

Prevention of Viral Hepatitis C in Social Reintegration Facilities in Slovakia

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Abstract:

Introduction: The WHO has adopted a global strategy to eliminate viral hepatitis as a major public health threat by 2030.

Aim of the research: a) to determine the prevalence and risks of hepatitis C in selected social reintegration facilities; b) to initiate the necessary measures to prevent and reduce the incidence of the disease.

Characteristics of the sample group: We have tested a total of 3803 clients and employees from social reintegration facil-

ities in Eastern Slovakia for the presence of antibodies against hepatitis C. The screening was on a voluntary basis.

Methodology: To identify hepatitis C antibodies (antiHCV) we used a test for rapid diagnostics. At the same time, we gave the clients a questionnaire of our own design.

Results: Anti HCV positivity was found in a total of 97 clients, which represents a prevalence of 2.5%. In case of positive HCV antibodies, we ordered the client for an examination in hepatology / infectiology clinic.

Conclusions: CHC is currently the only chronic viral infection that can be definitively cured. Our screening project is prospective.

Introduction

In addition to metabolic diseases (NAFLD - non-alcoholic fatty liver disease, NASH - non-alcoholic steatohepatitis), **viral liver diseases are considered to be the most common liver diseases** (1, 2).

In 2010 and 2014, **World Health Assembly's resolutions WHA63.18 and WHA67 recognized viral hepatitis as a global public health problem**. This has guided the WHO to develop and implement a comprehensive strategy for viral hepatitis, including the development of guidelines on the diagnosis and treatment of HBV and HCV for Member States (3).

According to the WHO, hepatitis B (HBV) and hepatitis C (HCV) infections are major causes of both acute and chronic liver damage. They cause about 1.4 million deaths a year. It is estimated that there are 2 billion people in the world who have overcome or currently have HBV infection, and 248 million of them are chronic carriers of HBsAg (HBV surface antigen).

Despite a decreasing global incidence of HCV (according to WHO data from 2019, there are 58 million people infected with HCV infection in the world), a large number of people were infected with CHC 30-60 years ago and are currently dying from complications of CHC such as liver cirrhosis (4,5) with its complications that heavily cripple patients in various aspects of their lives, including their mental (6,7) and legal capabilities (8,9), and finally hepatocellular carcinoma, leading to many premature deaths (10). Based on WHO data, approximately 400,000 people died from complications of CHC in 2019. 1.5 million new cases of hepatitis C will be added annually. Globally, 3.2 million children and adolescents are infected with chronic hepatitis C (4,5).

HCV infection is still widespread in developing areas due to the existing vast reservoir of infection by asymptomatic infected individuals without diagnosis and treatment (11).

At the same time, developing countries have an imperfect system for testing blood donors, a low level of use of disposable devices, which contributes to the spread of hepatitis C. Migration of infected people from developing countries carries the risk associated with transmission (12).

The World Health Organization has therefore adopted a global strategy to eliminate viral hepatitis as a major public health threat by 2030. This strategy covers both hepatitis B (HBV) and hepatitis C (HCV). Its goals include a 90% reduction in consequences and a 65% reduction in mortality related to HBV / HCV by 2030 (13, 14).

Testing and diagnosis of hepatitis B and hepatitis C is a key prerequisite for their prevention and treatment and at the same time a crucial part of an effective response to the hepatitis epidemic (15).

According to expert estimates, up to 90% of infected individuals are undiagnosed (1). The symptoms are often non-existent or nonspecific and the patients often go through lengthy tests included in differential diagnosis of various abdominal organic (16,17), functional (18,19) and psychosomatic ailments (20). Therefore, despite the existence of an effective antiviral therapy that slows disease progression and prevents the development of cirrhosis and liver cancer, many patients who could benefit from the treatment remain undetected (21).

Therefore, an early identification of people with chronic HBV or HCV infection will allow them to receive the necessary care and treatment to prevent or slow the progression of liver disease (22). Testing also provides an opportunity

to connect people with interventions focusing on the reduction of hepatitis transmission through the provision of risk behaviour counselling, commodities for prevention (e.g., sterile syringes and needles), and hepatitis B vaccination (3). In contrast to hepatitis C, for which an effective vaccine still does not exist, the epidemiological status of hepatitis B in many countries is continuously improving. This is primarily because of the introduction of obligatory vaccination for children (23), even though there is a rise in the number of cases where vaccinations are postponed or cancelled because of contraindications (24), and the young generation of parents increasingly ignores the vaccination recommendations in general (25). This is happening despite various strategies aiming at enforcing them (26) that are accepted by medical and public health professionals (27) and state institutions (28) that take into consideration the latest lessons learned on vaccine efficacy from the COVID-19 (29) or influenza pandemics (30,31). Also the radical improvements in sanitary and hygienic standards in hospitals and outpatient clinics play crucial role when it comes to hepatitis B, because it is still acquired by patients with a higher frequency during medical procedures and, consequently, in developed countries the highest incidence of acute hepatitis is reported among

the adult unvaccinated population (23) among which the treatment results are still unsatisfactory in significant number of patients (32) and vaccination efforts tend to focus mainly on the high risk groups (33).

Aim of the research: a) to determine the prevalence and risks of hepatitis C in selected social reintegration facilities; b) to initiate the necessary measures to prevent and reduce the incidence of the diseases.

Characteristics of the sample group

Hepatitis C screening took place during the years 2019 - 2021 under the title *“Hepatitis C screening in social reintegration facilities in Eastern Slovakia”*.

So far, we have tested a total of 3803 clients and employees from social reintegration facilities, charity facilities, community centres, and slums in Eastern Slovakia for the presence of antibodies against hepatitis C. The screening was on a voluntary basis. A total of 251 employees (6.6%) and 3552 clients (93.4%) were examined - of which 2312 were men (60.7%) and 1494 were women (39.2%). The average age of clients in social reintegration facilities was 43.7 years - i.e. people of working age (see Graph 1). The average length of a client’s stay in the facility was 4.3 years.

Graph 1 Characteristics of the social reintegration facilities clients sample group

Parameter	Year 2019 N / (%)	Year 2020 N / (%)	Year2021 N (%)
Respondents	1387	861	1555
- clients	1255 / (90)	804 / (93)	1493(96)
- employees	132 / (10)	57 / (7)	62(4)
Gender			
- men	786 / (57)	516 / (60)	1010(65)
- women	602 / (43)	345 / (40)	544(35)
Age (+ - SD)	41y (+-17y)	45y (+- 16y)	45y (+-17y)
Length of stay Average (+-SD)	5y (+- 4,8y)	4,9y 7,9y)	2,9y (+-3,9y)

In 2019, we visited a total of 28 social reintegration facilities. Here are the numbers of clients we examined at each facility: Charity Vranov nad Toplou (3 clients), Michalovce Mlynska Street (58), Michalovce shelter – asylum house (13), Community Centre Pavlovce (31), Community Centre Slavkovce (23), Institute of Christ the King Sovereign Priest in Zakovce (207), Kosice - Lunik IX settlement (181), Resocia no Petrovce (20), Resocia no Rozhanovce (13), Greek Catholic Charity Presov Pod Taborom (70), Sarisske Jastrabie (69) Presov Charity (23), Resocia no Repejov (14), Jakubany (60), Presov Dorka (20), Greek Catholic Charity Kosice shelter dormitory (9), Kosice Dorka (10), Presov Community Centre K Starej Tehelni (98), Oaza Nadej pre novy zivot (Oasis Hope for a new life) Bernatovce (134), Kosice surrounding (29), Community Centre Stropkov (29), Charity Vranov nad Toplou 2 (13 clients), Spisska Nova Ves (18), Shelter of St. Frantisek Levoca (15), Low-threshold center for children and family Kendice (25), Charity house of St. Elisabeth (38), Greek Catholic Charity Svidnik – House of St. Faustina (17), and Youth Center Vranov (13).

In 2020, we also visited a total of 28 social reintegration facilities. Here are the numbers of clients we examined at each facility: Charity Vranov nad Toplou (10 clients), Humenne shelter (12), Institute of Christ the King Sovereign Priest in Zakovce (13), Institute of Christ the King Sovereign Priest in Lubica (22), Kosice - Lunik IX settlement (80), Resocia no Petrovce (42), Resocia no Rozhanovce (14), Greek Catholic Charity Presov Pod Taborom (77), Sarisske Jastrabie (24) Presov Charity (13), Resocia no Repejov (13), Presov Dumbierska – halfway house (10), Presov Community Centre K Starej Tehelni (89), Kosice – Oaza (Oasis) (217), Kosice - Community centre on Adlerova street (26), Kosice - Samaritan (8), Kosice – Svatopluk’s Street (6), Kosice - Charity (37), Kosice Greek Catholic Charity shelter dormitory on Fialkova Street (27), Kosice Polna Street (49), Kosice Resocia no Tahanovce (7), Charity Vranov nad Toplou 2 (17 clients), Shelter of St. Frantisek Levoca (7), Poprad Outpatient psychiatric clinic (3), Greek Catholic Charity Svidnik - House of St. Faustina (20), Charity Svidnik (20).

In 2021, we visited a total of 26 social re-

integration facilities. Here are the numbers of clients we examined at each facility: DSS (social services house) Trstena (40), DSS Namestovo and shelter dormitory (44), Detva - Community centre (267), Detva City office (38), Detva PZ (Police force) (8), Kosice - Lunik IX settlement (106), OZ (civic association) Dobry Pastier Klastor pod Znievom (363), Presov Charity Pod Taborom (39), Presov Charity (11), Lucenec shelter dormitory (10), Resocia no Petrovce (40), Resocia no Repejov (23), Kosice Charity (31), Kosice Resocia (7), Lucenec (10), Lucenec Community Centre (80), Michalovce asylum house (17), Svidnik charity – House of St. Faustina (12), Sutovo Centre for drug addicts (25), Martin - charity (42), Martin – OZ (civic association) Manus (16), Martin DSS Medik (68), Martin Asylum house (51), Liptovsky Mikulas – Charity (14), Kosice – Oaza (Oasis) (126), Presov Community Centre K Starej Tehelni (54), House of St. Anna – assistance service for homeless (32).

Methodology

To identify hepatitis C antibodies (anti-HCV), we used a test for rapid diagnostics of hepatitis C (Liver HCV rapid test – Voyage and Turklab).

At the same time, we gave the clients a questionnaire of our own design with questions that focused on the risk factors of viral hepatitis as well as on the reasons for their arrival to the social reintegration facility. From the grant funds, we purchased disposable needles and single use rapid tests to detect antiHCV antibodies. To determine the antibodies to hepatitis C, we used a drop of capillary blood that we placed on the diagnostic set. A positive or negative result of antiHCV antibody was recorded after 15 minutes.

In the case of positivity with antiHCV antibodies, we educated clients about chronic hepatitis C, its possible complications, and possibilities of antiviral treatment. We supplemented the examination of blood count, blood coagulation and biochemical parameters (glucose, creatinine, bilirubin, liver function tests, lipid profile, albumin, superstructure methodology for determining a possible presence of chronic hepatitis C virus - HCV RNA, CHC genotype).

In case of positive HCV RNA, we ordered the client for an examination in hepatology / in-

fectiology clinic in order to start chronic hepatitis C treatment.

Clients underwent ultrasonographic examination of the abdominal cavity and examination by transient elastography in specialized hepatology / infectiology outpatient clinics (according to the region in which the facility was located).

Results

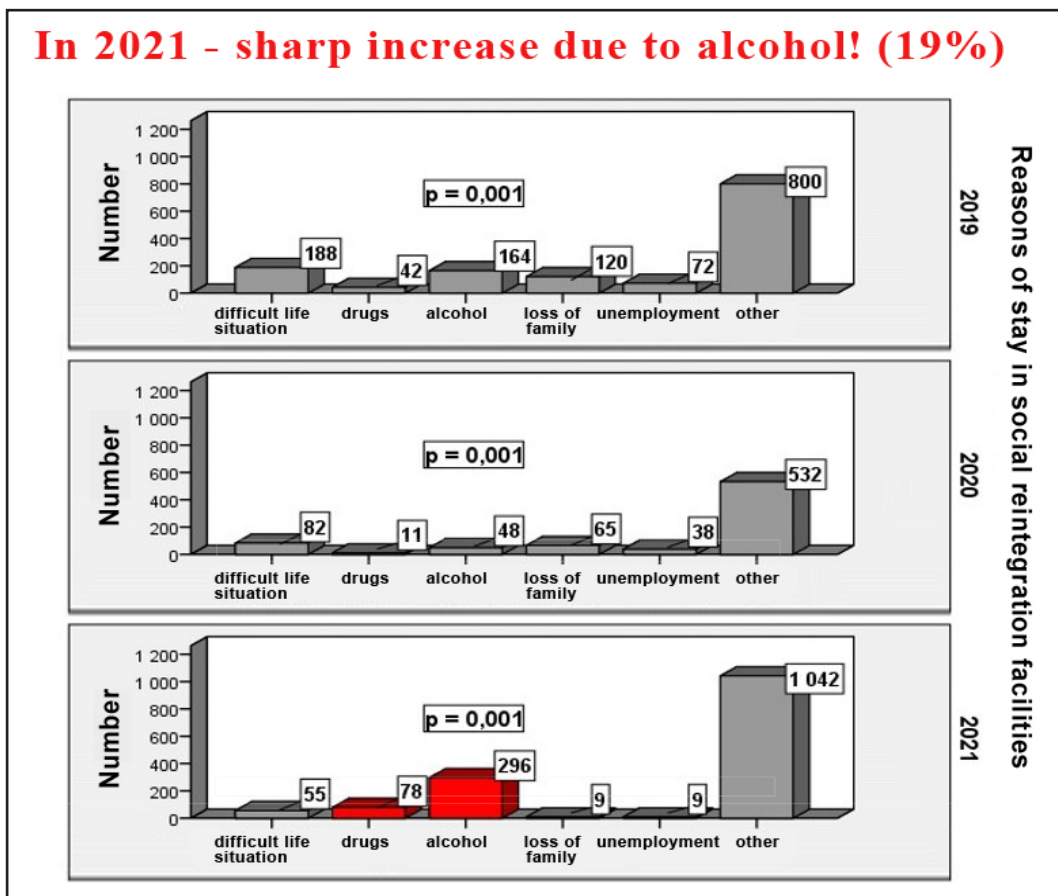
Clients gave various reasons for coming to social reintegration facility: difficult life situation, drugs, alcohol, loss of family, unemployment, other reasons. As the questionnaire was anonymous, we cannot verify the veracity of clients' answers. When comparing the individual years of the project, we noticed that **in 2021, the number of clients who reported alcohol as the main reason for coming to the social reintegration facility increased by 19%**. As usually, the

answer „other“ dominated in the questionnaire. Behind that reason, alcohol can also be hidden. A more detailed analysis and comparison of the reasons for placement in the social reintegration facility is shown in graph no. 2.

Out of the total number of 1387 examined in 2019, 1335 clients were antiHCV negative, 52 (3.7%) were antiHCV positive. In our research sample group, 174/1255 clients (13.9% of the group) used drugs, while 124/1255 clients used drugs intravenously, which represents 9.9% of the group (see Graph 3).

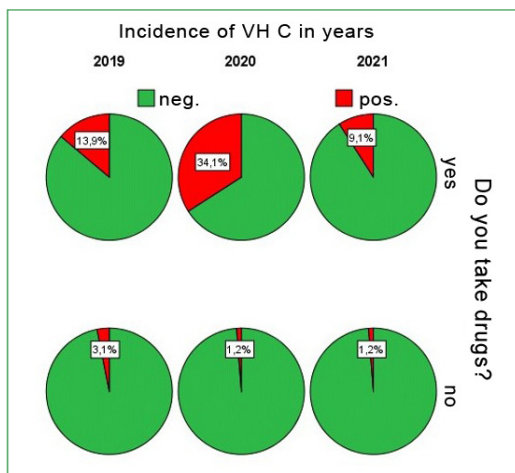
Out of the total number of 861 examined in 2020, 839 clients were antiHCV negative, 22 (2.7%) were antiHCV positive. In our research sample group, 274/804 clients used drugs (34.1% of the group), while 46/804 clients used drugs intravenously, which represents 5.5% of the group (see Graph 3).

Graph 2 Reasons for placing clients in social reintegration facilities in 2019-2021



Out of the total number of 1555 examined in 2021, 1532 clients were antiHCV negative, 23 (1.5%) were antiHCV positive. In our research sample group, 136/1493 clients used drugs (9.1% of the group), while 74/1493 clients used drugs intravenously, which represents 4.9% of the group (see Graph 3).

Graph 3 Incidence of hepatitis C in drug use (p=0,001)



Anti HCV positivity was found in a total of 97 clients, which represents a prevalence of 2.5%! (compared to 0.1% prevalence in the general adult population of the Slovak Republic).

Clients who reported intravenous drug use (IDU) in the questionnaire also had more frequent experience with other drugs. They most often reported marijuana, benzodiazepines, methamphetamine, heroin, cocaine, other hallucinogens, hypnotics, amphetamines.

In the questionnaires, there was no question on clients' nationality. However, according to the locations in which clients live, we know that e.g. the Lunik IX settlement in Kosice is inhabited exclusively by Roma community. We plan to continue testing risky clients from this location in the future and to evaluate this file independently. There is a need for repeated education of these clients and for involvement of field workers in solving this problem.

Field workers provide counselling for Roma families in the field of social matters, upbringing and education. They focus mainly on working with an individual and their family. They solve individual client problems and use methods of

social work, which they apply in the client's natural environment (34).

Discussion

Chronic viral hepatitis B and C (CHB / CHC) are a serious medical, public health, social and economic problem on a global scale, in Europe as a whole, and in Central and Eastern Europe in particular (35).

Injecting drug use remains the main route of transmission of hepatitis C infection (HCV) in Europe. In 2017-2018, the prevalence of HCV antibodies in national samples of injecting drug users ranged from 16% to 86%, with 10 out of the 16 countries with national data reporting rates above 50% (36).

According to an analysis of epidemiological data, approximately 10 million intravenous drug users worldwide were anti-HCV positive. Studies show that each person who injects drugs with an infected needle is likely to infect about 20 other drug users, and this rapid transmission of the disease occurs within the first three years of the initial infection (37).

The approach of educating injecting drug users about the prevention, testing and treatment of hepatitis C is therefore an important requirement for the elimination of this disease. Although effective oral antiviral medications with direct effects are currently available, expanding the supply of these medications, along with opioid substitution treatment and needle exchange programs, is still challenging for many countries. An introduction of better diagnostic and surveillance techniques to identify people chronically infected with the virus is important for targeting the treatment to all infected people (36).

Successful detection and treatment of viral hepatitis in substance users requires effective cooperation and functional interconnection not only of health professionals and specialists, but of the wide range of professionals and institutions involved in the care of such patient - social workers, volunteers working within governmental and non-governmental organizations, in self-help groups and foundations, family members and friends of the drug addicts (12,38).

To successfully solve the hepatitis B and C problem, emphasis needs to be placed on prevention, proactive screening and early diagnosis of people at risk, such as injecting drug users,

prisoners, HIV-infected people, immigrants from endemic countries, health workers, children, and pregnant women, etc. (38).

It is essential to initiate and support the development and funding of comprehensive and well-managed national information campaigns to raise awareness about these diseases, especially with a focus on at-risk groups.

Conclusions

Chronic hepatitis C is currently the only chronic viral infection that can be definitively cured.

The most important factor in preventing the occurrence of viral hepatitis in IDUs is the adoption of basic measures to end risky behaviour - a discontinuation of drug use. Social reintegration facilities help to achieve this goal and enable clients to find a new meaning in life - a drug-free life (39). The ultimate goal of the re-socialization process is the reintegration of drug addicts into a natural (or alternative) social environment and for them to gain independence from institutional social support (40, 41).

Our screening project is prospective (2019-2021-2022-2023). We see the benefit of the project in: a) the continuous education of clients of social reintegration facilities; b) the detection of specific people with CHC infection c) the implementation of secondary prevention.

Successful detection and treatment of viral hepatitis in substance users not only requires effective cooperation and functional interconnection of health professionals and specialists, but of the wide range of professionals and institutions involved in the care of such patients - social workers, volunteers working within governmental and non-governmental organizations, in self-help groups and foundations, family members, and friends of the drug addicts (12, 42).

A screening for chronic hepatitis C and subsequent treatment should be part of a comprehensive client care in social reintegration facilities.

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