

Prevalence of HCV, HBV and HIV in Institutionalized Mental Illness Patients at Aswan Governorate

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ABSTRACT

Background: HIV, hepatitis B, and hepatitis C are serious infections, but can be treated. The prognosis is much improved by earlier detection and treatment. Prevalence studies have shown that serious mental illness is a risk factor for blood-borne virus infection.

Objective: To evaluate the prevalence of blood-borne viral infection in people with psychological disorders attending Aswan Governate.

Patients and methods: This across sectional study included 180 patients (150 male, 30 female) with moderate to severe mental illness from the attendants of the Outpatient Clinic of Psychiatric Department, Neuro-Psychiatric Hospital, Aswan Governorate. The study was conducted in the period from May 2019 to November 2019. The etiological diagnosis of the studied group were schizophrenia (males=64, females=9), depression (males=30, females=9) and general anxiety disorder (males=16, females=6).

Results: As regard HCV Abs, 157 patients (87.2%) were negative and 23 patients (12.8%) were positive in the studied patients. As regards HBs Ag, there were 162 negative patients (90%) and 18 positive patients (10%) in the studied patients. As regards HIV Abs, there were 170 negative patients (94.4%) and 10 positive patients (5.6%) in the studied patients. There was no statistical significant relation between sex and virology markers in all studied patients (p-value > 0.05).

Conclusion: People with serious mental illness are at risk of blood-borne viral infections. Serious mental illness is unlikely to be a sole risk factor and risk of blood-borne viral infection is probably multifactorial and is associated with low socioeconomic status, drug and alcohol misuse, ethnic origin, and sex.

Keywords: Depression, general anxiety disorder, Hepatitis B, Hepatitis C, mental illness and schizophrenia.

INTRODUCTION

Hepatitis C virus (HCV) infection is a major public health burden in Egypt, which has the highest prevalence rate in the world. The prevalence of mental illness in patients with hepatitis C virus infection is higher than those in the general population, and the prevalence of viral hepatitis infection in patients with severe mental illness may reach nine times that of the general population⁽¹⁾.

Hepatitis C is the 10th leading cause of death worldwide. However, viral hepatitis is a major public health threat in Egypt, but little is known about the epidemiology of hepatitis B (HBV). The prevalence of hepatitis B virus among adults between the ages of 15 and 59 in Egypt is 1.4%, but despite the exceptionally high prevalence of hepatitis C virus, the rate of infection with hepatitis B-HCV is 0.06% and the geographical distribution varies significantly⁽²⁾.

Psychological reactions among hepatitis B patients differ widely and influence their decision about treatment and follow-up of the disease. Moreover, psychological problems are common among patients with chronic hepatitis B virus infection, to the extent that anxiety and depression are much more among them than among healthy people⁽³⁾.

Although people with severe mental illness have a high risk of contracting a blood-borne viral infection, mental health researchers and policymakers have

largely neglected sexual health. Failure to address this deficiency can lead to increased morbidity and mortality from undetected and untreated infections⁽⁴⁾. We aimed to evaluate the prevalence of blood-borne viral infection in people with psychological disorders attending Aswan Governate.

PATIENTS AND METHODS

This across sectional study included 180 patients (150 male, 30 female) with moderate to severe mental illness from the attendants of the Outpatient Clinic of Psychiatric Department, Neuro-Psychiatric Hospital, Aswan Governorate. The study was conducted in the period from May 2019 to November 2019. The etiological diagnosis of the studied group were schizophrenia (males=64, females=9), depression (males=30, females=9) and general anxiety disorder (males=16, females=6).

Our study was subjected to: Patients with psychological disorder were studied for their association with HCV & HBV and HIV infection.

Inclusion criteria: • Age: more than 20 years old. • All patients attending Outpatient Clinic should be diagnosed with a lifetime diagnosis of a serious mental illness.



Exclusion criteria: • Pregnant women. • Extra-hepatic malignancy except after 2 years of disease-free interval. • Patients who received a liver transplant just before the study period. • Patients with severe form of extra-hepatic manifestation.

All studied individuals were subjected into: 1 -Full medical history including: Name, age, sex, occupation, diseases history, past history, family history, infectious disease screening history and engagement in high-risk behaviors including IV drug use, unprotected sexual activity and substance use patterns.

2- Clinical examination.

3- Investigations including • HCV antibody. • HBV antigen (HBV surface Ag). • HIV antibody. • Pelvic-abdominal ultrasound. • Liver function tests (serum albumin, total and direct serum bilirubin, aspartate aminotransferase (AST), alanine aminotransferase (ALT), prothrombin time and INR). • Kidney function test (urea, creatinine). • Complete blood count (CBC). • Fasting blood sugar (FBS). • C.T Brain. • MRI Brain.

Ethical approval and written informed consent:

An approval of the study was obtained from Al-Azhar University Academic and Ethical Committee. Every patient signed an informed written consent for acceptance of the study.

Statistical analysis

Recorded data were analyzed using the statistical package for social sciences, version 20.0 (SPSS Inc., Chicago, Illinois, USA). Quantitative data were expressed as mean ± standard deviation (SD). Qualitative data were expressed as frequency and percentage. Independent-samples t-test of significance was used when comparing between two means. Chi-square (χ^2) test of significance was used in order to compare proportions between two qualitative parameters. The confidence interval was set to 95% and the margin of error accepted was set to 5%. The p-value was considered significant as the following: P-value ≤ 0.05 was considered significant. P-value < 0.001 was considered as highly significant. P-value > 0.05 was considered insignificant.

RESULTS

As regards HCV Abs, there were 157 negative patients (87.2%) and 23 positive patients (12.8%) in the studied patients. As regards HBs Ag, there were 162 negative patients (90%) and 18 positive patients (10%) in the studied patients. As regards HIV Abs, there were 170 negative patients (94.4%) and 10 positive patients

(5.6%). As regards co-infection, there were 2 patients (1.1%) with HCV Ab + HBs Ag, 1 patient (0.6%) with HCV Ab + HIV Ab and 3 patients (1.7%) with HBs Ag + HIV Ab (Table 1).

There was no statistical significant relation between sex and virology markers in studied schizophrenia patients (p-value > 0.05). As regards co-infection, there was 1 male patient (0.02%) with HCV Ab + HBs Ag in the studied patients (Figure 1).

There was no statistical significant relation between sex and virology markers in studied depression patients (p-value > 0.05). As regard co-infection, there was 1 male patient (0.03%) with HCV Ab + HBs Ag and 1 female patient (11.1%) with HBs Ag + HIV Ab (Figure 2). There was no statistical significant relation between sex and virology markers in studied general anxiety disorder patients (p-value > 0.05). As regards co-infection, there were no males or females co-infected with viral markers in the studied patients (Table 2).

There was no statistical significant relation (p-value > 0.05) between sex and studied virology markers in mania patients. As regards co-infection, there were no males or females co-infected with viral markers in the studied patients (Table 3).

There was no statistical significant relation (p-value > 0.05) between sex and studied virology markers in OCD patients. As regards co-infection, there was 1 male patient (14.3%) with HCV Ab + HIV Ab in the studied patients (Table 4).

Table (1): Description of HCV Abs, HBs Ag and HIV Abs in all studied patients

		Studied patients (N = 180)	
HCV Abs	Negative	157	87.2%
	Positive	23	12.8%
HBs Ag	Negative	162	90%
	Positive	18	10%
HIV Abs	Negative	170	94.4%
	Positive	10	5.6%
Co-infection	HCV Ab + HBs Ag	2	1.1%
	HCV Ab + HIV Ab	1	0.6%
	HBs Ag + HIV Ab	3	1.7%
	HCV Ab + HBs Ag + HIV Ab	0	0%

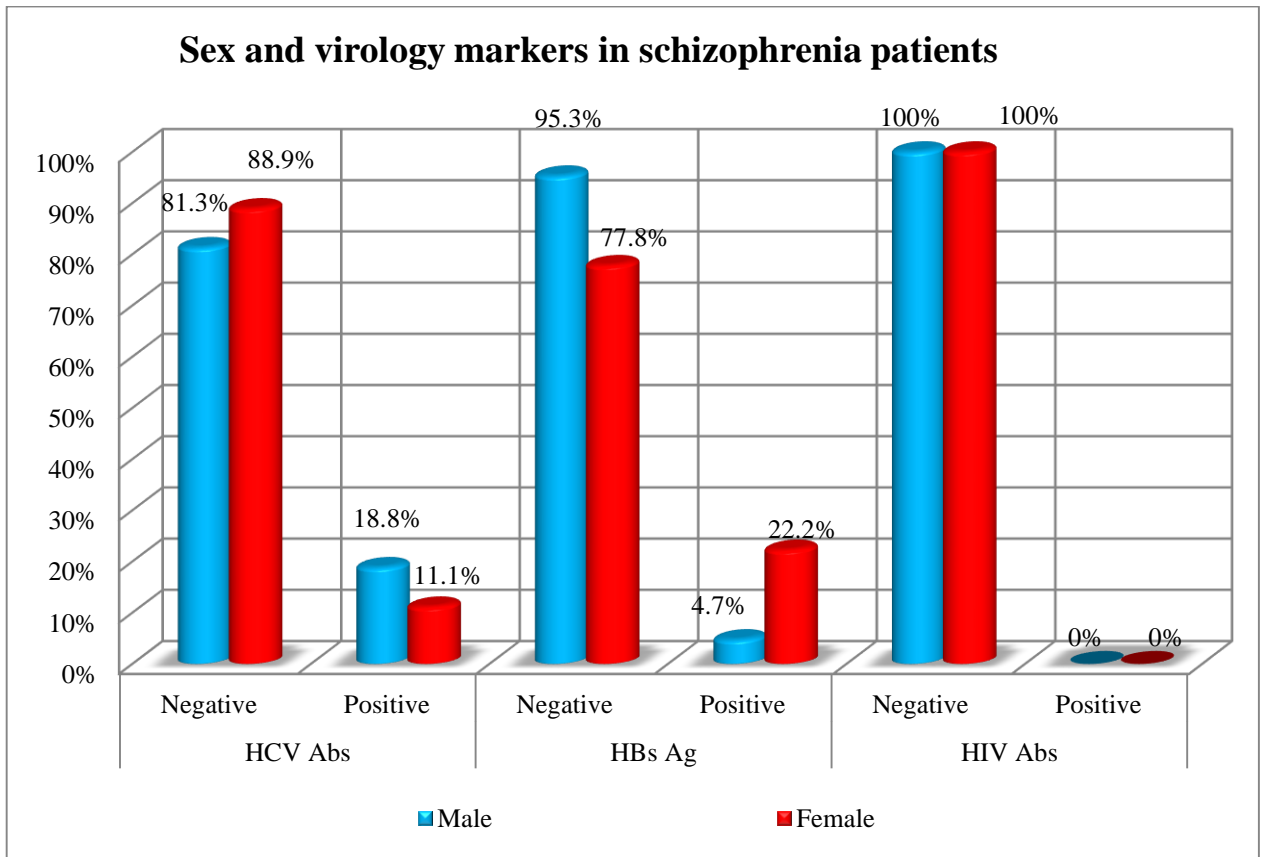


Figure (1): Relation between sex and studied virology markers in schizophrenia patients

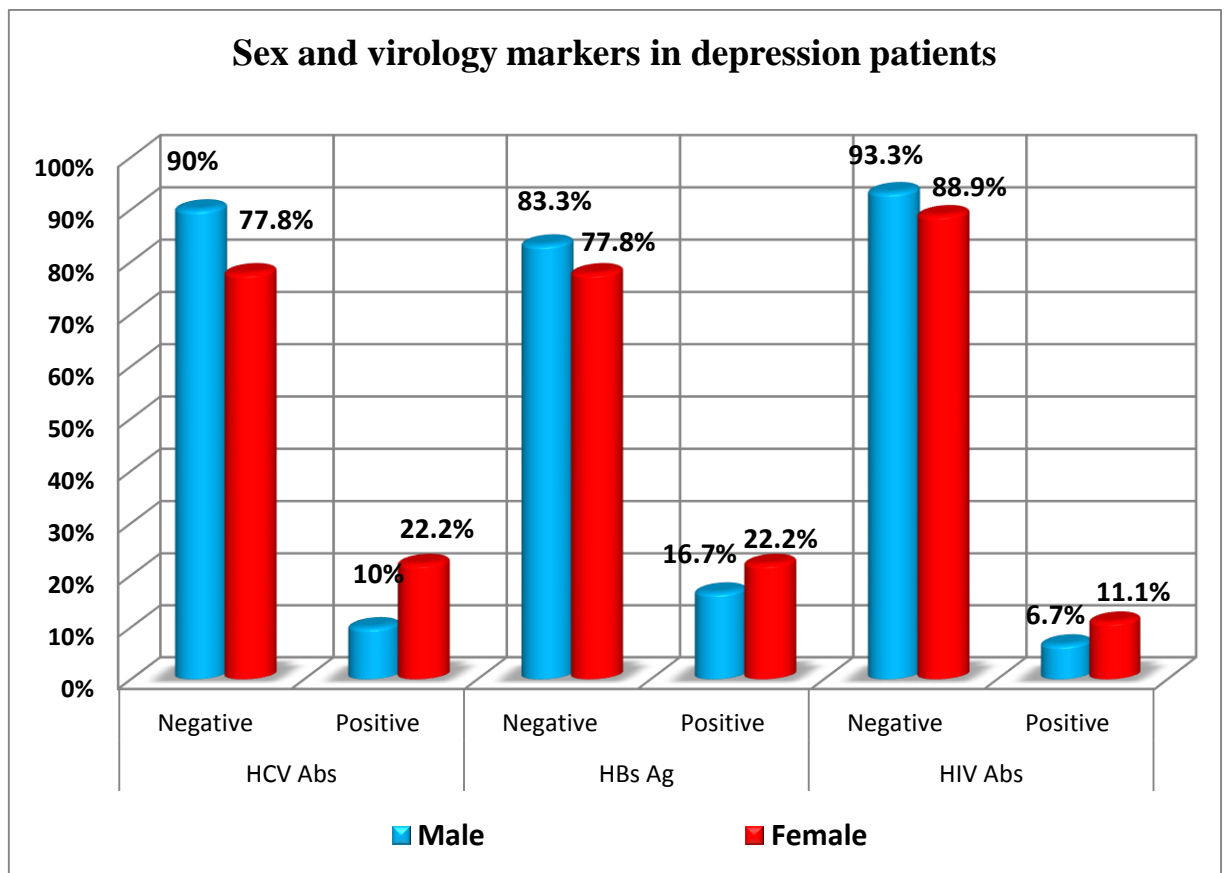


Figure (2): Relation between sex and studied virology markers in depression patients.

Table (2): Relation between sex and studied virology markers in general anxiety disorder patients

General anxiety disorder patients Viral markers		Sex				X ²	P-value
		Male (N = 16)		Female (N = 6)			
HC V Abs	Negative	14	87.5%	6	100%	0.825	0.364 NS
	Positive	2	12.5%	0	0%		
HBs Ag	Negative	14	87.5%	6	100%	0.825	0.364 NS
	Positive	2	12.5%	0	0%		
HIV Abs	Negative	16	100%	6	100%	----	----
	Positive	0	0%	0	0%		
Co-infection	C + B	0	0%	0	0%	-----	----
	C + I	0	0%	0	0%		
	B + I	0	0%	0	0%		
	C + B + I	0	0%	0	0%		

Table (3): Relation between sex and studied virology markers in mania patients

Mania patients Viral markers		Sex				X ²	P-value
		Male (N = 10)		Female (N = 2)			
HCV Abs	Negative	10	100%	2	100%	----	-----
	Positive	0	0%	0	0%		
HBs Ag	Negative	9	90%	2	100%	0.21	0.640 NS
	Positive	1	10%	0	0%		
HIV Abs	Negative	10	100%	2	100%	----	----
	Positive	0	0%	0	0%		
Co-infection	C + B	0	0%	0	0%	-----	----
	C + I	0	0%	0	0%		
	B + I	0	0%	0	0%		
	C + B + I	0	0%	0	0%		

Table (4): Relation between sex and studied virology markers in OCD patients

OCD patients Viral markers		Sex				X ²	P-value
		Male (N = 7)		Female (N = 2)			
HCV Abs	Negative	6	85.7%	2	100%	0.32	.571 NS
	Positive	1	14.3%	0	0%		
HBs Ag	Negative	7	100%	2	100%	-----	-----
	Positive	0	0%	0	0%		
HIV Abs	Negative	6	85.7%	1	50%	1.14	.284 NS
	Positive	1	14.3%	1	50%		
Co-infection	C + B	0	0%	0	0%	-----	----
	C + I	1	14.3%	0	0%		
	B + I	0	0%	0	0%		
	C + B + I	0	0%	0	0%		

DISCUSSION

240 million people have a serious mental illness, with a broadly similar distribution worldwide. Serious mental illness is defined as a diagnosis of mental illness (e.g., schizophrenia and schizoaffective disorders, bipolar disorder, or psychosis) that is persistent, disabling, and requiring specialized psychiatric treatment as an outpatient or inpatient admission. The point prevalence of serious mental illness is 4.6 cases per 1000 people, and 4.0% of people have a serious mental illness at some point during their life⁽⁴⁾.

A significant proportion of people with severe mental diseases, are infected with HIV at some time in their lives with epidemiologically representative studies finding around 6.2–29.10% of people with severe mental diseases had comorbid HIV infections. The prevalence of hepatitis B and hepatitis C viruses in people with severe mental diseases is significantly higher. According to different studies, the prevalence ranges from 7.45 to 47.5% and 6.2–29.8% for hepatitis B and hepatitis C, respectively⁽⁴⁾.

The present study showed the description of HCV Abs, HBs Ag and HIV Abs in studied patients. As regards HCV Abs, there were 157 negative patients (87.2%) and 23 positive patients (12.8%) in the studied patients. As regards HBs Ag, there were 162 negative patients (90%) and 18 positive patients (10%) in the studied patients. As regards HIV Abs, there were 170 negative patients (94.4%) and 10 positive patients (5.6%) in the studied patients. As regards co-infection, there were 2 patients (1.1%) with HCV Ab + HBs Ag, 1 patient (0.6%) with HCV Ab + HIV Ab and 3 patients (1.7%) with HBs Ag + HIV Ab in the studied patients. These results resemble that of **Rosenberg et al.**⁽⁵⁾ who studied the prevalence of HIV, hepatitis B, and hepatitis C in people within severe mental illness, and found that the prevalence of HIV infection in his sample of severe mental illness was 3.1%, prevalence rates of HCV was 18.4% and HBV was 14.6%. **Huy et al.**⁽⁶⁾ who studied HBV, HCV and AIDS coinfection among severe mental patients in the National Hospital of Tropical Diseases, Vietnam. found that 5 % had HCV Ab + HBs Ag, 2.5 % had HCV Ab + HIV Ab and 3 % of mental patients had HBs Ag + HIV Ab. Other results of **Durotoye et al.**⁽⁷⁾ in Nigeria disagree with our results where they found that HIV was 12%, HBV was 25% and HCV was 21%.

The current work showed that there was no statistical significant relation between sex and virology markers in all studied patients (p -value > 0.05). As regards co-infection, there were 2 male patients (0.1%) with HCV Ab + HBs Ag, 2 males (0.1%) and 1 female (0.01%) with HCV Ab + HIV Ab and 2 patients (0.1%) with HBs Ag + HIV Ab in the studied patients. These results are in agreement with **Siberstein et al.**⁽⁸⁾, who studied HIV, HBV and HCV seroprevalence among homeless patients admitted to a psychiatric inpatient

unit, and found that there was no significant difference between virology markers and psychiatric patients (p -value = 0.7623). Similar study by **Huy et al.**⁽⁶⁾ found also no statistical significant difference between severe mental male and female patients regarding co-infection with our viral markers (p value > 0.05).

The current work showed that there was no statistical significant relation between sex and virology markers in studied schizophrenia patients (p -value > 0.05). As regards co-infection, there was 1 male patient (0.02%) with HCV Ab + HBs Ag in the studied patients. Similar results are found in the work of **Kneeland & Fatemi**⁽⁹⁾ who studied the viral infection, inflammation and schizophrenia. **Mazaheri-Tehrani et al.**⁽¹⁰⁾ studied viral infection in psychiatric patients and comparison of sex groups with healthy controls in Iran. They found that there was a significant difference among males group, females group and controls group (p value < 0.05). As regards schizophrenia patients co-infected with viral markers; **Huy et al.**⁽⁶⁾ found also no statistical significant difference between males and females (p value > 0.05).

The current work showed that there was no statistical significant relation between sex and virology markers in studied depression patients (p -value > 0.05). As regards co-infection, there was 1 male patient (0.03%) with HCV Ab + HBs Ag and 1 female patient (11.1%) with HBs Ag + HIV Ab in the studied patients. Similar results found also in the work of **Oquendo et al.**⁽¹¹⁾ who studied sex differences in clinical predictors of depression. As regards depression patients co-infected with viral markers, **Huy et al.**⁽⁶⁾ found also no statistical significant difference between males and females (p value > 0.05). **Maeng & Hong**⁽¹²⁾ studied inflammation as the potential basis in depression. They disagree with our results as they found a significant statistical difference between males and females in studied sex group (p value > 0.05) as females were more likely than males to experience a major depressive episodes.

The present study showed that there was no statistical significant relation between sex and virology markers in studied general anxiety disorder patients (p -value > 0.05). As regards co-infection, there were no males or females co-infected with viral markers in the studied patients. These results are in accordance with that of **Maron & Nutt**⁽¹³⁾ who studied biological markers of generalized anxiety disorder and found similar results.

As regards depression patients co-infected with viral markers, **Huy et al.**⁽⁶⁾ found also no statistical significant difference between males and females (p value > 0.05).

The current study showed that there was no statistical significant relation (p -value > 0.05) between sex and studied virology markers in mania patients. As regards co-infection, there were no males or females co-infected with viral markers in the studied patients.

Chong et al. ⁽¹⁴⁾ who studied association of viral hepatitis and bipolar disorder, a nationwide population-based study found also similar results regarding mania patients.

As regards mania patients co-infected with viral markers, **Huy et al.** ⁽⁶⁾ found also no statistical significant difference between males and females (p value > 0.05).

The present study showed that there was no statistical significant relation (p-value > 0.05) between sex and studied virology markers in OCD patients. As regards co-infection, there was 1 male patient (14.3%) with HCV Ab + HIV Ab in the studied patients. In addition, **Campos et al.** ⁽¹⁵⁾ studied HIV, syphilis, and hepatitis B and C prevalence among patients with mental illness. They found that there was no statistical significant relation (p-value > 0.05) between sex and studied virology markers in OCD patients.

As regard OCD patients co-infected with viral markers, **Huy et al.** ⁽⁶⁾ found also no statistical significant difference between males and females (p value > 0.05).

Finally, the current study showed that there was no statistical significant relationship (p-value > 0.05) between sex and mental disorders in studied patients.

CONCLUSION

People with serious mental illness are at risk of blood-borne viral infections. Serious mental illness is unlikely to be a sole risk factor and risk of blood-borne viral infection is probably multifactorial and associated with low socioeconomic status, drug and alcohol misuse, ethnic origin, and sex. Health providers should routinely discuss sexual health and risks for blood-borne viruses (including risks related to drug misuse) with people who have serious mental illness as well as offering testing and treatment for those at risk.

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