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RESEARCH ARTICLE
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FREQUENCY OF DIABETES MELLITUS IN PATIENTS WITH CHRONIC HEPATITIS C INFECTION

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Abstract:
Objectives: To determine the frequency of diabetes mellitus in patients with chronic Hepatitis C Infection.
Materials and Methods: In this cross sectional study, we enrolled a total of 102 patients of both gender. The study duration was 6 month from (August, 2023 to January, 2024) and was conducted at Jinnah Sindh Medical University, Karachi Pakistan. All the patients were clinically examined. 5 ml blood were obtained from all the patients and send to laboratory for testing Fasting blood sugar. HCV Ab test, used for initial screening for hepatitis C, was also done to conform the hepatitis C infection.
Results: The mean age of the 102 patients enrolled in the study was 39.04 ± 8.99 years. Among them, 62 (60.8%) were male, while the remaining 40 (39.2%) were female. The majority of patients, 78 (76.5%), fell within the age group of 31-50 years, followed by 12 patients each (11.8%) in the age groups of 18-30 years and >50 years. Diabetes mellitus (DM) was diagnosed in 33 (32.4%) patients. Stratification of DM with respect to age groups and gender was conducted, revealing insignificant p-values in both cases.
Conclusion: The study concluded that there is association between chronic Hepatitis C infection and diabetes mellitus.

Key words: Chronic, Hepatitis C infection, diabetes mellitus,

INTRODUCTION:

The relationship between chronic hepatitis C infection and diabetes mellitus is complex and multifactorial.(1) Research suggests that there may be an increased risk of developing diabetes mellitus among patients with chronic hepatitis C infection, although the exact frequency varies depending on the population studied and other factors such as age, gender, ethnicity, and presence of other comorbidities.(2, 3) Several studies have reported an association between chronic hepatitis C infection and insulin resistance, which is a key factor in the development of type 2 diabetes mellitus.(4-6) The relationship between hepatitis C virus (HCV) infection and diabetes mellitus is

complex and not fully understood.(7) While some reports from Western countries have suggested a higher prevalence of HCV infection among diabetics compared to the general population, indicating a potential association between the two conditions.(2, 8) Hepatitis C virus (HCV) infection is a common illness that can cause short-term and long-term liver problems.(9) It can lead to liver cirrhosis and liver cancer.(10) Around 150 to 200 million people worldwide have been exposed to HCV, and about 85% of them have the infection for a long time.(11) Diabetes is a significant health concern worldwide, affecting around 537 million adults aged 20 to 79, which is about 10.5% of all adults in this age group. By 2030, it's projected that the number of people with diabetes globally will increase to 643 million, and by 2045, it could reach 783 million.(12) The International Diabetes Federation's 10th edition reports that the incidence of diabetes has been increasing in South-East Asia (SEA) nations for at least two decades.(12) Current estimates suggest that the prevalence of diabetes in these countries has exceeded earlier predictions, indicating a growing health challenge in the region. The purpose of the study, therefore, is to systematically investigate and quantify the frequency of diabetes mellitus among patients with chronic Hepatitis C Infection. By doing so, researchers aim to contribute to the existing knowledge base, inform clinical practice, and potentially identify areas for further research and intervention.

Objective:
To determine the frequency of diabetes mellitus in patients with chronic Hepatitis C Infection.

MATERIALS AND METHODS:

Study Design: cross-sectional study.
Study setting: Jinnah Sindh Medical University, Karachi Pakistan.
Duration of the study: Duration of the study was 6 month (August, 2023 to January, 2024).

Inclusion Criteria:
- Patients suffering from chronic Hepatitis C Infection.
- Patients of age 18-60 years.

Exclusion Criteria:
- Patients with acute Hepatitis C infection.
- Patients with a history of liver transplantation.
- Patients with significant comorbidities or medical conditions that could affect glucose metabolism or liver function, such as advanced renal disease or advanced heart failure.
- Patients who are pregnant, as pregnancy can affect glucose metabolism and may introduce confounding variables.

Methods:
This cross sectional study was conducted Jinnah Sindh Medical University, Karachi Pakistan from August, 2023 to January, 2024. A total of 102 patients were enrolled and an inform consent were obtained from the patient/guardian. All the patients were clinically examined to complete the selection criteria. 5 ml blood were obtained and send to laboratory for testing Fasting blood sugar. HCV Ab test, used for initial screening for hepatitis C, was also done to conform the hepatitis C infection. A pre-design questionnaire was used to data. SPSS version 26 were used to analyse the data.

RESULTS:

The mean age of all enrolled 102 patients was 39.04±8.99 years (Table 1). Out of total patients 62(60.8%) were male while the remaining 40(39.2%) were female. Most of the patients 78(76.5%) were of age group 31-50 years, followed by the age group of 18-30 years and >50 years in which there were 12(11.8%) patients each (Table 2, fig 2). DM was diagnosed in 33(32.4%) patients (Table 2, fig

1). Stratification of DM with respect to age groups and gender were done and it was found that in both cases the p-value was insignificant (Table 3).

Table 1: Mean age of all enrolled Patient *(n=102)*

Variables	Mean±SD
Age (Years)	39.04±8.99

Table 2: Characteristics of all the enrolled patients *(n=102)*

Gender	Frequency	Percentage
Male	62	60.8
Female	40	39.2
Age groups		
18-30 years	12	11.8
31-50 years	78	76.5
>50 years	12	11.8
DM		
YES	33	32.4
NO	69	67.6

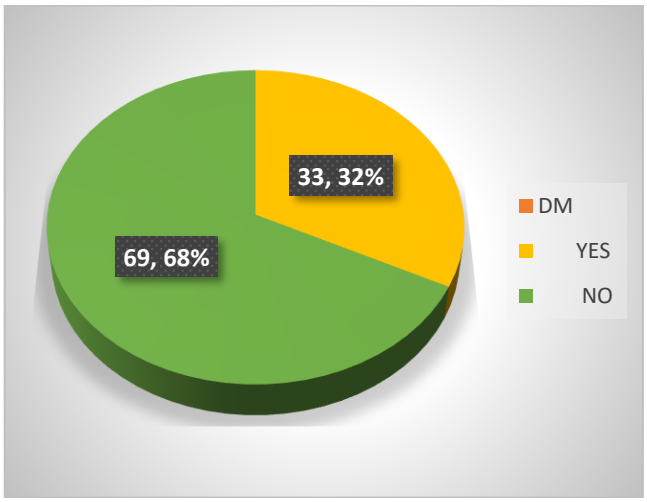

Fig 1: Frequency of DM

Table 3: Stratification of DM with respect to age groups and gender *(n=102)*

Age groups	DM		P-value
	YES	NO	
18-30 years	3(9.1%)	9(13.0%)	0.69
31-50 years	25(75.8%)	53(76.8%)	
>50 years	5(15.2%)	7(10.1%)	
Gender			
Male	20(60.6%)	42(60.9%)	0.98
Female	13(39.4%)	27(39.1%)	

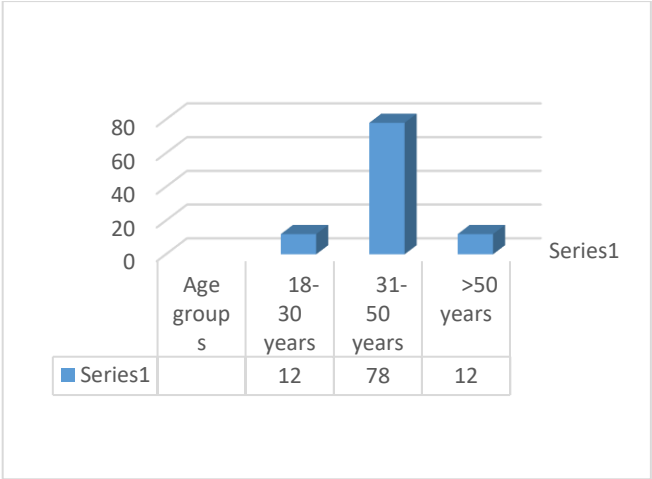

FIG 2: *Patients distribution on the basis of age groups*

Discussion: The relationship between chronic Hepatitis C infection and diabetes mellitus is complex. Research suggests that there may be an increased prevalence of diabetes mellitus in patients with chronic Hepatitis C infection compared to the general population. The main of the present study was to determine the frequency of diabetes mellitus in patients with chronic Hepatitis C Infection. In the present study DM was diagnosed in 33(32.4%) patients. our study finding was supported by a number of studies. All these supported studies shows an association between chronic Hepatitis C infection and diabetes mellitus. A recent study (13) have indicated a correlation between chronic infection with Hepatitis C virus (HCV) and a heightened likelihood of developing insulin resistance (IR) and type 2 diabetes mellitus (T2DM). Other studies by Gray et al.(14) and Caronia et al.(15) also stated that there is strong association between HCV infection and type 2 diabetes. The study conducted by J i Kon Ryu et al.(16) similarly concluded an association between diabetes and chronic HCV infection. In the present study most of the affected patients were of between 3rd and 5th decade. Consistently, a national survey in the United States revealed a higher prevalence of HCV infection in patients over the age of 40 with type 2 diabetes mellitus.(17) Moreover, another study in the United States identified advanced age as a prominent risk factor for the presence of clinical and biological extrahepatic manifestations of chronic HCV.(18) Age-stratified analysis of diabetes mellitus was performed, revealing an insignificant p-value. An insignificant p-value suggests that there may not be a statistically significant difference in the prevalence or characteristics of diabetes mellitus among the different age groups studied. This finding could have implications for understanding how diabetes affects different age demographics within the study population. In our study 62(60.8%) were male while the remaining 40(39.2%) were female. Gender-stratified analysis of diabetes mellitus was performed, revealing an insignificant p-value. An insignificant p-value suggests that there may not be a statistically significant difference in the prevalence or characteristics of diabetes mellitus between males and females in the study population. This finding could indicate that gender may not be a significant factor influencing the development or presentation of diabetes. Caronia et al.(15) identified male gender as a significant factor linked with type 2 diabetes mellitus. Conversely, Cacoub et al.(18) found that female gender was among the most common factors associated with the occurrence of extrahepatic manifestations of HCV infection.

Conclusion: It was concluded that there is strong association between chronic Hepatitis C infection and diabetes mellitus. And in most patients suffering from chronic Hepatitis C infection, there is chances of developing DM.

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