



HEPATITIS C INFECTION RATES IN PEOPLE WITH TYPE 2 DIABETES

Preh^{1*}, Waseem Raja Memon², Kehf³, Mir Tahir Hussain Talpur⁴, Noor Nabi⁵, Mukhtiar Ahmed Abro⁶

^{1*}Women Medical officer Medicine, People's University of Medical and Health Sciences for Women Nawabshah Pakistan. email: dr.prspmc@gmail.com

²Associate Professor of Medicine, People's University of Medical and Health Sciences for Women Nawabshah Pakistan. email: waseemwasfi81@gmail.com

³Senior Women Medical officer Medicine, People's University of Medical and Health Sciences for Women Nawabshah Pakistan. email: drshaikh85@yahoo.com

⁴Associate Professor of Medicine, People's University of Medical and Health Sciences for Women Nawabshah Pakistan. email: drtahirhussaintalpur@yahoo.com

⁵Assistant Professor of Medicine, People's University of Medical and Health Sciences for Women Nawabshah Pakistan. email: noorsiyal@hotmail.com

⁶Assistant Professor of Medicine, People's University of Medical and Health Sciences for Women Nawabshah Pakistan. email: drmukhtiarahmed@gmail.com

***Corresponding Author:** Preh

^{*}Women Medical officer Medicine, People's University of Medical and Health Sciences for Women Nawabshah Pakistan. email: dr.prspmc@gmail.com

Abstract

Objective: This study aims to evaluate the prevalence of Hepatitis C among a cohort of 150 patients with diabetes mellitus (DM).

Study design: A cross-sectional study

Place and Duration: This study was conducted in People's University of Medical and Health Sciences for Women Nawabshah from June 2022 to June 2023

Methodology: A total of 150 patients, both male and female, aged between 24-65 years, with DM were included in the study. Data on patients' age, gender, BMI, residence, and educational attainment were collected after obtaining informed written consent. Hepatitis C was diagnosed using the Enzyme-Linked Immuno-Sorbent Assay (ELISA) method. The diagnostic criteria for DM were based on two fasting or random plasma glucose levels exceeding 126 mg/dL and 200 mg/dL, respectively. Patients were subsequently categorized as hypoglycemic, normal, or hyperglycemic based on their blood glucose levels. The data analysis was performed using SPSS version 26.

Results: Among the 150 patients with diabetes, 80 (53.3%) were females and 70 (46.7%) were males. The mean age of patients was 37.8±14.89 years, with a mean BMI of 25.4±7.3 kg/m². The majority of cases were from rural areas (60%), and 40% had urban residency. Of the patients, 44.66% were educated, while 55.33% were uneducated. Hepatitis C was found in 28% of patients, all of whom had DM II, with the majority being females (60%). Most patients (54.76%) had glycemic values in the 180 mg/dl range. In the Hepatitis C cases, 20% were aged between 24-35 years, 50% were between 36-45 years, and 30% were older than 45 years. Elevated levels of Serum Glutamic-Pyruvic Transaminase (SGPT) were observed in 80.95% of patients.

Conclusion: This study concludes that Hepatitis C infection was prevalent among 28% of patients, primarily associated with DM II cases. The majority of affected patients were females, and elevated SGPT levels were common in this population.

Keywords: Hepatitis C, Diabetes Mellitus, Prevalence,

Introduction

Non-alcoholic fatty liver disease (NAFLD) and Hepatitis C are significant public health concerns with substantial global prevalence. NAFLD, characterized by hepatic fat accumulation, has emerged as a leading cause of chronic liver disease, often associated with metabolic disorders such as DM [1]. On the other hand, Hepatitis C, caused by the Hepatitis C virus (HCV), poses a substantial risk to individuals worldwide and is a leading cause of liver-related morbidity and mortality [2].

The intricate interplay between NAFLD and DM has been widely explored, as DM is a recognized risk factor for the development and progression of NAFLD [3]. Moreover, individuals with DM may face a higher likelihood of comorbidities, including Hepatitis C infection, which can further exacerbate liver-related complications [4].

Several studies have been done to understand the epidemiology of NAFLD and Hepatitis C, shedding light on their prevalence, risk factors, and clinical implications. A study by Younossi et al. highlighted the global burden of NAFLD, emphasizing its association with DM and underscoring the need for comprehensive management strategies [5]. Additionally, the work of Kanwal et al. explored the impact of DM on the progression of Hepatitis C-related liver disease, emphasizing the importance of addressing these dual burdens in clinical practice [6].

The complex relationship between NAFLD, DM, and Hepatitis C warrants further investigation, especially concerning its implications for the quality of life (QOL) experienced by affected individuals. Research by Golabi et al. emphasized the considerable impact of NAFLD on health-related QOL, underscoring the need for holistic approaches to patient care [7]. Similarly, studies such as those by Foster et al. and Hickman et al. have investigated the broader implications of Hepatitis C on patient well-being, emphasizing the need for integrated healthcare strategies [8, 9].

As the understanding of NAFLD, DM, and Hepatitis C evolves, it is crucial to explore not only their individual impacts but also their collective influence on patient outcomes and QOL. This study aims to contribute to this body of knowledge by assessing the QOL of individuals with DM and its association with Hepatitis C infection, adding valuable insights to the multidimensional care of these complex and overlapping conditions.

Methodology

The study encompassed a cohort of 150 participants, carefully selected for a cross-sectional examination. Inclusion criteria involved individuals with DM, while those with a history of intravenous drug addiction or lacking written consent were excluded from the study. Thorough data collection was conducted, capturing essential patient information such as age, gender, BMI, residence, and educational attainment. This meticulous process was carried out after obtaining informed written consent.

A comprehensive questionnaire was employed to gather detailed insights into hepatitis C infection risks, diabetes duration and type, as well as the occurrence of associated complications. This instrument probed the stigmata of chronic liver disease and the enduring effects of DM. A structured medical history, clinical examination, and laboratory investigation were integral components of the data collection process.

The clinical examination focused on evaluating peripheral symptoms associated with chronic liver disease and the enduring impacts of DM. Laboratory investigations were multifaceted, encompassing random blood glucose levels, urine regular screening, a complete blood count, and the identification of anti-HCV antibodies using ELISA in a local laboratory.

The diagnostic criteria for DM were based on two fasting or random plasma glucose levels exceeding 126 mg/dL and 200 mg/dL, respectively. Patients were subsequently categorized as

hypoglycemic, normal, or hyperglycemic based on their blood glucose levels. Revised diagnostic criteria were applied to ascertain the underlying liver condition, with liver function tests being a crucial aspect of this determination.

The wealth of collected data underwent rigorous analysis using SPSS version 26.0. Using descriptive and inferential statistical methods, meaningful insights and conclusions were drawn from the large dataset. This helped researchers learn more about the complicated relationships between diabetes, hepatitis C, and other health factors.

Results

A total of 150 patients were included in the study, with 70 (46.7%) females and 80 (53.3%) males diagnosed with DM. The mean age of the patients was 37.8 ± 14.89 years, and the mean BMI was 25.4 ± 7.3 kg/m². The demographic distribution revealed that the majority of cases were from rural areas (60%), while 40% had urban residency. In terms of education, 67 (44.66%) patients were educated, and 83 (55.33%) patients were uneducated.

Hepatitis C was identified in 42 patients, representing a frequency of 28%. All patients with Hepatitis C were concurrently diagnosed with DM type II. Among the Hepatitis C cases, the majority were females (60%). Age distribution showed that 20% were aged between 24-35 years, 50% between 36-45 years, and 30% were aged over 45 years.

Elevated levels of Serum Glutamic-Pyruvic Transaminase (SGPT) were observed in 34 (80.95%) patients. Regarding glycemic values, 23 (54.76%) of patients with Hepatitis C had values in the 180 mg/dl range, 7 (16.66%) in the 60-120 mg/dl range, and 12 (28.57%) in the 121-180 mg/dl range. These findings provide a comprehensive understanding of the demographic and clinical characteristics of the study participants and underscore the prevalence and associated factors of Hepatitis C in individuals with DM.

Table 1. Demographic Characteristics

Characteristic	Count	Percentage
Total Patients	150	100
Females	70	46.7
Males	80	53.3
Mean Age (years)	37.8	-
Mean BMI (kg/m ²)	25.4	-
Rural Residency	90	60
Urban Residency	60	40
Educated Patients	67	44.66
Uneducated Patients	83	55.33

Table 2. Hepatitis C and DM Characteristics

Characteristic	Count	Percentage
Hepatitis C Cases	42	28
Hepatitis C in Females	25	60
Age 24-35 years	30	20
Age 36-45 years	75	50
Age >45 years	45	30
Elevated SGPT Levels	34	80.95

Table 3. Glycemic Values in Hepatitis C Patients

Glycemic Range	Count	Percentage
60-120 mg/dl	7	16.66
121-180 mg/dl	12	28.57
181 mg/dl and above	23	54.76

These tables offer a structured representation of the demographic and clinical characteristics of the study participants, highlighting key factors such as gender distribution, age, BMI, residency, education, Hepatitis C prevalence, age distribution within Hepatitis C cases, and glycemic values in Hepatitis C patients.

Discussion

The discussion of our study centers on the multifaceted relationship between DM and Hepatitis C, exploring the demographic and clinical intricacies revealed in our findings. The prevalence of Hepatitis C among DM patients has been a subject of increasing importance, and our results contribute valuable insights to this growing body of knowledge.

Our study revealed a considerable prevalence of Hepatitis C (28%) among the DM cohort, aligning with the increasing recognition of the intersection between these two conditions. This finding is consistent with similar studies indicating a higher prevalence of Hepatitis C in individuals with DM [10, 11]. The coexistence of these conditions poses challenges in the management and treatment of affected individuals.

Notably, a majority of Hepatitis C cases were found among females, constituting 60% of the identified cases. This gender-specific prevalence aligns with existing literature emphasizing the gender-based variations in Hepatitis C incidence and progression [12, 13]. Further investigation into the gender-specific factors contributing to this observation is warranted.

The age distribution within the Hepatitis C cases revealed a higher prevalence among individuals aged 36-45 years (50%). This age-related pattern is in harmony with studies that highlight the cumulative impact of age on both DM and Hepatitis C [14,15]. Understanding age-related dynamics is crucial for developing targeted interventions and treatment strategies.

Elevated levels of Serum Glutamic-Pyruvic Transaminase (SGPT) were observed in a substantial proportion (80.95%) of Hepatitis C patients. This highlights the potential hepatic impact of Hepatitis C in individuals with DM, reinforcing the need for vigilant monitoring of liver function in this population [16, 17].

The glycemic values in Hepatitis C patients depicted a significant proportion (54.76%) with values in the 180 mg/dl range. This raises questions about the bidirectional relationship between DM and Hepatitis C, where one condition may exacerbate the other [18, 19].

While our study provides crucial insights, certain limitations must be acknowledged. The cross-sectional nature of the study limits our ability to establish causal relationships. Future longitudinal studies are essential to unravelling temporal dynamics and causative factors.

Conclusion

Our findings underscore the important interplay between DM and Hepatitis C, emphasizing the need for holistic patient management strategies. These insights contribute to a broader understanding of the epidemiology and clinical manifestations of coexisting DM and Hepatitis C.

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This study was conducted without receiving financial support from any external source.

Conflict in the Interest

The authors had no conflicts related to the interest in the execution of this study.

Permission

Prior to initiating the study, approval from the ethical committee was obtained to ensure adherence to ethical standards and guidelines.

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