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FREQUENCY OF HEPATITIS B AND C IN RELATION TO LIFESTYLE AND SOCIO-DEMOGRAPHIC CHARACTERISTICS AMONG ADULTS IN LAHORE

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Abstract

Hepatitis is the eighth-highest cause of mortality globally and second-highest in Pakistan. The purpose of this study was to determine frequency of Hepatitis B and C and related lifestyle and socio-demographic risk factors among adults. The data were collected though questionnaire from Hepatitis B and C patients from Mayo and Jinnah hospital Lahore. The data was analyzed using SPSS version 18. There were 5095 patients with Hepatitis B and C out of which 146 patients (67 males and 79 females) filled questionnaire. The frequency of hepatitis C was higher than hepatitis B. The significant risk factors associated with hepatitis B and C were education, marital status, family history, household income, and type of food consumed. Therefore, socio-demographic and lifestyle risk factors related interventions needed to reduce frequency of Hepatitis B and C.

Keywords: Frequency of hepatitis, Hepatitis, Lifestyle determinants of hepatitis, Risk factors of hepatitis, Socio-demographic determinants of hepatitis.

What We Already Know

▪ Hepatitis is one of the leading causes of death worldwide

- South Asian countries have one of the highest burden of Hepatitis C
- Sociodemographic and lifestyle factors play an important role in the development of Hepatitis B and C

What This Article Adds

- There are more number of Hepatitis C patients as compared to Hepatitis B.
- Low education, marital status and type of food consumed are noteworthy risk factors that are linked with hepatitis B and C patients in Lahore, Pakistan
- Patients who are hospitalized, have surgical procedures and and history of blood transfusion have higher odds for the development of Hepatitis C as compared to family history of hepatitis, history of dental procedure and history of therapeutic injections.

Introduction

Hepatitis is the eighth leading cause of mortality and 1.34 million deaths are caused by worldwide (WHO, 2018). The two most prevalent strains of Hepatitis B and C have affected estimated 257 and 71 million individuals globally (WHO, 2018).

South Asian countries have a higher prevalence of hepatitis C where 94.6 million people are infected**.** Socio-demographic and environmental factors including age and healthcare facilities play a pivotal role in increased prevalence of Hepatitis. A cross-sectional study conducted in a rural village in India on the risk factors of Hepatitis B and C showed that being a healthcare worker, and having a tattoo were the major risk factors for Hepatitis mainly Hepatitis C (Bhate et al. 2015). Similarly, a study carried out in Azerbaijan, Iran showed that a history of hospitalization and urine infection has a significant relationship with Hepatitis B and C (Pouri et al. 2019).

In Pakistan, almost 12 million population is affected by Hepatitis B and C annually (WHO, 2016). According to a survey conducted in different provinces of Pakistan showed highest prevalence (6.7%) in Punjab (Khan et al. 2000). Commonly this virus prevails among people in unhygienic dispensaries and most of the time people are unaware of this viral attack (WHO, 2016).

There are some hospital-based and regional studies being carried out in Pakistan that present diverse prevalence rates of Hepatitis (Ghias and Pervaiz 2009; Waheed et al. 2009). A research conducted in Lahore determined the relationship of Hepatitis B and C with lifestyle and socio-demographics among adults. Data was collected through interviews in 2006 from Jinnah, Sheikh Zayed, and Mayo hospitals in Lahore. The results of the study showed that age, blood transfusion history, history of hospitalization, tattooing, family history of hepatitis, and surgical operation were found to have a substantial and positive relationship with hepatitis C (Ghias and Pervaiz 2009).

There is a high prevalence of hepatitis B in Kargil (8.3%) and Leh (3.3%) showed by data (Khan et al. 2018). A study carried out at the outdoor patient department of People's medical university and hospital district Shaheed Benazir Abad Sindh Pakistan revealed that patients who were uneducated, had past medical history included unsafe injections and patients with blood transfusion history were all positive for Hepatitis C (Jilani et al. 2017).

A review by Mehmood *et al.*, 2020 revealed that there was high prevalence of Hepatitis B and C i.e. 68.3% among intravenous drug addicts and sex workers in Pakistan. The average of hepatitis B antigen in non-blood donors was 1.98% while in blood donors it was 2.41%. The rate of hepatitis C among blood donors and non-donors was 3.31% and 7.44% respectively. In addition, 44.45% of chronic liver disease patients had hepatitis B; similarly, 27.33% thalassemia patients were suffering from Hepatitis C (Mehmood et al. 2020).

A study carried out in Lahore Pakistan, data was collected from primary care hospitals to find out the socio-demographic status of the hepatitis C patients showed they belonged to the labor class

(39.4%); most of them (71.4 %) were uneducated. Stress ($p<0.05$), sleep disturbance ($p<0.05$), and female gender (70.1%) had a significant relationship with Hepatitis C. Moreover, these factors were more prevalent among married patients ($p<0.05$) (Mukhtar et al. 2015).

Hepatitis B and C are emerging as an epidemic and until now the data is inadequate regarding the prevalence and incidence of all types of hepatitis in Pakistan as compared to developed countries like, America (Shepard et al. 2005). There is a dearth of literature on the prevalence of hepatitis B and C n Lahore, Pakistan and not updated as demographics and socioeconomic status is constantly changing. This research will generate latest data on prevalence of hepatitis and the major determinants responsible for this disease from Mayo and Jinnah Hospital in Lahore which can be used for health policy makers to plan different strategies to curb the menace of Hepatitis in Pakistan.

Research question: What is the frequency/prevalence of hepatitis B and C and its association with lifestyle and socio-demographic characteristics among adults in two tertiary hospitals of Lahore, Pakistan?

Methods

Research Design

Study design is case series determining the frequency of hepatitis B and C

Study Locale

Data was collected from two tertiary hospitals named Mayo and Jinnah Hospital Lahore.

Study Population

The target population was adults with an age range between 19 to 60 years diagnosed with hepatitis as mentioned in the data registry of the hepatitis outdoor patient department.

Sample Size Calculation

$N= Z^2 * P (1-P)/d^2$
d= degree of freedom i.e. 5%
N= 150.4
150 participants was minimum sample size.

Duration of the Study

The data collection was completed in 4-months from January to April 2019.

Sampling Technique

The sampling technique was Non- Probability purposive sampling.

Inclusion Criteria

Ambulatory Patients (both genders) diagnosed with Hepatitis and started treatment.

Exclusion Criteria

Children from age 0 to 18 were excluded from the study.

Data Collection Tool and Sample

The principal researcher collected data from Mayo and Jinnah hospitals and took records of all the confirmed hepatitis cases. The lifestyle and socio-demographic characteristics of hepatitis B and C patients were determined through a structured questionnaire which included participant age, gender, marital status, education, income, clinical information, lifestyle choices, and other possible risk factors of the patients The principal investigator helped illiterate participants to fill questionnaire.

Ethical Approval

An ethical approval was obtained from the ethical committees of hospitals where the research was conducted. Informed written consent was taken from the participants and the anonymity of their information was ensured.

Statistical Analysis

Data was analyzed using SPSS version 18.00. Frequencies and percentages were reported. Pearson correlation was used to determine the association between Hepatitis and related risk factors. Multiple logistic regressions were used to report odd ratios by adjusting for age, gender, income and educational status.

Results

Table 1 shows self-reported background characteristics of Hepatitis B and C patients in Mayo and Jinnah Hospital Lahore. There were total 67 males and 79 females who filled the questionnaire. The mean age was ±42years. 61 (91%) men reported to be married and 75 (96.2%) women reported to be married who were diagnosed with Hepatitis B and C as compared to unmarried subjects. Results showed that a large percentage of population had never gone to school and had no proper information regarding the risk factors related to the development of Hepatitis B and C.

Table 1: Self-reported background characteristics of Hepatitis patients in Mayo and Jinnah Hospital Lahore

Variable	Men (n=67)%	Women (n=79)%
Mean (SD) age (years)	42.2 (10.9)	42.2 (10.3)
Marital Status n (%)		
Single	6 (9)	3 (3.8)
Married	61 (91)	75 (96.2)
Highest education level		
No school	34 (50.7)	44 (56.4)
Primary	10 (14.9)	10 (12.8)
Matriculation	17 (25.4)	18 (23.1)
Graduate	6 (9.0)	4 (5.1)
Postgraduate		2 (2.6)

Table 2 shows the frequencies and percentages of risk factors in Hepatitis B patients. History of dental procedure i.e. 13(59.1%) was found in most of the patients infected with hepatitis B and 18(45.5%) were reported with the history of hospitalization. Only 4(18.2%) patients with hepatitis B gave history of blood transfusion and visit to community barbers who reused blades for shaves. Moreover, 6(27.3%) patients reported the use of reused therapeutic syringes and no patients of hepatitis B were drug addicts.

Table 2: Frequency and percentages of risk factors in Hepatitis B patients

	Hepatitis B
Positive family history of Hepatitis	7(31.8%)
Hospitalization	10(45.5%)
Surgical procedure	8(36.4%)
History of dental procedure	13(59.1%)
History of blood transfusion	4(18.2%)
Use of drugs	0
History of therapeutic injections	6(27.3%)
Barber shaves	4(18.2%)

Table 3 shows frequencies and percentages of risk factors in Hepatitis C patients. A total of 82(66.1%) patients of Hepatitis C had a history of dental methods. hospitalization and surgical procedure was also prevalent in the subjects. there were 41(33.1%) individuals with positive history of hepatitis. There were just 15(12.1 %) patients that were drug addicts and only 19(15.3%) patients reported their visit to community barbers.

Table 3: Frequency and percentages of risk factors in Hepatitis C patients

Risk factors	Hepatitis C
Positive family history of Hepatitis	41(33.1%)
Hospitalization	60(48.4%)
Surgical procedure	49(39.5%)
History of dental procedure	82(66.1%)
History of blood transfusion	29(23.4%)
Use of drugs	15(12.1%)
History of therapeutic injections	38(30.6%)
Barber shaves	19(15.3%)

Table 4 shows the association of socio-demographic and lifestyle factors with hepatitis B and C. Pearson correlation was used to determine the relation of socio-demographic and lifestyle factors with Hepatitis B and C. Significant risk factors related to Hepatitis were low education, low household income, family history of hepatitis, marital status and type of food consumed. Low education, marital status and type of food consumed were highly noteworthy risk factors that are linked with hepatitis B and C.

Table 4: Association of Socio-demographic and lifestyle factors with Hepatitis B and C

Risk Factors	Pearson correlation
Gender	0.121
Education	-.283**
Household income	-0.201*
Occupational Status	0.015
Family history of hepatitis	0.199*
Marital status	0.467**
Hospitalization	0.021
History of surgical procedure	0.023
History of dental procedure	0.053
History of blood transfusion	0.045
History of therapeutic injections	-0.026
Type of food consumed	-.243**

***p<0.05**
****p<0.01**

Table 5 shows that hospitalization, surgical procedure and history of blood transfusion had higher odds ratio for the development of Hepatitis C as compared to family history of hepatitis, history of dental procedure and history of therapeutic injections.

Table 5: Odds ratio for risk factor against Hepatitis C

Risk Factors	Differences between Hepatitis Adjusted for age, gender, income and educational status. Hepatitis B was taken as a reference group	
	OR	CI (95%)
Family history of Hepatitis	0.945	0.357-2.497

Hospitalization	1.125	0.453-2.795
Surgical Procedure	1.143	0.446-2.928
History of Dental Procedure	0.740	0.293-1.871
History of Blood Transfusion	1.374	0.430-4.384
History of therapeutic injections	0.849	0.308-2.337

Figure 1 shows the number of hepatitis B and C patients from January to April 2019 in Mayo hospital Lahore. There were total 33 cases of Hepatitis B and 663 cases of Hepatitis C in Mayo hospital. Figure 2 shows the number of Hepatitis B and C patients from January to April 2019. The total number of hepatitis B patients was 375 and hepatitis C patients were 4024. Figure 3 shows that the prevalence of Hepatitis varied among different age groups but the highest reported cases of hepatitis B and C fell under the age group of 40 to 50 years with predominantly women. Further it is observed that the lowest stated cases of hepatitis B and C fall under age group of 51 to 60 years.

Figure 1: Number of Hepatitis B and C patients in 2019 in Mayo Hospital, Lahore

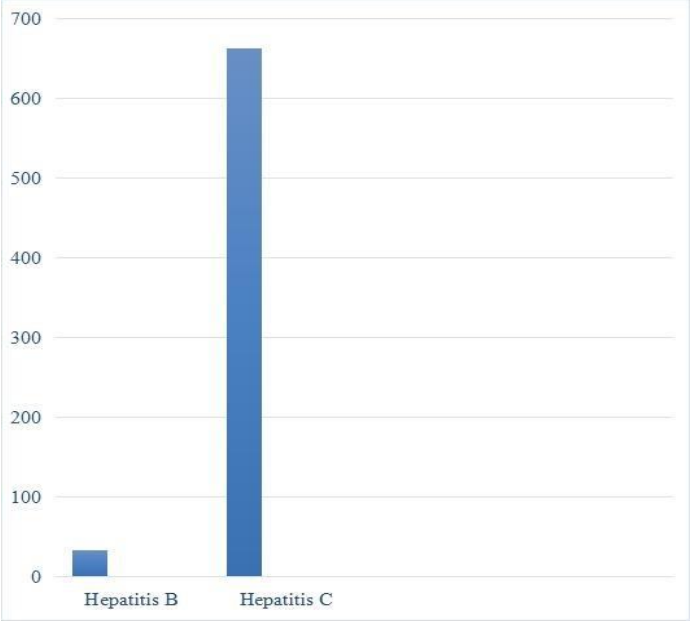


Figure 2: Number of Hepatitis B and C in 2019 in Jinnah Hospital, Lahore

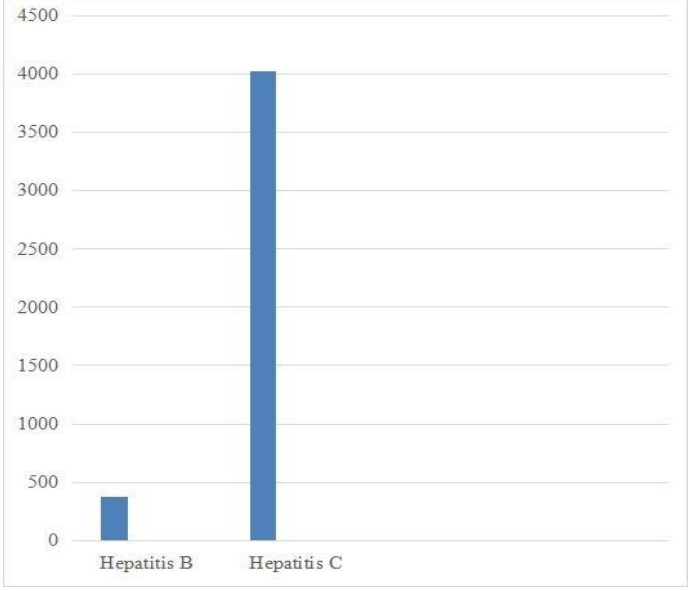
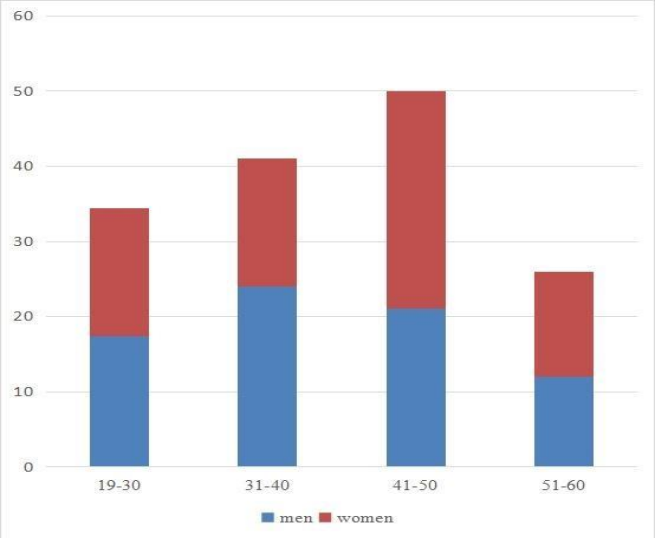


Figure 3: Number of hepatitis B and C patients based on age in years and gender



Discussion

The aim of the study was to determine the frequency of Hepatitis B and C The results of the study have shown that there is a high frequency of Hepatitis B & C mainly Hepatitis C in two main hospitals in Lahore. The outcomes of the study showed that education, household income, family history of hepatitis, and type of food consumed were the factors that showed association with the spread of hepatitis. a research conducted by Mehmood et al., 2020 showed that barbers, reused syringes, intravenous drug users, blood transfusion, blood donors, sexual transmission, ear and nose piercings, dental surgeries and other surgeries are the major risk factors for the transmission of hepatitis B and C. Moreover, gender, vaccinators, tattooing, household contact, circumcision, embroidery, perinatal transmission, socioeconomic status, awareness, and genotype distribution were documented as minor risk factors (Mehmood et al. 2020).

The study showed that 15.8 % of patients developed Hepatitis B and C due to the reuse of blades by the barbers and history of reused therapeutic syringes. Furthermore, 39.0% of Hepatitis C patients had gone through surgical procedures and 47.9% of patients had a history of hospitalization. In this study, 65.1% patients developed hepatitis B and C due to dental procedures and 22.6% patients developed due to blood transfusion. Lack of awareness among the participants of this study regarding spread of hepatitis B and C and use of unsterilized equipment was also observed (Gupta et al. 2018). A study by Ahmad *et al.,* 2010 showed that 13% of the total patients were unaware of how they got the hepatitis virus in their blood. In addition, the results of the study also revealed that dental procedure was one of the contributing risk factors in the spread of Hepatitis B and C among the inhabitants of Lahore. Moreover, blood transfusion, road accidents, barber shops, sexual exposure, substance abuse are also the major risk factors responsible for the transmission of the disease (Ahmad et al. 2010).

In this study it was noted that almost 31% patients of hepatitis B and C had a positive family history of hepatitis B and C and many patients were unaware of the precautionary measures that are needed to avoid contagious contact with the hepatitis patients. Moreover, the results of the study showed that the history of dental procedure, surgical procedure and therapeutic injections were significant factors for the transmission of hepatitis B and C. Barber shaves were also reported as the important risk factors for the spread of the disease. It seems that barbers are unaware of the hygiene during shaving practices and they need to be educated and guided to change their shaving blades for every customer at their shop. A study was conducted by Gias *et al.,* 2010 in the tertiary care hospitals of Lahore regarding the risk factors of hepatitis B and C. this study revealed that positive family

history of the disease, surgical procedures and road accidents significantly contributed towards the development of hepatitis B and C. In this study barber shaves were not found to be a significant risk factor (Ghias et al. 2010).The study also showed that level of education, household income, profession, marital status and type of food consumed were significantly associated with the occurrence of hepatitis B and C.

The results showed that lower the education level, the higher the chances of getting the disease. A study by Ziaee et al., 2016 conducted in South Khorasan, Iran regarding the prevalence and risk factors of hepatitis B among adult population showed that adults who had low education status, old age, intravenous (IV) drug addicts, body piercings, and subjects with a positive history of family history of HBV or HCV disease were more prone to hepatitis B (Ziaee et al. 2016). This study reported that the patients who were married had higher percentage of hepatitis B and C because of the sexual contact between them.

A study in jarwar, Sindh on the prevalence of B and C and associated risk factors showed that independent hepatitis C was more common among people older than 16 years of age, had past dental techniques, had history of liver sickness and absence of immunization, and at least 10 infusions in a year. There was sign of intra-familial and family unit grouping for hepatitis C, namely parent to youngster, spouse to spouse, kin to sibling and for hepatitis B it was parent to kid (Abbas et al. 2008). This study also showed that there was inverse relation between food consumption and hepatitis which means that the less an individual consumes food from home and more from outside, they become more prone to getting infected with Hepatitis.

The age range in this study was 40-50 years with predominantly women. Further it is observed that the lowest stated cases of hepatitis B and C fell under age bracket of 51 to 60. In a study by Umumararungu et al., 2017 it was observed that there was high prevalence of HCV among older people (>55 years) (Umumararungu et al. 2017). In addition, a study by Bhatti and Manzor 2016 reported higher prevalence of Hepatitis C among males as compared to females with the age range from 18 to 65 years (Bhatti and Manzoor 2016).

Conclusion

The objective of this research was to find the frequency of Hepatitis B and C in two tertiary care hospitals of Lahore, Mayo and Jinnah. In addition, the study also aimed at determining the socio-demographic and lifestyle risk factors associated with Hepatitis B and C. The outcomes of the study have shown that there is high frequency of Hepatitis C along with significant frequency of Hepatitis B in two main hospitals of Lahore. The results of the study showed that education, household income, family history of hepatitis and type of food consumed were the factors that showed association with the spread of hepatitis B and C. Low income, low education, being married and consuming contaminated food and drinking unclean water are major determinants of Hepatitis B and C.

Recommendations

Longitudinal prospective studies with large sample sizes regarding the causal factors at play for Hepatitis should be conducted. These studies will help us in determining the causal factors accountable for the high prevalence of Hepatitis. These causal factors can be intervened through the development of targeted interventions aimed at risk factors and may help in reducing the prevalence of Hepatitis B and C. The results can be shared with researchers and policy makers who should take the scientific studies into consideration and develop policies to prevent the onset of Hepatitis B and C.

Competing Interests:
The authors declare no competing interests. The authors are not involved with any financial or non-financial interests related to the publication of this study.

Authors Contributions:
QR, AU, RAI, SI, and KI along with RB conceptualized the paper. QR carried out the data collection, data analysis, helped in developing the questionnaire and wrote the paper. RAI gave her intellectual input into the conceptualization of the paper, data collection, data analysis and commented on the paper during all stages. QR supervised the whole project and helped in data collection, data analysis and commented on the paper during all stages. All authors read and approved the final manuscript.

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All the authors have consented to the publication of this manuscript.

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