

Review Article

Reporting of Progress toward Eliminating Viral Hepatitis B and C in the Central Asian Region

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Eliminating viral hepatitis became a global goal and was targeted by countries worldwide. Using WHO, Google Scholar, PubMed, and other databases, the progress of Central Asian countries (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan) in ending viral hepatitis B and C by 2030 was evaluated and reported. Collected data shows that countries have made significant efforts toward achieving goals in the Global Health Sector Strategy. All countries have national programs focused on hepatitis elimination and have reached the target vaccination coverage against hepatitis B. However, the available information requires regular updates, and public accessibility of data collected by governments should be enhanced. Additionally, countries are recommended to improve harm reduction and treatment services.

1. Introduction

Viral hepatitis is a significant public health burden that affects many lives, communities, and health systems. Over 350 million people globally live with hepatitis B virus (HBV) and hepatitis C virus (HCV), and more than 1 million deaths are caused by viral hepatitis annually [1]. To combat this public health threat, in May 2016, the World Health Organization (WHO) initiated the Global Health Sector Strategy (GHSS) to end viral hepatitis in the 2030 Agenda for Sustainable Development framework. By 2030, the GHSS targets to reduce the number of new cases of chronic hepatitis by 90% and the number of deaths by 65%, compared with the 2015 baseline. In addition, the strategy is aimed at adding the full range of hepatitis services to the national health benefit package in all countries. The services should include five central interventions: vaccination, blood safety, prevention of mother-to-child transmission of HBV, harm reduction, and treatment of chronic HBV and HCV infections [2].

The prevalence of HBV and HCV remains high in the Central Asian region, including Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan (Figure 1). Thus,

countries set targets and took actions aligned with the global goals of the GHSS. This health policy paper summarizes the data collection findings on the viral hepatitis response in the Central Asian region. This review should help countries in the Central Asian region track their overall progress toward the hepatitis elimination 2030 goals and identify any challenges to guide their future actions in elimination planning.

2. Methods

WHO websites were the primary source of reports and data to collect information on HBV and HCV cases, immunization, and national programs against viral hepatitis. The Harm Reduction International (HRI) website was used to get global and regional overviews on employing harm reduction approaches in policies. Other databases used were PubMed, Google Scholar, Google, the Institute of Health Metrics and Evaluation, the Coalition for Global Hepatitis Elimination website, and the CDA Foundation website. The relevant information and literature were acquired in the given databases using keywords: viral hepatitis, HCV, HBV, Central Asian countries, the GHSS, hepatitis prevention and elimination, the viral hepatitis response, vaccination, blood safety,

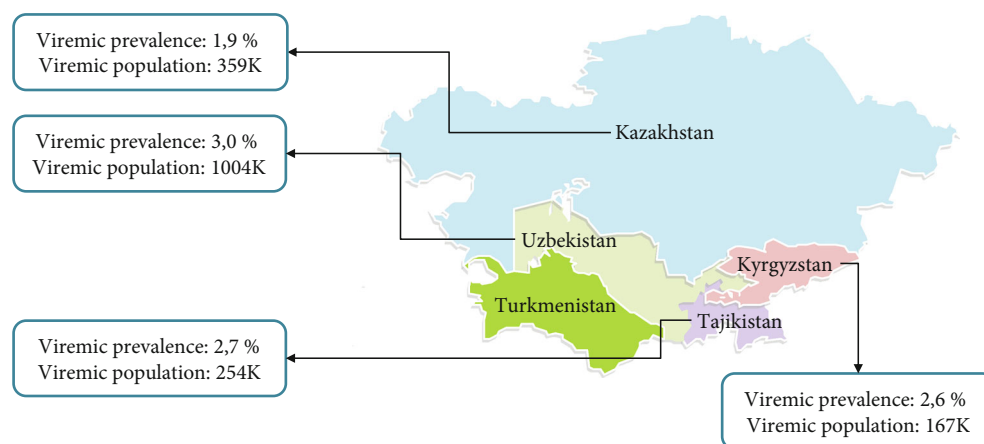


FIGURE 1: HCV viraemic prevalence for Central Asian countries modeled by the Polaris Observatory HCV Collaborators [3]. Map template source: YourFreeTemplates [4].

prevention of mother-to-child transmission of HBV, harm reduction, and treatment of chronic HBV and HCV infections. The article dates were restricted to 2010-2023 to ensure the recent information.

3. Policy

From 2016 to 2022, countries developed national and regional policies and took further actions toward five primary interventions. The information on some programs is shown in Table 1.

All the countries reported that there were either active or planned national plans or programs (Table 1).

- (i) Turkmenistan has launched a strategic plan called “Strategic Plan on Strengthening Control Measures for Viral Hepatitis in Turkmenistan for the period of 2019-2030,” which aimed at eliminating viral hepatitis through updating guidelines and improving the diagnostic and treatment capacities of the country. The program was launched in December 2018 and remains active [5]. Last year, in 2022, the Ministry of Health and Medical Industry of Turkmenistan, in collaboration with the WHO Country Office and the U.S. Agency for International Development (USAID), introduced electronic monitoring systems for patients with viral hepatitis to improve the epidemiological surveillance system. Previously, they have also organized training programs to teach health workers to use the electronic system [13].
- (ii) Uzbekistan’s 1-year pilot program, the Uzbekistan Hepatitis Elimination Project (UHEP 1.0), started in Tashkent in December 2019. The Uzbekistan Ministry of Health initiated the project with the support of the CDA Foundation. During the 12 months, the project worked on improving access to the screening, testing, and treatment of HBV and HCV [6]. About 250,000 people were screened at polyclinics for both HBV and HCV using rapid

tests and simplified protocols for testing. In addition, physicians underwent training to treat patients with HBV/HCV but without advanced liver diseases. After the end of UHEP 1.0, UHEP 2.0 was launched for the period of 2021-2022 and expanded to include more regions of Tashkent [7].

- (iii) Tajikistan has its planned national program called the “Tajikist Viral Hepatitis Elimination Program.” The program was under consideration as of July 2019, and no further updates were done. It was planned to cover all five primary interventions and target goals aligned with the GHSS [8].
- (iv) Kazakhstan plans to launch a pilot program to eliminate HBV and HCV that will cover 10,000 people in Astana and focus on the timely screening of the population, treatment of HCV, and prevention of its complications to reduce mortality from cirrhosis and liver cancer. The program is in the planning phase, and organizational and outreach work is being done [9].
- (v) Kyrgyzstan launched a new program for the treatment of viral hepatitis. The program was launched in April 2023 and provides priority (urgent) treatment to citizens. Free services offered include consultations with doctors, monthly provision of antiviral drugs as prescribed by a doctor, markers of HBV and HCV by ELISA based on general medical practice centers or family medicine centers at the place of residence, and markers of HBV and HCV by PCR methods at the centers for the control of viral hepatitis and HIV [10].

In addition to programs, some countries were also involved in joint projects (Table 1). One is the “Russian Program for Technical Aid to the countries of Eastern Europe and Central Asia on prophylaxis, control, and management of AIDS/HIV and other infectious diseases.” The program was initiated by the Russian Federation in 2012 and helped

TABLE 1: Viral hepatitis elimination programs initiated by Central Asian countries.

Program	Countries involved	Phase	Aims
Strategic Plan on Strengthening Control Measures for Viral Hepatitis in Turkmenistan for the period of 2019-2030 [5]	Turkmenistan	Active since December 2018	(i) Strengthen viral hepatitis surveillance system and enhance laboratory diagnostic capacity (ii) Updating guidelines for testing and treatment of viral hepatitis (iii) Expand access of people with viral hepatitis to diagnostics and treatment
Uzbekistan Hepatitis Elimination Pilot (UHEP 1.0 and 2.0) [6, 7]	Uzbekistan	Was active in 2019 - 2020 (1.0) and 2021 - 2021 (2.0)	(i) Early diagnosis for HBV and HCV (ii) Treatment of HCV (iii) Increased prevention through vaccination
Tajikist Viral Hepatitis Elimination Program (National program) [8]	Tajikistan	Under consideration	(i) HBV vaccination (ii) Blood safety (iii) Harm reduction (iv) Prevention of mother-child transmission (v) Screening and diagnosis (vi) Treatment (direct or referral)
Pilot program for Elimination of Viral Hepatitis B and C [9]	Kazakhstan	Planning	(i) Early diagnosis of HBV and HCV (ii) Treatment of HCV
Program for the Provision of Services for the Diagnosis and Treatment of Viral Hepatitis B and C [10]	Kyrgyzstan	Active since April 2023	(i) Primary diagnosis of viral hepatitis (ii) Treatment of viral hepatitis B and C (iii) Basic types of laboratory and instrumental studies
The Program for Technical Aid to the countries of Eastern Europe and Central Asia on prophylaxis, control, and management of AIDS/HIV and other infectious diseases [11]	Russian Federation, Armenia, Tajikistan, Kyrgyzstan, Azerbaijan, Belarus, Uzbekistan	Active since December 2012	(i) Carrying out activities for the prevention and control of HIV/AIDS, sexually transmitted infections (STIs), and viral hepatitis (ii) Conducting training, workshops, and events for healthcare professionals and other specialists to provide clinical and advisory services on the treatment and management of infectious diseases (iii) Organization of information campaigns to educate the general population and people at risk of infection (iv) Provide material and technical assistance to the partner countries
Eastern Europe and Central Asia Hepatitis Elimination [12]	Kyrgyzstan, Tajikistan, Uzbekistan, Ukraine, Russian Federation	Planning	(i) HBV vaccination (ii) Injection and blood safety (iii) Harm reduction (medications and syringe services) (iv) Prevention of mother-child transmission (v) Screening and diagnosis (vi) Treatment (direct or referral)

countries like Armenia, Azerbaijan, Belarus, Kyrgyzstan, Tajikistan, and Uzbekistan. As of now, the program works with only three countries (Armenia, Kyrgyzstan, and Tajikistan) to help them strengthen their capacity to effectively control, detect, treat, and prevent HIV/AIDS, STIs, viral hepatitis, and other parenterally transmitted diseases [11]. Another program is “Eastern Europe and Central Asia Hepatitis Elimination,” which was in the planning phase as of July 2019. The program was planned to involve five countries (Kyrgyzstan, Tajikistan, Uzbekistan, Ukraine, and Russian Federation) and focus on the broad hepatitis testing,

diagnosis, counseling, and care of people infected with viral hepatitis, HIV, syphilis, and tuberculosis [12].

4. Vaccination and Transmission

In 2016, all five countries had a vaccination against HBV included in their national vaccination program. Since the HBV vaccine was introduced early in these countries, they all achieved a relatively high vaccination coverage by 2016. Four out of 5 countries have reached the 2020 target of

90% of HBV vaccination third dose (HepB3) (Table 2). By 2022, all five countries had reached the target coverage.

Regarding the HBV vaccination birth dose (HepB BD), all countries except Kyrgyzstan had HepB BD coverage higher than 90%. Kyrgyzstan had 95% and a higher percentage of HepB BD coverage till 2022. In 2022, the coverage was only 80-65% (Table 3). This decrease could be attributed to the lack of updates by officials. The HepB BD is given within 24 hours after birth to prevent the transmission of HBV from mother to child. According to the GHSS, it is planned to increase HBV birth-dose vaccination coverage to 50% by 2020 and 90% by 2030 [2]. Due to the early introduction of HBV vaccines in Central Asian countries, all countries had high coverage of HepB BD during the last seven years.

In Kyrgyzstan, the Ministry of Health aims to decrease viral hepatitis incidence and increase HepB3 coverage through the work of a new pilot project for the vaccination of the adult population against hepatitis B. The project was launched in December 2022, and the government expects that publicly available vaccination against HBV combined with universal immunization at birth will significantly reduce the spread of infection in Kyrgyzstan [17].

In Kazakhstan, vaccination against viral hepatitis is included in the National Immunization Schedule. Children are immunized against HBV within 1-4 days after birth, with revaccination at 2 and 4 months at the expense of national budgets. A vaccine against viral hepatitis A (HAV) is given to children two years of age at the cost of local budgets. Vaccination against hepatitis and other infectious diseases is recommended among certain adult population groups. For example, medical workers and people who received blood transfusions are vaccinated against HBV, and people living in regions with high levels of infections are vaccinated against HAV [18].

In Tajikistan, children are vaccinated against HBV at birth with the following revaccinations at 2, 3, and 4 months. The immunization schedule is the same for Uzbekistan. In Turkmenistan, children are given the pediatric HBV vaccine at birth and the pentavalent vaccine (DTwP-Hib-HepB) vaccine at 2, 3, and 4 months of life [19].

5. Blood Safety

Data for 2018 showed that Kazakhstan had collected 215,695 blood donations, with 98% being tested through blood screening (Table 4). Uzbekistan had performed blood screening of all donations collected, reaching 100% of donations tested. Kyrgyzstan and Tajikistan tested 82% and 78% of donations, respectively.

The GHSS targeted achieving 95% of donations screening in a quality-assured manner by 2020 and 100% by 2030 [2]. The collected blood donations and tests were compared to monitor countries' progress. The total number of blood donations collected includes whole blood and apheresis donations. However, the number of apheresis donations in Uzbekistan and Turkmenistan was unavailable in the "Global Status Report on Blood Safety and Availability." Overall for Turkmenistan, there was no data on blood donations. Table 4 shows that Uzbekistan and Kazakhstan had

high percentages of blood donations screened and reached the target value. Kyrgyzstan and Tajikistan have not yet achieved the target percentage. However, since the data obtained is for 2018 (Tajikistan) and 2015 (Kyrgyzstan), the actual numbers by 2023 might be higher, and updates from the report are required.

Data collected included the number of blood centers and markers in the screening algorithm of donated blood to prevent HBV and HCV transmission. The anti-HB markers are hepatitis B surface antigen (HBsAg), total hepatitis B core antibody (anti-HBc Ab), and HBV nucleic acid amplification testing (NAT). The anti-HC markers are anti-HCV Ab, Ag, and NAT [20]. As of 2016, Uzbekistan had the highest number of blood centers, while Tajikistan had only 4 in 2018 (Table 4). HBsAg marker is included in the mandatory screening algorithm of donated blood in all countries except Turkmenistan (no data was found for this country). Screening for anti-HBc Ab is included only in Kyrgyzstan, while NAT for HBV is included in Kazakhstan and Tajikistan. In blood screening for HCV, the anti-HCV Ab marker is used in 4 countries (all except Turkmenistan), Ag in Tajikistan, and NAT in Kazakhstan and Tajikistan (Table 5).

Out of all five countries, Tajikistan has the best screening algorithm for donated blood, including 2 out of 3 given markers for HBV and all for HCV. Kazakhstan uses two markers each for screening for both HBV and HCV. However, due to the above-average prevalence of HBV, an additional anti-HBcore marker is recommended to be included to improve the quality of screening and prevent the transmission of HBV [21].

6. Harm Reduction

According to HRI, the highest number of people who inject drugs (PWID) among Central Asian countries is 113,000 in Kazakhstan, while the lowest number is 26,000 in Tajikistan. The prevalence of HCV was higher than that of HBV in all countries. Overall, more than 200,000 people in the Central Asian region inject drugs. However, there is no data from Turkmenistan. The other four countries provide some data, but it still requires regular updates on the number of PWID and the prevalence of HBV and HCV among them [22].

Data was collected on a comprehensive package of evidence-based interventions that include clean needle and syringe programs (NSP), opioid substitution therapy (OST), drug consumption room, and naloxone distribution (Table 6). These harm reduction ways allow for mitigating the harms of drug injections for individuals and communities.

6.1. Clean Needle and Syringe Programs (NSPs). NSPs are proven to be effective in preventing viral hepatitis transmission among PWID [24]. Available data shows that NSPs operate in 4 out of 5 countries (Table 6). NSP coverage levels can be low (<100), moderate (100-199), and high (≥ 200) [28].

- (i) Kazakhstan has 125 operational sites that distribute syringes available in the community but not in prisons. The country has a moderate level of NSP (145). However, people report that the syringes

TABLE 2: Implementation of HBV vaccination third dose (HepB3) in the Central Asian countries. Source: WHO [14, 15].

Country	Year of HepB3 introduction	Coverage of third dose (%)						
		2022	2021	2020	2019	2018	2017	2016
Target				90 [2]				
Kazakhstan	1998	98.64	95.24	88.3	97	98	101.9	82.5
Kyrgyzstan	2001	90.16	88.51	86.35	95	94	92	96.3
Tajikistan	2002	96.54	96.79	96.71	96.7	95.6	96.5	97.2
Turkmenistan	2002	97.8	97.3	98.8	98.9	98.8	98.9	98.2
Uzbekistan	2001	99.21	97.91	95.28	95.8	97.9	99.8	99.8
Countries meeting target		5	4	3	5	5	5	4

Bold text indicates the target was met. Source: WHO [14].

TABLE 3: Implementation of HBV vaccination birth dose given within 24 hours after birth (HepB BD) in Central Asian countries.

Country	Year of HepB BD introduction	Coverage of HepB BD (%)						
		2022	2021	2020	2019	2018	2017	2016
Target		90			50			
Kazakhstan	1998	93.1	92.4	92.6	93	95	89.7	95
Kyrgyzstan	1998	80.65	95.72	95.05	96.2	96.6	96.6	96.5
Tajikistan	1998	99.16	99.28	99.22	99.3	99.3	98.9	92
Turkmenistan	2002	99.6	99.6	99.6	99.6	99.5	99.6	99.7
Uzbekistan	1998	99.38	99.21	96.79	99.45	95.4	99.9	99.9
Countries meeting target		4	5	5	5	5	5	5

Source: WHO [16].

TABLE 4: Number and percentage of blood donations collected and tested in Central Asian countries. Source: WHO [18].

Countries	The number of whole blood donations collected	Number of. apheresis donations collected	Total blood donations collected	Number of donations tested	Percentage of donations tested (%)
Target					95 [2]
Kazakhstan	190 782	24 913	215 695	211 469	98
Kyrgyzstan	43 110 (2015)	7 828 (2015)	50 938 (2015)	41 946 (2015)	82
Tajikistan	42 935	11 526	54 461	42 935	78
Turkmenistan	No data	No data	—	No data	—
Uzbekistan	142 723 (2015)	No data	142 723 (2015)	142 723 (2015)	100

Unless otherwise stated, the data is given for 2018.

TABLE 5: Screening donated blood for HBV and HCV.

Countries	The number of blood centers	Donated blood screening for HBV			Donated blood screening for HCV		
		HBsAg	Anti-HBc Ab	HBV NAT	Anti-HCV Ab	Ag	NAT
Kazakhstan	18	+	—	+	+	—	+
Kyrgyzstan	45	+	+	—	+	—	—
Tajikistan	4	+	—	+	+	+	+
Turkmenistan	—	No data	No data	No data	No data	No data	No data
Uzbekistan	205(2016)	+	—	—	+	—	—

HBsAg = hepatitis B surface antigen; Anti-HBc Ab = total hepatitis B core antibody; NAT = nucleic acid amplification testing. Unless otherwise stated, the data is given for 2018. Source: WHO [20].

TABLE 6: Harm reduction interventions and their availability in Central Asian countries.

Countries	Clean needle and syringe programs (NSP)			Opioid substitution therapy (OST)			Drug consumption room (DCR) available	Take-home naloxone available	Naloxone peer distribution program	
	Available in community	Available in prison	Number of NSPs operating in the country	Number of needles/syringes per PWID	Available in community	Available in prison				Percent of PWID accessing OST, %
Target	Yes	Yes		200 [2]	Yes	Yes		Yes	Yes	Yes
Kazakhstan	Yes	No	125	145 (2016) [23]	Yes	No	0-3 [24]	No	No	No
Kyrgyzstan	Yes	Yes	40	244 (2014) [25]	Yes	Yes	4-4 [24]	M	Yes	Yes
Tajikistan	Yes	Yes	48	278 (2016) [23]	Yes	Yes	2-7 [24]	M	Yes	Yes
Turkmenistan	No	No	—	0 (2013) [26]	No	No	—	—	No	No
Uzbekistan	Yes	No	230	28 (2014) [27]	No	No	—	—	No	No

(M) = methadone; (B) = buprenorphine; (O) = any other form (including morphine and codeine). * Unless otherwise stated, the data is given for 2022 and obtained from Harm Reduction International [22].

distributed are of poor quality and might lead to unsafe injecting [24].

- (ii) Kyrgyzstan has NSPs available both in the community and prison. NSP was introduced there in 1999; as of 2022, the country had 40 NSPs operational. The government has high NSP coverage (244). NSPs became available in prisons in 2002, and currently, nine prisons have syringe exchange points [24].
- (iii) Tajikistan also has NSPs available in the community and prisons with high NSP coverage (278). The country has 48 operational sites distributing clean needles and syringes [24].
- (iv) Uzbekistan has the highest number (230) of operational NSPs that provide fewer needles/syringes per PWID. These so-called “trust points” were introduced in 2000 and provide counseling, needle and syringe exchange, and individual protection equipment. However, they are inconvenient for the local community due to their location in healthcare facilities. The main causes are stigma, fear that other people might see them during their visit, discrimination, and criminalization [24].
- (v) There are no NSPs in Turkmenistan

There are no up-to-date statistics on the number of syringes provided per PWID, and data obtained was from 2013 to 2016. The data for all countries require updates.

6.2. Opioid Substitution Therapy (OST). As of 2022, 3 out of 5 countries have OST programs (Table 6). OST can be provided in the form of methadone, buprenorphine, heroin, or others [28]. The form of OST provided in all three countries is methadone (M).

- (i) Kyrgyzstan has 31 operational sites of OST that are accessible to 4.4% of PWID. Then, in 2008, they became available in prisons. One example is colony no. 47 in Bishkek [24].
- (ii) In Kazakhstan, ten operational sites of OST are located in three cities. These sites providing methadone became available in 2005. However, due to funding cuts and reduced government support, OST was accessible only to 0.3% of PWID and limited to pilot programs [24].
- (iii) Tajikistan has 12 OST programs launched in 2010 at three sites. There were only 2.7% of PWID accessing OST
- (iv) Uzbekistan has limited treatment methods that do not meet international standards. As a result, the country does not have OST programs. In 2006, Uzbekistan tried to launch a pilot OST program that provided two forms of OST (methadone and buprenorphine). However, the program was stopped due to inexpediency [24].
- (v) OST is unavailable in Turkmenistan

Overall, OST coverage is very low. The leading causes are limited political support, stigma, and a lack of trust between customers and service providers.

6.3. Drug Consumption Rooms (DCRs). DCRs are safe places that allow PWID to use needles intravenously in more hygienic conditions. These DCRs decrease overdose-related and HCV infections-related mortality [29]. However, DCRs are not available in Central Asian countries.

6.4. Naloxone Distribution. Naloxone is used to treat opioid overdose by reversing its effects. Unfortunately, there is an underestimation of the number of deaths caused by overdose in Eurasia because of the stigma related to drug use [22]. As a result, naloxone distribution programs are available only in Kyrgyzstan and Tajikistan (Table 6).

- (i) In Kazakhstan, naloxone is available only in hospitals, ambulances, and harm reduction services [24].
- (ii) In Kyrgyzstan, naloxone was only used in hospitals and ambulances till 2013. In 2013, the country launched a pilot program for the distribution of naloxone and training PWID to treat overdoses [24]. Both naloxone peer-distribution programs and take-home naloxone are available in Kyrgyzstan
- (iii) In Tajikistan, the situation with naloxone is analogous to that in Kyrgyzstan [24].
- (iv) In Uzbekistan, naloxone is not distributed at the trust points; however, they are used to treat opioid overdose in healthcare facilities [24].
- (v) There is no data on the availability of naloxone in Turkmenistan [24].

7. Treatment of Chronic Infections

In Kazakhstan, all the medications shown in Table 7 are distributed for free under the state program for the treatment of viral hepatitis if a patient is registered for follow-up care in the health facility at the place of residence [34]. In Tajikistan, there is no government program for treating viral hepatitis. However, disabled people, participants in the Second World War, low-income citizens, people undergoing premarital examination, children under the age of 1, and people aged 80 and over 80 are eligible for free tests for all types of hepatitis and treatment of chronic HBV and HCV [35]. In Turkmenistan, drugs for the treatment of HCV are provided by the United Nations Development Program, with the government’s financial support. These drugs are easy to administer and have high efficiency [33]. In Uzbekistan, people with diagnosed HBV receive a prescription for 12 months of TDF with instructions to return in 12 months for free follow-up tests. People with positive HCV receive a prescription for three months for either SOF/DCV or SOF/VEL, depending on the absence/presence of cirrhosis, with instructions to return in 12 weeks for free tests to determine a sustained virological response [6].

TABLE 7: Medications used for the treatment of chronic HBV and HCV in Central Asian countries.

Countries	Treatment of chronic HBV	Treatment of chronic HCV
Kazakhstan [30]	Peg-INF alpha-2a Tenofovir disoproxil fumarate (TDF) Tenofovir alafenamide fumarate (TAF) Entecavir (ETV) [30]	Sofosbuvir (SOF) Daclatasvir (DCV) Sofosbuvir/velpatasvir (SOF/VEL) Glecaprevir/pibrentasvir (GLE/PIB) Ledipasvir/sofosbuvir (LED/SOF) Elbasvir/grazoprevir (EBR/GZR) Ombitasvir/paritaprevir/ritonavir + dasabuvir (OMB/PAR/RIT + DAS) Sofosbuvir/velpatasvir/voxilaprevir* (SOF/VEL/VOX) Ribavirin (RBV) [30]
Kyrgyzstan [31]	First-line therapy: ETV and TDF Second-line therapy: telbivudine (LdT) Peg-INF alpha-2a Peg-INF alpha-2b	SOF/DCV LED/SOF SOF/RBV
Tajikistan [32]	Interferons in the form of injections (e.g., Peg-INF alpha-2a) Nucleoside analogs in the form of drugs (e.g., tenofovir)	SOF/DCV
Turkmenistan [33]	No data	SOF/DCV SOF/VEL
Uzbekistan [6]	TDF	SOF/DCV SOF/VEL

TABLE 8: HBV and HCV-related death rates per 100 k in Central Asian countries.

Country	% change	HBV-related deaths, rate per 100 k					% change	HCV-related deaths, rate per 100 k				
		2019	2018	2017	2016	2015		2019	2018	2017	2016	2015
Target	-10%						-10%					
Kazakhstan	-7.63%	7.27	7.38	7.46	7.66	7.87	-7.85%	9.51	9.64	9.78	10.03	10.32
Kyrgyzstan	-6.08%	6.18	6.14	6.13	6.16	6.58	-5.47%	7.78	7.71	7.68	7.72	8.23
Tajikistan	+0.43%	4.69	4.74	4.81	4.82	4.67	+2.37%	6.05	6.03	6.07	6.13	5.91
Turkmenistan	-4.82%	9.88	9.99	10.07	10.17	10.38	-2.97%	11.42	11.46	11.48	11.59	11.77
Uzbekistan	-6.31%	7.72	7.78	7.87	8.03	8.24	+4.06%	9.48	9.41	9.32	9.25	9.11

Source: the Institute of Health Metrics and Evaluation [36].

8. Mortality and Cure

The effect of all five interventions can be analyzed through the mortality rates that are shown in Table 8.

The GHSS targeted a 10% reduction in the number of deaths from HBV and HCV by 2020 compared with the 2015 baseline [2]. Table 8 shows that the number of HBV-related deaths decreased in all countries except Tajikistan and the number of HCV-related deaths in Kazakhstan, Kyrgyzstan, and Turkmenistan. No reduction in Tajikistan could be attributed to the absence of a government program focused on the treatment of both chronic HBV and HCV. In Uzbekistan, the increase in deaths could also be related to the absence of a functioning government program during this period since the ‘‘Uzbekistan Hepatitis Elimination Pilot 1.0’’ program started only in 2019 (see Table 1). There is no available data on the number of deaths in 2020 and subsequent years. The observed decrease in deaths suggests that the interventions are effective and this can further be checked through the analysis of cure rates of HBV and HCV patients.

9. Conclusion

All Central Asian countries are progressing toward viral hepatitis elimination by implementing various national and international policies, vaccination programs, blood screening protocols, harm reduction interventions, and antiviral drug supplies for treatment. However, the transparency of the process cannot be ensured due to the lack of regular updates on the available data. The only up-to-date information obtained was on vaccination and harm reduction interventions. Other aspects of the GHSS still require some updates because countries do not collect and provide publicly accessible information in official languages. This case is significantly worse in Turkmenistan, where data on blood screening, the number of PWID, harm reduction interventions, and treatment of chronic hepatitis infections was unavailable or partially available. Thus, large-scale surveys and their full disclosure are needed to keep track of viral hepatitis prevalence and transmission. Additionally, countries are recommended to enhance harm reduction ways and treatment of viral hepatitis to achieve the GHSS target by 2030.

Data Availability

The statistical data used to support the findings are found on the websites of the World Health Organization and Harm Reduction International.

Conflicts of Interest

The author declares that there are no conflicts of interest regarding the publication of this paper.

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