand, the majority of patients had normal white blood cells and normal platelets counts. The prevalence of anemia among schizophrenic patients is a firm finding particularly among female patients. The occurrence of anemia among schizophrenic patients could be due to their poor food choices and unhealthy lifestyle. Healthy lifestyle choices, including protein-rich diet, can help prevent common types of anemia. Therefore, mental healthcare providers are encouraged to include an appropriate nutritional intervention, social support, and regular blood checkup in order to provide a good care for schizophrenic patients.

Keywords: Schizophrenia, Blood, Anemia, Leukocytes, Platelets.

INTRODUCTION:

People with schizophrenia show high incidence of metabolic syndrome, which is associated with a high mortality from cardiovascular disease. The etiology of the metabolic syndrome in schizophrenia is multi-factorial and may involve poor diet, unhealthy lifestyle, antipsychotic treatment and high levels of stress (1), a poor diet can also predispose the development of metabolic abnormalities.

Many studies have demonstrated that people with schizophrenia make poor dietary choices. They prefer a high fat diet and consume fewer vegetables (2). One study on the dietary intake of 102 people with schizophrenia in Dumfries and Glasgow showed that their consumption of fruits and vegetables was less than half of the recommended intake and few patients made acceptable dietary choices (2). Moreover, in

Scotland, the diet of schizophrenic patients is at least as poor as that of the general population in social class V (the lowest social class), with high fat content, contributing further to dyslipidemia and weight gain (1).

Nutritional anemia is a world-wide problem (3, 4) that can be reversed by dietary intake of healthy diet. Left untreated, anemia can cause numerous complications, such as severe fatigue, heart problems, coma and even death. We have previously assessed different health aspects of schizophrenic patients including dyslipidemia and obesity (5), medication adherence (6) and diabetes mellitus (7). Since, the measurements of hemoglobin and hematocrit are usually included among nutritional assessment procedures (8) therefore, the objective of this study was to use these procedures to assess the nutrition status and lifestyle of schizophrenic patients.

MATERIALS AND METHODS:

A cross sectional study was conducted between August 2011 and February 2012, covering four governmental primary psychiatric health care centers located throughout the Northern West Bank of Palestine. Two hundred and fifty four patients diagnosed with schizophrenia based on DSM-IV were invited to participate in the study. A convenience non-probability sampling method was adopted. Two hundred and fifty patients that were diagnosed with schizophrenia for more than 6 months and aged 16 years and older were included in the study. An informed consent for participation was obtained and in case of children, consent was obtained from parents or guardian.

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Data collection

The data was collected first through an assessment sheet developed to collect personal information from patients themselves or from their families, beside information from patients' medical files. The assessment sheet covered demographics information, clinical characteristics, the duration of illness and history of psychiatric hospitalizations. Then, peripheral blood specimens were collected from participants and the complete blood count (CBC) test was performed using Abbott Cell-Dyn Hematology Analyzer System (USA). According to the World Health Organization (WHO), anemia is defined as a hemoglobin level of less than 13 g/dL in men and less than 12 g/dL in women (9).

Data Analysis

Descriptive statistics and regression analysis were conducted using Statistical Package for Social Sciences (SPSS; version 18.0) for Windows. Statistical inferences were done at 5% level of significance.

RESULTS:

Out of the 254 schizophrenic patients, 250 patients agreed to participate in the study with a response rate of 98.4% and the majority of the patients were males (72.8%). For male patients, the mean value of hemoglobin concentration, hematocrit, RBCs count, mean corpuscular volume, platelet count and WBCs were 14.1 ± 1.3 g/dL, $42.6 \pm 3.3\%$, $5.25 \pm 3.6 \times 10^6$ cells/mm³, 85.8 ± 6.7 femtoliters, $260 \pm 68 \times 10^9$ /L, and $7.9 \pm 2.8 \times 10^9$ cells/L respectively. While among female patients, the mean value of hemoglobin concentration, hematocrit, RBCs count, mean corpuscular volume, platelet count and WBCs were 11.8 ± 1.5 g/dL, $36.2 \pm 3.9\%$, $4.51 \pm 4.3 \times 10^6$ cells/mm³, 80.5 ± 8 femtoliters, $303 \pm 11 \times 10^9$ /L, and $7 \pm 2.3 \times 10^9$ cells/L respectively (Table 1).

Table(1): Blood profile for schizophrenic patients

Variable	Total	Male	Female
HB (g/dl)	13.5 ± 1.7	14.1 ± 1.3	11.8 ± 1.5
HCT (%)	40.8 ± 4.5	42.6 ± 3.3	36.2 ± 3.9
RBC (cell/L)	5.0± 3.1	5.25 ± 3.6	4.51 ± 4.3
MCV (fl)	84.3 ± 7.5	85.8 ± 6.7	80.5 ± 8
Platelets (cell/L)	270 ± 82.5	260 ± 68	303 ± 11
WBC (cell/L)	7.7 ± 2.7	7.9 ± 2.8	7 ± 2.3

There was a significant difference in the prevalence of anemia among both male and female patients. The number of anemic females was 38 (55.9%) out of 68 female patients, while the number of anemic males was 25 (13.7%) out of 182 male patients (*P-value* < 0.01) (Table 2).

Table(2): Frequency of anemia stratified with gender

Variable	Anemic	None anemic	p. value
Male	25(13.7%)	157(86.3%)	<0.01
Female	38(55.9%)	30(44.1%)	
Total	63(25.2%)	187(74.8%)	

The majority of patients (86.2% of male and 80.9% of female) had normal WBC

counts. About 6.1% of male and 11.8% of female patients had leucopenia while 7.7% of male and 7.3% of female patients had leukocytosis (Table 3).

Table(3): Frequency of Leukopenia and Leukocytosis stratified with gender

Gender	Leukopenia	Normal WBC	Leukocytosis	p. value
Female	8 (11.8%)	55(80.9%)	5(7.3%)	0.315
Male	11(6.1%)	157(86.2%)	14(7.7%)	

A significant number of patients (93.4% of males and 89.7% of females) had normal platelet counts. About 5.5% of males and

4.4% of females had thrombocytopenia, while 1.1% of male patients and 5.9% of female had thrombocytosis (Table 4).

Table(4): Frequency of Thrombocytopenia and Thrombocytosis, and platelets count stratified with gender

Gender	Thrombocytopenia	Normal platelets	Thrombocytosis	p. value
Female	3 (4.4%)	61(89.7%)	4(5.9%)	0.086
Male	10(5.5%)	170(93.4%)	2(1.1%)	

The results summarized in Tables 3 and 4 had no statistical significance (p -value > 0.05).

DISCUSSION:

Patients with schizophrenia have higher mortality rates compared with the general population (10). Several studies suggested many reasons for the increased mortality and reduced life expectancy including suboptimal lifestyles, unhealthy diets, excessive smoking, alcohol use, lack of exercise, use of antipsychotics, physical illnesses and suicide (11, 12). In a study of mentally ill individuals living in mental health residential housing, no subject met the recommended dietary intake for fruit and vegetables (13).

Poor or inappropriate dietary habits increase the risk of anemia and other chronic disease. The WHO global data base reported the prevalence of anemia in women and in men in the Eastern Mediterranean countries as 11% and 6% respectively (9). In this study, it was found that 55.9% of female patients and 13.7% of male patients suffer from anemia indicating anemia as a serious problem since its prevalence is much higher than that in the general population as reported by WHO report (9). The wide spread of anemia among the Palestinian schizophrenic patients shown in this study could be attributed to the poor dietary

choices and un-healthy lifestyle. In this study as well as in other studies (14-16), female patients suffered from anemia more than male patients which could be due to diminished intake and increased demands of iron, low protein food, disturbed metabolism, pregnancy, blood loss during labor, heavy menstrual blood flow, inflammation and infectious diseases. Moreover, schizophrenic patients usually have less access to medical care, consume fewer proteins, and are less compliant with the healthy lifestyle; therefore, blood abnormalities further worsen their health and increase the burden on the health care providers (17).

The majority of the patients had normal WBC counts and leucopenia was found in only 11.8% of female patients and in 6.1% of male patients. On the other hand, leukocytosis was seen in 7.3% of female patients and in 7.7% of male patients. This minimal change in WBC count is clinically insignificant and could be due to minor infections or it could be due to the use of antipsychotics (18) but does not necessitate cessation of treatment.

Since platelets are important for blood clotting and plugging damaged blood vessels (19), a low platelet count makes bleeding more likely while high platelet count may increase the risk of forming blood clots (20). The schizophrenic patients in this study had normal platelet count which may indicate that

neither the disease nor the use of antipsychotics had any effect on the platelet count; therefore these patients may not be susceptible to any of the abnormal platelets count consequences.

CONCLUSION:

This study showed there is a high prevalence of anemia among schizophrenic patients compared with the general population. Other blood abnormalities were detected but these abnormalities were insignificant. It is suggested that the unhealthy lifestyle and poor dietary choices are the major causes of anemia among these patients. Therefore, the mental health providers are recommended to deliver patients with an appropriate community-based intervention strategy for prevention, detection and treatment of different blood abnormalities. Finally, assertive program to monitor blood profile, improve eating habits and change lifestyle are recommended.

Limitations of the study:

Information about the types of medication used by patients is lacking and this could have shed some light about the effects of these medications on the CBC parameters.

CONFLICT OF INTRESTS

The authors report no conflicts of interest in this manuscript

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