и их родителей о правильности обработки и употребления фруктов и ягод. Заболеваемость ЭВИ в городе и области превышает среднемноголетний показатель по республике в целом, что означает о важности эпидемического надзора в этой области и районах. Высокая лабильность заболеваемости ЭВИ к факторам внешней среды диктует необходимость в постоянном эпидемическом слежении.

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COMPARITIVE ANALYSIS OF EPIDEMIOLOGY AND PREVALANCE OF HCV IN BELARUS AND PAKISTAN

Introduction

Hepatitis is a significant global public health issue, affecting 10-17 million people. According to WHO, Pakistan bears a substantial burden of hepatitis C virus (HCV) infection, with the second-highest prevalence globally after Egypt, with around 6% of the population infected. The WHO reports that HCV infection has a high impact on public health, with approximately 170 million people infected worldwide. HCV is a positive sense RNA virus from the Flaviviridae family, categorized into seven genotypes and 67 subtypes due to genetic variation. It mainly occurs through parental routes, such as past blood transfusions and intravenous drug abuse. Acute hepatitis occurs after 40-120 days of incubation period. About 20–50% of acute hepatitis C to 80% will develop chronic HCV infection. While chronic HCV infection can persist for life and cause death from liver-related diseases, if not treated with antiviral therapy [1].

Pakistan is facing a significant rise in HCV cases, primarily due to healthcare-related exposures such as poor sterilization of medical equipment, re-use of needles and syringes, limited screening of contaminated blood products and informal healthcare providers. In 2019, 295.9 million (3.8%) people were living with HBV and 57.8 million (0.8%) with HCV. Over 3 million new infections and 1 million deaths were caused due to the viruses. Between 2015 and 2019, 15.2 million people with HCV infection were diagnosed, and 9.4 million were treated with direct-acting antiviral drugs. The cost of direct acting antivirals (DAAs) has decreased significantly over the past decade, making global elimination of HCV a realistic target.

SOVALDI, a new oral drug for hepatitis C treatment, has been registered in Pakistan on fast track, with a 99% cost reduction compared to the USA. HCV is highly endemic in the various regions of Pakistan, the exact prevalence rate of HCV infection is still unknown, different reports revealed that 4.8% of the population is infected, thereby making it crucial to understand the epidemiology for developing cost-effective prevention and treatment interventions to meet the global target of HCV elimination. The WHO has set a global elimination timeline for the virus by 2030. In line with this, the Government of Pakistan has developed the National Hepatitis Strategic Framework aiming to reduce hepatitis C incidence by 90%, reduce mortality by 65%, diagnose 90% of cases, and provide treatment to 80% of eligible persons by 2030 [1].

Goal

To describe the prevalence and epidemiology of HCV among the population of Pakistan and compare it with the Republic of Belarus.

Material and Methods of research

WHO Global Hepatitis Reports, Pakistan National Hepatitis Strategic Framework, Polaris Observatory, an initiative of the CDA Foundation and Pakistan National hepatitis elimination profile describing Pakistan's progress toward HCV were reviewed and evaluated. A literature review was conducted to assess the incidence of HCV in Belarus carried out according to the data of the state statistical reporting form «Report on individual infectious, parasitic diseases and their carriers» in 1996–2022.

The results of the research and their discussion

Pakistan is endemic for HBV and HCV with 10 and 11 million infections, respectively. Based on the first hepatitis serosurvey conducted in 2008, Pakistan was identified as the country with the second highest hepatitis C disease burden in the world with almost one in every 20 people infected with HCV. In 2021, the Polaris Observatory, an initiative of the CDA Foundation estimated that 9.7 million people in Pakistan were living with viraemic hepatitis C, corresponding to a prevalence of 4.3%. In Pakistan, the major routes of HCV transfusion were studied and it was found that the maximum HCV prevalence was among IDUs [1,3].

Table 1 – Comparison of epidemiological parameters between Pakistan and Belarus (Data from 2021–2022)

Epidemiological parameters	Pakistan	Belarus
HCV-related death rate (per 100,000)	8.73	6.46
HCV-related deaths	50000	645
Number of new cases of chronic HCV (annual)	110000	3322
Number of persons living with chronic HCV (RNA+/cAg)	8790812	203665
Prevalence of anti-HCV (%)	7.5	1
Prevalence of chronic HCV (RNA+/cAg) (%)	4.14	2.12)
Number of needles/syringes per PWID per year	215	37
Rate of new cases per 100,000	11.6	15.6
Number of persons treated for HCV (annual)	2700000	
Proportion of persons diagnosed with HCV treated (%)	54	18
Proportion of persons living with HCV diagnosed (%)	36	27
Number of persons diagnosed with chronic HCV (annual)	1902877	48119

Source: WHO Global Health Observatory, CGHE [5]

HCV prevalence rates have been said to be extremely high and show no apparent decline over the last three decades. The epidemic is of huge scale and geographical distribution of HCV showed highest prevalence in Punjab (~8.9%) and Sindh (~6.1%) followed by KPK (~6.1%) and Balochistan (~5.8%). For all of Pakistan, the distribution demonstrated a high frequency of genotype 3 (81.5%), followed by genotype 1 (10.3%), genotype 2 (5.7%), genotype 4 (2.0%), genotype 5 (0.3%), and genotype 6 (0.2%). Genotype 7 was not identified by any study. Genotype 3a is the most common genotype accounting for >60% of the cases. With the advancing age the prevalence increased indicating not only aggregation of positive cases but also higher chances of exposure to the virus through different modes of transmission. The HCV positivity reached a peak of 10.4% among those aged 50-59 years. Similar prevalence rates were seen for men and women in general population. Anti-HCV rose from 5.1% (2007) to 6.2% (2019) in Sindh. Percentage of change in deaths during 2015-2021 rose by 7%. HCV prevalence has been growing over the past several years, indicating ongoing rapid transmission due to persistent risk factors like unsafe injection practices, poorly screened blood transfusions, poor sterilization and unsafe dental procedures. [3, 4, 6]

In Belarus, the incidence of acute HCV decreased by 4.5 times from 2.68 cases in 1996 to 0.6 cases per 100,000 in 2022. The average rate of decline was 3.2%. The incidence of chronic HCV increased intensively during the period 2002-2019 from 16.16 to 30.61 cases per 100,000. Then it decreased to 18.01 per 100,000 in 2021. In 2022, the incidence rate increased by 1.8 times and moderate downward trend in the registration of cases of Hepatitis C carrier status with a rate of 3.8%. The main risk group for HCV comprised of individuals aged 21-49 years. Most prevalent HCV genotype during 2018-2019 was 1st genotype represented by 1a (10.3 ± 1.7%) and 1b (51.7 ± 2.9%) subtypes and genotype 3a (31.8 ± 2.7%) [2].

There is currently no vaccine for hepatitis C prevention, therefore, prevention of the risk factors is the only prevention strategy. WHO recommends that all patients having active HCV infection should be treated using DAAs. Pakistan currently produces the world's most cost-effective pan-genotypic DAAs and has developed its national hepatitis B and C treatment guidelines with an intention to treat all cases. Currently, the government's funds for hepatitis treatment and control are insufficient to yield the expected results. To reach the WHO set target of hepatitis C elimination, Pakistan needs to screen an average of 18.9 million people, 1.1 million treatments and prevention of 470,000 new infections every year. Some of the factors contributing to the inadequate control of HCV infections in Pakistan include absence of a national registry or database system, lack of research, underreporting, lack of reliable epidemiological data, lack of awareness, fragile health system, lack of sustained funding, negligence, corruption and weak political will. Currently, each province has its own program, such as the Punjab Hepatitis Control Program, Hepatitis Free Sindh Program which has carried out various research works in past, but a compile sero-epidemiological data describing HCV prevalence and unified approach is lacking which presents as significant obstacles in effectively combating this disease [1].

Conclusions

Pakistan is enduring an HCV epidemic of historical proportions accounting to largest population of Hepatitis C patients in the world, with 10 million of the global 60 million cases. The prevalence is persistent and homogeneous across provinces, with no evidence of a decline over the last three decades. Genotype 3 is the most common genotype in all provinces, with only minor differences in distribution by province whereas in Belarus the prevailing types are 1b, 1a, and 3a sub genotypes. The primary risk group for hepatitis C is individuals aged 21-49 years in Belarus while in Pakistan, it was found to be individuals aged 50-59 years. A new national survey is critical to elucidate and update our understanding of the epidemic and inform targeted, cost-effective interventions. Although Pakistan has made efforts to increase coverage of safe injection and blood screening but to eliminate HCV infection by 2030, Pakistan must

also scale up treatment and securing commitment to prevention in all healthcare sectors. Hepatitis elimination is a national priority but it requires combined efforts of the government, international partners and non-governmental organizations and adoption of WHO guidelines for safety-engineered syringes. If we do not act, Pakistan will face over 11 million HCV cases by 2035, leading to 500,000+ liver cirrhosis cases, 100,000+ cases of liver cancer, and 130,000 HCV-related deaths.

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COMPARATIVE ANALYSIS OF TUBERCULOSIS EPIDEMIOLOGY AND CONTROL STRATEGIES IN ENGLAND AND BELARUS

Introduction

Tuberculosis (TB) persists as a major global cause of mortality, despite the availability of effective treatment. The disease disproportionately affects the world's most vulnerable populations, creating a blatant divide between high- and low-income countries. In response, the World Health Organisation (WHO) launched the ambitious End TB strategy in 2015, aiming to reduce TB incidence by 80% and deaths by 90% by 2035 [1]. The path to achieving this goal, however, differs drastically based on a country's existing epidemiological context and challenges.

This article examines this divide through a comparative analysis of England and Belarus, two nations facing distinct TB endemics. England is a low-incidence country (less than 10 cases per 100,000). Most cases arise from reactivation of latent TB infection (LTBI) aquired abroad, particularly in migrants from high-burden countries, and focused on pre-entry screening and post entry LTBI management. In contrast, Belarus is a high-priority country within the WHO European region, struggling with a high rate of primary transmission and one of the world's highest burdens of multidrug-resistant TB (MDR-TB).