Readers Insight
Publisher of open access books and journals

PJMLS

Print ISSN: 2707-4471. Online ISSN: 2707-448X

Research Article	Pak-Euro Journal of Medical and Life Sciences
DOI: 10.31580/pjmls.v6i2.2744	Copyright © All rights are reserved by Corresponding Author
Vol. 6 No. 2, 2023: pp. 77-84	
www.readersinsight.net/pjmls	**Revised:** June 03, 2023 **Accepted:** June 10, 2023
Submission: February 24, 2023	**Published Online:** June 30, 2023

SCREENING OF RISK FACTORS AND SUBCLINICAL ASPECTS FOR HEPATITIS A, B AND C IN THE HOSPITALIZED DRUG ADDICTIVE'S IN "TREATMENT AND REHABILITATION CENTER" IN DISTRICT KECH, BALOCHISTAN

Balach Khan[1], Asim Iqbal[1], Mir Chakar Baloch[1], Muhammad Ismail[1], Shebaz Nasir[1], Basharat Iqbal[1], Mahrukh Naseem[1]*

[1]**Department of Zoology**, University of Balochistan, Quetta, Pakistan

***Corresponding Author:** Dr. Mahrukh Naseem. Email: mahrukh.zoology@um.uob.edu.pk

Abstract

*Viral hepatitis is a serious health problem this study was aimed to investigate the prevalence of HAV, HBV and HCV in the injectable drug users (IDUs) admitted in Treatment and Rehabilitation Center for Drug Addicts in District Kech, with prior concentration given to the associated risk factors and sub-clinical aspects. During the study, a total of 436 IDUs blood simple were tested for the confirmation of HAV, HBV and HCV infections in Teaching Hospital Turbat. The socio-demographic data (e.g., age, gender, literacy, vaccination, economical and marital status), associated risk factors were also recorded in the questionnaire-based study. All the infected individuals were divided into three age groups i.e. group-I (10- 20 Yrs), group II (21-40Yrs) and group-III (41- 60 Yrs).*Out of these 436 tested IDUs*372 (85.32%) was found to have HAV, HBV and HCV infections. Out of 372 infected IDUs 13.30% (58/436) were infected with HAV, 30.73% (134/436) were infected with HBV and 41.28% (180/436) were infected with HCV. The prevalence of hepatitis infection was highest in group II 259/436 (59.40%), followed by group III 61/436 (13.90%), however least prevalence was found in group-I 52/436 (11.92%). The collected data showed that majority of hepatitis patients maintained the poor hygiene condition 246/436 (56.42%). A relatively lesser number of patients 126/436 (28.89%) were observed to have good hygiene condition. The most serious risk factors of HAV, HBV and HCV infections in IDUs of Treatment and Rehabilitation Center were notably the use of unsterilized syringe which is 75.92% and it's shearing among themselves for injecting drugs, followed by hair dressing tools (30.50%), unsterilized surgical tools (25.46 %).*

Keywords: *Age groups, HAV, HBV, HCV, Hygiene condition, Injectable drug users, Prevalence, Risk factors*

INTRODUCTION

Hepatitis is a viral disease refers to inflammation of the liver (1). Hepatitis is a significant health concern for injectable drug users IDUs, as the virus can be transmitted through sharing needles or other injection equipment. There are several types of viral hepatitis, including hepatitis A, B and C. Hepatitis A is transmitted through contaminated food or water, while hepatitis Band C are primarily spread through blood-to-blood contact. Hepatitis B and C are of particular concern for IDUs, as they can be easily transmitted through the sharing of needles, syringes, or other injection equipment (2). These viruses can cause chronic liver disease and lead to liver failure or liver cancer if left untreated.

According to the World Health Organization (WHO), it is estimated that 1.5 million cases of HAV, 296 million cases of HBV and 58 million cases of HCV existed worldwide, with the fact that HBV and HCV are more common among IDUs than the general population and approximately 67% of people who inject drugs worldwide are living with HCV and 2.3 million with HBV (3). The World Drug Report showed that 35 million people use drugs globally, and about 12 million people are IDU's, 5.6 million of whom are infected with HBV. Out of these, 7.5% of the IDUs have chronic HBV (4).

IDUs are at increased risk of developing chronic HBV and HCV, which can lead to serious liver damage, cirrhosis, liver cancer, and even death. Although chronic hepatitis A and B occur in all parts of the

world, but are most specifically endemic to the Asian, some parts of African, Australian, and some populations of South American continents (5-7). Besides these regions, HAV and HBV infections are also very high in various groups of advanced states like migrants and IDUs. Pakistan, being a developing country in Asian region, is also infected with hepatitis viruses whose infection rate are very high in all parts of the country, including major cities like Karachi, Sukkur, Faisalabad, Rawalpindi, Lahore and particularly in Quetta where there is a rapid increase in the hepatitis infection (8-10).

The data revealed that, the prevalence of HAV infection among IDUs in Pakistan was found to be 58.2% (11, 12). Among injectable drug users in Pakistan, the prevalence of hepatitis B is even higher, with some studies reporting rates as high as 60% (9, 13, 14). The study revealed that, approximately 42% of IDUs in Pakistan were infected with hepatitis C (9, 13).

MATERIALS AND METHODS

BLOOD SAMPLING AND BIOCHEMICAL ANALYSIS

Blood samples (N=436) were collected from "Treatment and Rehabilitation Center for Drug Addictive's". A complete history of the patients along with socio-demographic data (e.g., age, gender, vaccination, education, economical and marital status) was recorded with the consultation of the staff and parents. Some patients with thyroid disorders, kidney problems, heart complications, metabolic issues, and other genetic diseases were excluded from the study to get an accurate result.

However, the HAV, HBV and HCV infections in those samples were detected through a technique called Enzyme Linked Immunosorbent Assay (ELISA) (Elabscience ELISA Kits) method that detects the reactivity of antibody to antigen pertaining to relevant infection (14).

RESULTS

OVERALL PREVALENCE OF HAV, HBV AND HCV

A total of 436 IDUs blood simple were tested for the confirmation of HAV, HBV and HCV infections in Treatment and Rehabilitation Center for Drug Addictive's in District Kech. Out of 436 tested IDUs 372 (85.32%) was found positive for HAV, HBV and HCV. Among the 372 infected IDUs 13.30% (58/436) were infected with HAV, 30.73% (134/436) were infected with HBV and 41.28% (180/436) were infected with HCV. The overall result showed that the HCV (41.28%) infection followed by HBV (30.73%) and HAV (13.30%) (Table I).

Table I. Overall prevalence of HAV & HBV in Treatment and Rehabilitation Center for Drug Addictive's in District Kech, Balochistan

S.No	Category of Individuals	Total	%age
1	HAV positive individuals	58	13.30
2	HBV positive individuals	134	30.73
3	HCV positive individuals	180	41.28
4	HAV, HBV& HCV negative individuals	64	14.67

BODY WEIGHT GAIN AGE BASED PREVALENCE OF HAV, HBV AND HCV

All the injectable drug user patients with HAV, HBV and HCV were categorized into three age groups: Group-I (1-20 years), Group-II (21-40 years), Group-III (41-60 years). The group II population (aged 21 to 40) had the highest rates of HAV, HBV, and HCV infection but HCV was found to be highly prevalent in all three age groups than HAV and HBV as shown in (Fig. 1).

HYGIENE CONDITION OF HAV, HBV AND HCV PATIENTS

Most of the HAV, HBV and HCV patients 246 (56.42%) were found to have poor hygiene condition. A relatively lesser number of patients 126/436 (28.89%) were observed to have good hygiene condition. Others 64 (14.67%) were among the individuals who were infected with neither of the viral infections (Fig. 2).

SICIODEMOGRAPHIC STATUS OF HAV, HBV AND HCV PATIENTS

Along with their parents' input and that of the Treatment and Rehabilitation Centre personnel, the socio demographic features of the injectable drug user patients have also been meticulously documented. It

shows that married persons had a much higher risk of HAV, HBV, and HCV infection than unmarried people as 246/436 (56.42%) of the patients were married and 126/436 (28.89%) remained single. Only a tiny percentage of patients (2.52%) were fully immunized, while the majority of patients (351/436) were not fully immunized (80.50%).

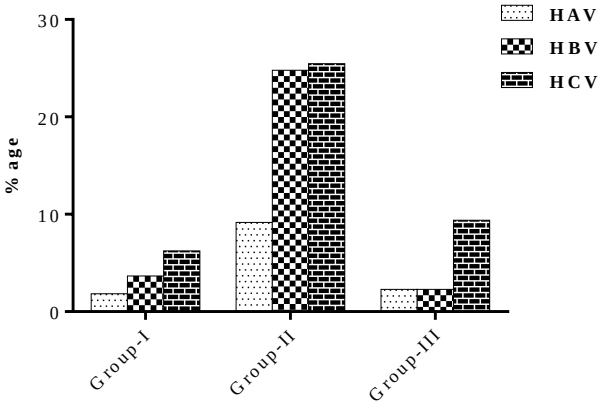

Fig. 1. Age based prevalence of HAV, HBV and HCV in Treatment and Rehabilitation Center for Drug Addictive's in District Kech, Balochistan

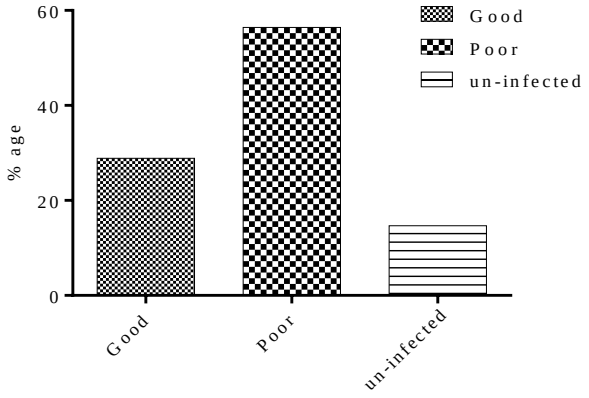

Fig. 2. Hygiene condition of the HAV, HBV and HCV patients of Treatment and Rehabilitation Center for Drug Addictive's in District Kech, Balochistan

Additionally, the Treatment and Rehabilitation Centre for Drug Additives in District Kech, Balochistan found that 164/436 (37.61%) of the population was illiterate, which clearly demonstrated that ignorance of the risk factors and methods of HAV, HBV, and HCV transmission is the primary cause of the rapid prevalence of viral infections in injectable drug users (Table II).

RISK FACTORS ASSOCIATED WITH HAV, HBV AND HCV

The most serious risk factors of HAV, HBV and HCV infections in IDUs of Treatment and Rehabilitation Center were notably the use of unsterilized syringe and it's shearing among themselves for injecting drugs, using hair dressing tools without consideration of safety measures, use of poorly sterilized surgical tools in hospitals are the risk factors associated with the spread of hepatitis among the IDUs. In addition the unsafe or carelessly screened blood transfusion and piercing of ear and nose are also the key risk factor associated with spread of hepatitis among the IDUs (Fig. 3).

TYPES OF DRUG USED

There are two common types of injectable drugs cocaine and heroin used in the selected areas. The majority of the IDUs use both of the injectable drugs (Fig. 4).

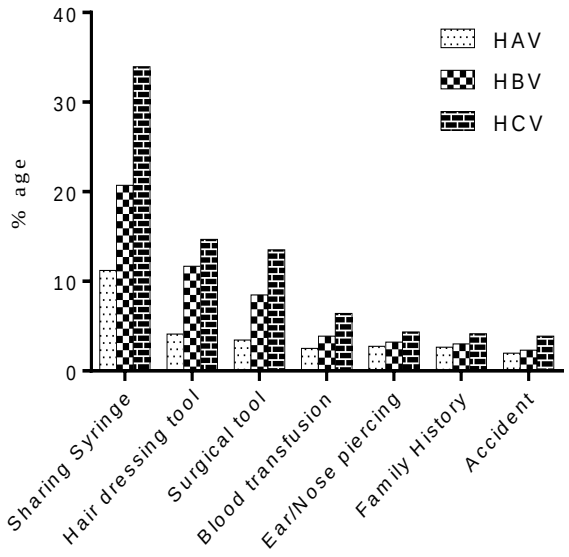

Fig. 3. Major risk factors associated with HAV, HBV and HCV among the population of Treatment and Rehabilitation Center for Drug Addictive's in District Kech, Balochistan

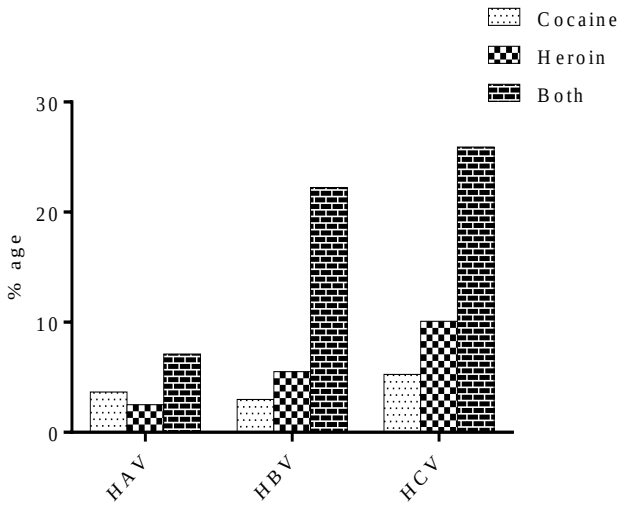

Fig. 4. Types of Drug used among the population of Treatment and Rehabilitation Center for Drug Addictive's in District Kech, Balochistan

Table II. Socio Demographic status of the HAV, HBV and HCV patients of Treatment and Rehabilitation Center for Drug Addictive's in District Kech, Balochistan

Particular	Groups	HAV (%)	HBV (%)	HCV (%)	Total (%)
Marital Status	Unmarried	4.58	14.68	9.63	28.89
	Married	8.71	16.05	31.65	56.42
Vaccination	Un-vaccinated	13.30	25.91	41.28	80.50
	Partially vaccinated	-	2.29	-	2.29
	Fully vaccinated	-	2.52	-	2.52
Education	Primary	0	2.29	3.44	5.73
	Middle	0	2.98	4.12	7.11
	Matric	4.12	4.12	5.73	13.99
	Intermediate	0.91	1.14	2.29	4.35
	Bachelor	4.12	3.66	1.37	9.17
	Master	0.22	2.75	4.35	7.33
	Illiterate	3.89	13.76	19.95	37.61
Family Income	1000 – 7000	8.48	14.44	21.55	44.49
	7000 – 14000	2.98	10.09	11.69	24.77
	14000 – 21000	1.83	6.19	8.02	16.05
Occupation	Employed	5.73	12.38	15.59	33.71
	Unemployed	7.56	18.34	25.69	51.60

SUB CLINICAL FEATURES OF HAV, HBV AND HBV

The most commonly found sub-clinical signs in IDUs hepatic patients included fever 76.37%, dark urine 74.77 % and muscle pain 72.01 %. Besides these, abdominal pain, headache, joint pain and nausea were reported by 69.95%, 69.49%, 66.74 % and 66.05% in IDUs hepatic patients respectively. Other sub-clinical aspects for which the patients have complained were jaundice 66.05 %, vomiting 63.53%, loss of appetite 59.86 % and constipation 49.77 % (Fig. 5). These subclinical features undoubtable have a further negative impact on the health of the infected patients.

DISCUSSION

Hepatitis is a major public health concern in Pakistan, particularly among injectable drug users. The prevalence of hepatitis B and C is high among the population of Kech district, primarily due to the sharing of needles and other injection equipment, the similar findings were reported earlier (15, 16). According to the previous study the prevalence of hepatitis C among injectable drug users in Pakistan is around 60%, while the prevalence of hepatitis B is around 7% (17-19) as also revealed by the present study. The study also found that the prevalence of co-infection with both hepatitis B and C was around 2% (20, 21). The high prevalence of hepatitis in injectable drug users is attributed to a lack of awareness about the risks associated

with sharing injection equipment, as well as limited access to sterile needles and syringes. In addition, stigma and discrimination against drug users often limit their access to healthcare and harm reduction services (14, 22).

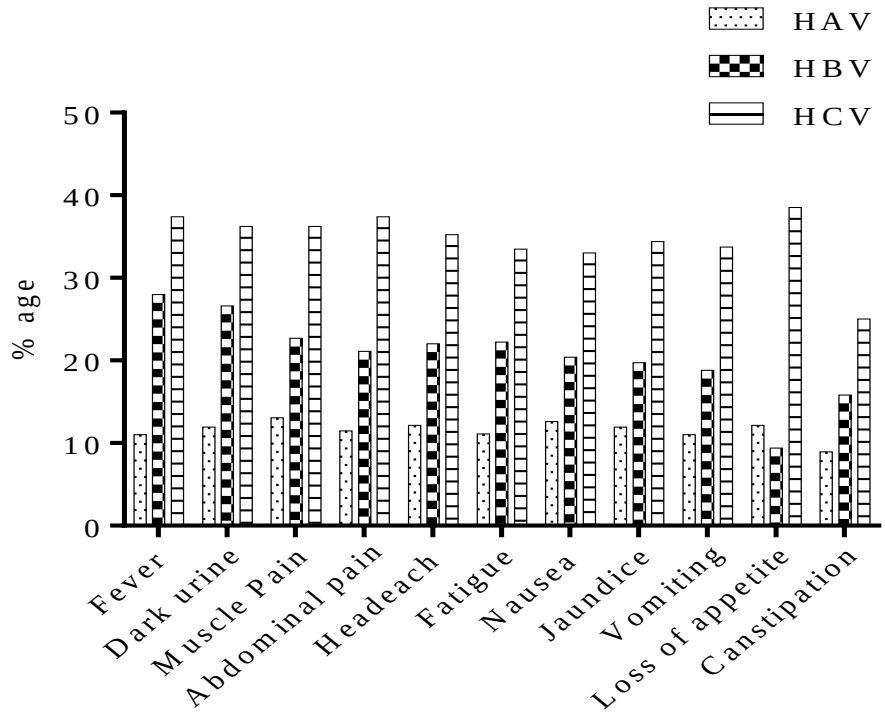

Fig. 5. Sub clinical features of HAV, HBV and HCV IDUs patients of Treatment and Rehabilitation Center for Drug Addictive's in District Kech, Balochistan

In the present study, the number of infections caused by HCV among the IDUs is mostly greater than any other type of hepatitis causing virus. Such Similar types of results are documented with the previous study (17, 23, 24). Numerous investigations have already found that people between the ages of 21 to 40 years are more susceptible to contracting the hepatitis infection (25, 26). Similar findings from our analysis showed that there were more infected people in the age range of 21 to 40 compared to the other allocated groups. A significant portion of the population was found to have poor hygiene, which is undoubtedly proof that viral hepatic infection has a direct detrimental influence on the hygiene of the carriers (20, 21, 27).

In this study, the socio demographic features of the IDUs patients have also been meticulously documented. It shows that married persons had a much higher risk of HAV, HBV, and HCV infection than unmarried patients and only 2.52% patients were fully vaccinated, while the majority of patients were not fully immunized the results of this study is in agreement with other researchers (28). Additionally, 37.61% of the population was illiterate, which clearly demonstrated that ignorance of the risk factors and methods of HAV, HBV, and HCV transmission is the primary cause of the rapid prevalence of viral infections in injectable drug users (29)

We also focused on certain risk factors associated with the spread of hepatitis. Certain risk factors of HAV, HBV and HCV infections were notably the use of unsterilized syringe and it's shearing among themselves for injecting drugs. Secondly multiple implications of hair dressing tools without consideration of safety measures, the use of poorly sterilized surgical tools in hospitals, unsafe or carelessly screened blood transfusion and piercing of ear and nose are the key risk factor associated with spread of hepatitis among the injectable drug users as other study also found the same (30-32).

The most common signs of HAV, HBV and HCV infections include joint pain, jaundice, nausea, vomiting, dark urine, headaches, high temperatures (fever), weight loss, and stomach discomfort (33, 34). These symptoms were also prevalent in a significant portion of the individuals we evaluated for our investigation.

CONCLUSION

In conclusion, the prevalence of HBV and HCV are very high in IDUs of district Kech. They are exposed to either of the infections via numerous careless activities such as sharing of contaminated needles. Beside this certain risk factors are involved in the spread of hepatitis in this region of the country. While preventive measures such as vaccination are taken by very few individuals. Therefore, more infections are likely to occur not only in Kech but in other parts of the country in IDUs during the ongoing and the preceding years after. Therefore, preventative measures, such as providing access to clean needles and education on safer injection practices, are crucial for reducing the spread of the virus is the need of time. Early diagnosis and appropriate treatment are also essential for managing the infection and preventing long-term complications.

References:

1. AA I, JC O. Diagnostic evaluation of hepatitis utilizing fuzzy clustering means. World. 2011;3(1):23-30.
2. Stark K, Bienzle U, Vonk R, Guggenmoos-Holzmann I. History of syringe sharing in prison and risk of hepatitis B virus, hepatitis C virus, and human immunodeficiency virus infection among injecting drug users in Berlin. International journal of epidemiology. 1997;26(6):1359-66.
3. Flores JE, Thompson AJ, Ryan M, Howell J. The global impact of hepatitis B vaccination on hepatocellular carcinoma. Vaccines. 2022;10(5):793.
4. Ndunda JM, Kimani H, Orinda G, Otieno S. Influence of socio-cultural factors on hepatitis B infection in Mombasa County, Kenya. International Journal of Community Medicine and Public Health. 2023;10(4):1322.
5. Franco E, Bagnato B, Marino MG, Meleleo C, Serino L, Zaratti L. Hepatitis B: Epidemiology and prevention in developing countries. World journal of hepatology. 2012;4(3):74.
6. Lavanchy D, Kane M. Global epidemiology of hepatitis B virus infection. Hepatitis B virus in human diseases. 2016:187-203.
7. de Martel C, Maucort-Boulch D, Plummer M, Franceschi S. World-wide relative contribution of hepatitis B and C viruses in hepatocellular carcinoma. Hepatology. 2015;62(4):1190-200.
8. Ismail M, Naseem M, Khan B, Baloch MC. Study on the Prevalence, Risk Factors and Clinical Aspects of Hepatitis A And B in Different Ethnic Groups of Quetta District. Pak-Euro Journal of Medical and Life Sciences. 2023;6(1):31-8.
9. Ali SA, Donahue RM, Qureshi H, Vermund SH. Hepatitis B and hepatitis C in Pakistan: prevalence and risk factors. International journal of infectious diseases. 2009;13(1):9-19.
10. Butt AS, Sharif F. Viral hepatitis in Pakistan: past, present, and future. Euroasian journal of hepato-gastroenterology. 2016;6(1):70.
11. Shayan SJ, Nazari R, Kiwanuka F. Prevalence of HIV and HCV among injecting drug users in three selected WHO-EMRO countries: a meta-analysis. Harm Reduction Journal. 2021;18(1):59.
12. Somi MH, Khayatzadeh S, Nalbandy M, Naghashi S, Nikniaz Z. Estimating the incidence rate of hepatitis B and C in East Azerbaijan, Islamic Republic of Iran. Eastern Mediterranean Health Journal. 2020;26(7):803-9.
13. Nelson PK, Mathers BM, Cowie B, Hagan H, Des Jarlais D, Horyniak D, et al. Global epidemiology of hepatitis B and hepatitis C in people who inject drugs: results of systematic reviews. The Lancet. 2011;378(9791):571-83.
14. Kazi AM, Shah SA, Jenkins CA, Shepherd BE, Vermund SH. Risk factors and prevalence of tuberculosis, human immunodeficiency virus, syphilis, hepatitis B virus, and hepatitis C virus among prisoners in Pakistan. International Journal of Infectious Diseases. 2010;14:e60-e6.
15. Hahn JA, Page-Shafer K, Lum PJ, Bourgois P, Stein E, Evans JL, et al. Hepatitis C virus seroconversion among young injection drug users: relationships and risks. The Journal of infectious diseases. 2002;186(11):1558-64.
16. Idrees M, Lal A, Naseem M, Khalid M. High prevalence of hepatitis C virus infection in the largest province of Pakistan. Journal of digestive diseases. 2008;9(2):95-103.
17. Al Kanaani Z, Mahmud S, Kouyoumjian SP, Abu-Raddad LJ. The epidemiology of hepatitis C virus in Pakistan: systematic review and meta-analyses. Royal Society open science. 2018;5(4):180257.
18. Connolly D, Gilchrist G. Prevalence and correlates of substance use among transgender adults: A systematic review. Addictive behaviors. 2020;111:106544.

19. Farook Mİ, İlhan MN, Koçak C. Determination of epidemiological characteristics of addicts treated in drug addiction clinics in Kabul. Journal of ethnicity in substance abuse. 2022;21(3):1063-82.
20. Piaserico S, Messina F, Russo FP. Managing psoriasis in patients with HBV or HCV infection: practical considerations. American Journal of Clinical Dermatology. 2019;20:829-45.
21. Osasona OG, Adewale-Fashoro O, Olumade TJ, Oguzie J, George U, Ariyo OE, et al. Comparative serologic profiles of hepatitis B Virus (HBV) between HIV/HBV co-infected and Hbv mono-infected patients in Ile-Ife, Nigeria. Journal of Immunoassay and Immunochemistry. 2021;42(6):633-47.
22. Khalid GG, Kyaw KWY, Bousquet C, Auat R, Donchuk D, Trickey A, et al. From risk to care: the hepatitis C screening and diagnostic cascade in a primary health care clinic in Karachi, Pakistan—a cohort study. International Health. 2020;12(1):19-27.
23. Mansha S, Imran M, Shah AMUH, Jamal M, Ahmed F, Atif M, et al. Hepatitis B and C virus infections among human immunodeficiency virus-infected people who inject drugs in Lahore, Pakistan. Viral immunology. 2017;30(5):366-70.
24. Hennessey KA, Kim AA, Griffin V, Collins NT, Weinbaum CM, Sabin K. Prevalence of infection with hepatitis B and C viruses and co-infection with HIV in three jails: a case for viral hepatitis prevention in jails in the United States. Journal of Urban Health. 2009;86:93-105.
25. Maher L, Jalaludin B, Chant KG, Jayasuriya R, Sladden T, Kaldor JM, et al. Incidence and risk factors for hepatitis C seroconversion in injecting drug users in Australia. Addiction. 2006;101(10):1499-508.
26. Maher L, Li J, Jalaludin B, Chant KG, Kaldor JM. High hepatitis C incidence in new injecting drug users: a policy failure? Australian and New Zealand journal of public health. 2007;31(1):30-5.
27. Vittal A, Ghany MG. WHO guidelines for prevention, care and treatment of individuals infected with HBV: a US perspective. Clinics in Liver Disease. 2019;23(3):417-32.
28. Khan S, Shah S, Ashraf H. Predictive factors for acquiring HCV infection in the population residing in high endemic, resource-limited settings. Journal of Family Medicine and Primary Care. 2021;10(1):167.
29. Castaneda D, Gonzalez AJ, Alomari M, Tandon K, Zervos XB. From hepatitis A to E: A critical review of viral hepatitis. World journal of gastroenterology. 2021;27(16):1691.
30. Joukar F, Mansour-Ghanaei F, Soati F, Meskinkhoda P. Knowledge levels and attitudes of health care professionals toward patients with hepatitis C infection. World Journal of Gastroenterology: WJG. 2012;18(18):2238.
31. Kazmi SA, Rauf A, Alshahrani MM, Awadh AAA, Iqbal Z, Soltane R, et al. Hepatitis B among University Population: Prevalence, Associated Risk Factors, Knowledge Assessment, and Treatment Management. Viruses. 2022;14(9):1936.
32. Waheed U, Saba N, Wazeer A, Ahmed S. A systematic review and meta-analysis on the epidemiology of hepatitis B and hepatitis C virus among beta-thalassemia major patients in Pakistan. Journal of Laboratory Physicians. 2021;13(03):270-6.
33. Moraras K, Block J, Shiroma N, Cannizzo A, Cohen C. Protecting the rights of health care students living with hepatitis B under the Americans With Disabilities Act. Public Health Reports. 2020;135(1_suppl):13S-8S.
34. Doshani M, Weng M, Moore KL, Romero JR, Nelson NP. Recommendations of the Advisory Committee on Immunization Practices for use of hepatitis A vaccine for persons experiencing homelessness. Morbidity and Mortality Weekly Report. 2019;68(6):153.