



Research Article

Hepatitis C Virus (HCV) and Hepatitis B Virus (HBV) Infections among Migrant populations in the Province of Brescia: An Emerging Public Health Issue

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Abstract

The province of Brescia faces a relevant epidemiological situation, with the prevalence of HCV and HBV infection reaching up to 3.0% in some areas. After the COVID-19 pandemic, the increase in HCV-related hepatocellular carcinomas has been overall in migrants. [In Brescia and its province], there is a high number of migrants originating from countries with a high prevalence of viral hepatitis. The epidemiological context has led the MISI Foundation and the non-profit organization “Il Filo della Salute” to undertake a project aimed at identifying infections of HBV and HCV in a settled migrant population from Eastern Europe employed as caregivers. Through the analysis of the most suitable methodologies to engage the target population, which is generally reluctant to undergo medical analyses and tests in the host country, communication strategies have been identified using social web channels and disseminated by influencers to promote the project. The project attracted 350 participants (300 women and 50 men), mainly originating from Moldova.

Following pre-test counseling, a self-test for HCVAb was administered, resulting in a positive outcome for 18 (5,1%). Among these, 4,2% tested positive for HCV RNA. In 300 subjects, the HBsAg test was offered, yielding a positive result in 8,3% of cases. All infected individuals were offered linkage to the nearest hepatological or infectious disease care facility based on their residence. The project has allowed the identification of a high number of migrants residing in the province of Brescia infected with HCV or HBV, with percentages consistent with the epidemiology of their country of origin. Within public health projects, it would be crucial to invest in dedicated screening campaigns for the settled migrant population, also considering the role as a caregiver, which is important for both minimizing the risk of transmission and reducing the progression of the infection.

Background

Epidemiology of HCV and HBV in the province of Brescia.

The global eradication of HCV proposed by the World Health Organization (WHO) by 2030 is an objective being pursued through every possible means [1]. An effective and safe therapy is now available to treat HCV infection. The province of Brescia faces a huge epidemiological situation, with the prevalence of HCV and HBV infection reaching up to 3.0% in some areas. One of the most apparent damages caused by the interruption of outpatient and hospital services during the COVID pandemic has been the increase in HCV/HBV-related hepatocellular carcinomas due to missed screening and ultrasound monitoring [2]. In the province of Brescia, nearly the entire population chronically infected with HCV, followed in the clinical departments of infectious diseases, hepatology, and gastroenterology, has already undergone eradication therapy.

However, it is estimated that there are still many unidentified patients with HCV hepatitis, and strategies for identification the uncovering submerged pathology are deemed necessary. Facing this epidemiological condition, the MISI Foundation (Infectious Diseases and International Health Foundation) and FdS E.T.S (Il Filo della Salute E.T.S, non-profit third-sector organization, have consistently worked to promote initiatives to bring HCV cases to the forefront in the Brescia territory.

Previous projects in the Brescia area and the obtained results.

Between December 2020 and March 2021, the pilot phase of the HELP DESK HCV screening initiative took place during the COVID-19 wave, involving two pharmacies. Despite resource limitations, it was possible to test 500 individuals, identifying 15 HCV Ab-positive persons, of whom 8 were active carriers of the virus (HCV-RNA positive). Infected patients were addressed to HCV treatment centers most convenient for their residential area and underwent appropriate treatment.

Given the success of the pilot phase and based on international experiences of screening campaign [3-8], the MISI Foundation has proposed a PHASE 2.0, introducing a help desk on COVID-19 Vaccines, and Hepatitis facilities. The service is advertised in all pharmacies in the town of Brescia and its province. Interested individuals could call a hotline, where a free telephone counseling session was organized to address their questions. During the conversation, a risk assessment for HCV is conducted using the C-now hepatitis app, and the option of undergoing a rapid HCV

test is offered. In the event of a positive result, the patient is then addressed to the appropriate treatment centers for further care.

Focus on HCV: Target Population and Predisposing Factors.

Worldwide, between the regions most affected by HCV are classified Eastern Europe and Balkans, with a prevalence reaching >3% [9,19]. The settled migrant population from these areas is highly represented in the Brescia province, This population is often diagnosed late with chronic hepatitis. ESLD or HCC often exhibit multifactorial causes, driven not only by undiagnosed viral infection but also by alcohol use/abuse, diet, obesity, and diabetes. Most of settled migrants f in the town of Brescia, primarily include women employed as domestic workers and caregivers. These persons often neglect their disease, refuse health check-ups, and, often, return to their home country for medical care. These individuals are frequently obese and predisposed to metabolic syndrome.

Comorbidities associated with chronic HCV infection, such as hepatic steatosis and diabetes, are exacerbated by factors such as a diet rich in sugars and fats and alcohol abuse. The frequency of ESLD and HCC is higher in this population compared to the Italian population due to the multifactorial nature related to ethnicity and behavioral factors.

Demography of the Foreign Resident Population in Brescia

Demography of the Foreign Resident Population in Brescia as of January 1, 2020, include 151,820 individuals, constituting 12.1% of the global resident population. The largest foreign community is from Romania, representing 16.4% of all foreigners in the area, followed by Albania (11.3%) [11]. The purpose to develop a project for the detection of submerged infections by HCV/HBV/HDV in a population of individuals from Eastern European countries permanently residing in Brescia is based on two main factors:

- 1) Likely high prevalence based on epidemiological data and age group.
- 2) The sample is easily identifiable and accessible through recruitment agencies, word of mouth within the group itself, or by identifying a suitable “influencer” for the target population.

In (Figure 1) and (Table 1) are described the updated ISTAT (National Institute of Statistics.) data on the percentages of individuals from Eastern Europe permanently residing in Brescia.

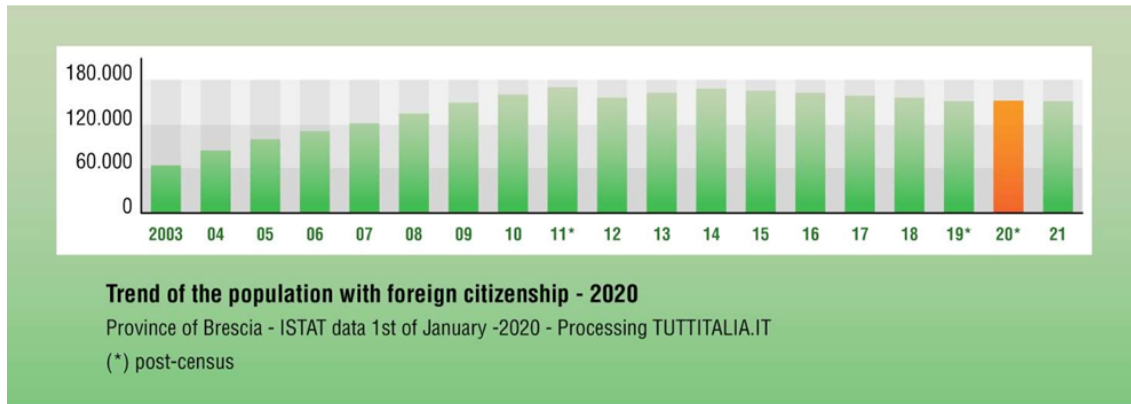


Figure 1: Trend of foreign citizens in Brescia province (ISTAT 2020).

EUROPE	Area	Male	Female	Total	%
Romania	European Union	11.196	13.665	24.861	16,38%
Albania	Central Eastern Europe	8.654	8.548	17.202	11,33%
Ukraine	Central Eastern Europe	1.664	5.973	7.637	5,03%
Moldova	Central Eastern Europe	1.726	3.571	5.297	3,49%
Kosovo	Central Eastern Europe	2.081	1.543	3.624	2,39%
Bosnia Herzegovina	Central Eastern Europe	699	581	1.280	0,84%
Republic of Serbia	Central Eastern Europe	609	644	1.253	0,83%
Poland	European Union	329	799	1.128	0,74%
Russian Federation	Central Eastern Europe	216	690	906	0,60%

Table 1: Updated ISTAT (National Institute of Statistics) data on the percentage of people coming from Eastern Europe in a permanent basis in Brescia.

Since 2020, the following populations reside in the Brescia area: 27,174 males and 63,188 females from Eastern Europe

The prevalence of HCV and/or HBV in Eastern European countries is estimated at 3.3%. Therefore, it is estimated that: 2,085 females and 896 males from Eastern Europe, subjects of the present project, may be carriers of Hepatitis C and/or B [1].

As expected results: 16 infections could be identified per 500 tested females.

If the test were reserved for patients with risk triggers, in addition to the country of prevalence (triggers identified with the “C-now hepatitis” web app or mobile app available on Google store Apple or on www.fondazionemisi.it), there could be an imagined increase of 2% in positives. The anticipated obstacles for enlisting subjects were limited sensitivity to prevention and

the performance of blood tests and tendency to seek healthcare in their home country due to potential access difficulties in host country. However, the existence of a project that connects this target population with specialist centers could have advantages for linkage-to-care, not only for liver disease but also for other health issues that may emerge during a consultation and could be diagnosed and treated, was presumed to be attractive in convincing subjects to participate.

Aims

The main objectives of the project were the Identification of the target population at risk of HBV/HCV infections, expand screening programs and promote the detection of potential HCV related diseases, directing them to specialized treatment facilities in line with WHO objectives to promote the elimination of HCV infection at the national level.

Methods

The project lasted for nine months (October 2022 – June 2023) and included 2 phases: Preliminary phase: Identification of suitable facilities within the province of Brescia for recruiting the target population of settled migrants from Eastern Europe. Identification and assessment of potential limitations, including linguistic and cultural barriers. Subsequent involvement of interpreters or key “influencers” for the target population. Design and creation of multilingual informational material for comprehensive and tailored outreach to the various identified locations (Russian, Romanian, Ukrainian, etc.).

Recruitment and Testing Phase : Active recruitment in the identified facilities offering Pre-test counseling; opportunity for rapid auto testing for HBV and HCV ,linkage to care for individuals testing positive for HCV, including HCV RNA testing, and testing for HDV in individuals positive for HBsAg and flyers (Figure 2AB).

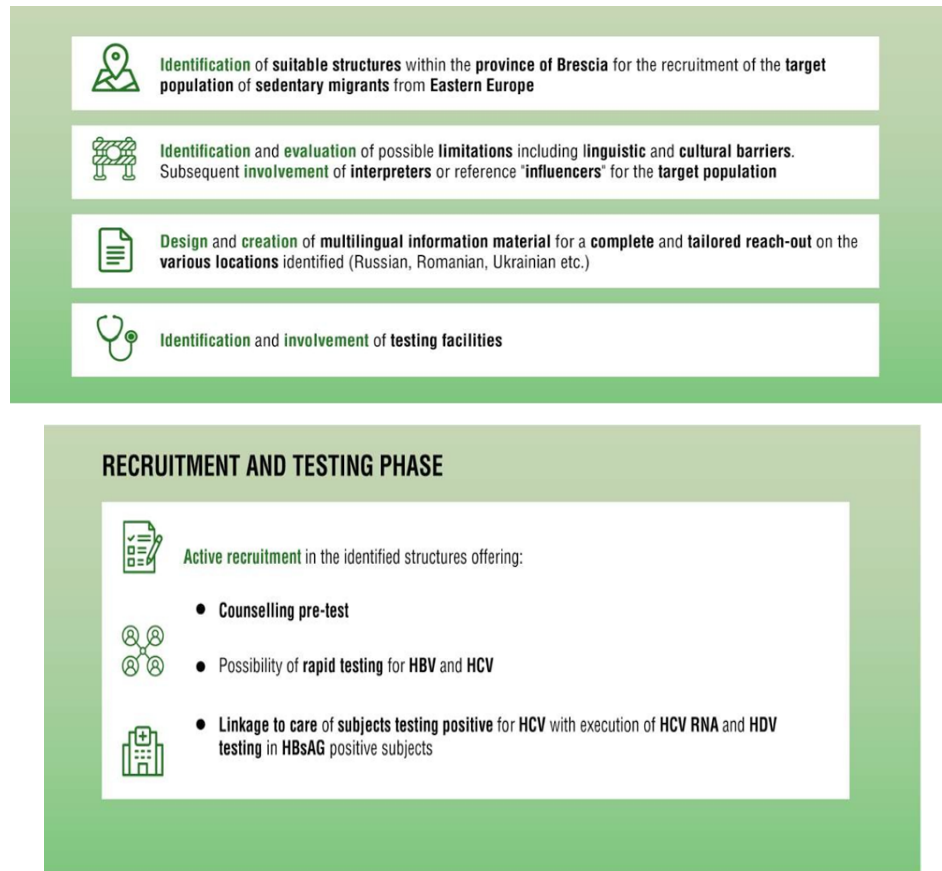


Figure 2AB: Project’s phases; A: Preliminary phase; B: Recruitment and Testing Phase.

Results

Identification of structures suitable for reaching the target population, The structures, such as caregiver and housekeeping recruitment agencies, were analyzed to assess the types of individuals accessing their services to look for/search for employment. Following this investigation, which involved ten structures, two leading agencies were identified in the area: Family Care ® and Private Assistance ® (Garda and Valtanesi territory)

These two agencies exhibit the following characteristics:

- Address 80% of the demand for housekeepers and caregivers in the area
- Have in-depth knowledge of the target population’s characteristics

- Have developed communication methods tailored to the different nationality
- Have devised campaigns suitable for attracting the correct population based on family needs

The communication management approach, work ethics, and the number of users handled led us to choose these two companies as project partners, involving them in all planning and implementation steps. Identification of the most effective communication methods for the service and assessment of potential limitations with the assistance of the identified structures, analysis were conducted on the types of products and language to engage the target population with the counselling and HCV/ HBV screening services provided by the project. 4 types of “personas” representing the most significant groups within the target population, were identified incorporating a type that was not initially foreseen: caregivers from South America. Analysis on type of flyers, language and content were conducted.

Four type of “personas” representing the most prominent groups in the target population, were identified: Caregivers from Moldavia, Ukraine, Russia and South America. Additionally, individuals who could serve as “influencers” within the four groups were identified and acted as promoters, posting messages on social media channels to invite their followers to join the project.

Design and implementation of multilingual informative material and social media supports Activities managed by the MCO International team following jointly developed guidelines. Flyer, posters and digital structures/activities (A Facebook page tailored to the need and targeted communication campaign for the local population) were produced. Flyers were created and translated into Spanish, Moldovan, Ukrainian, and Russian languages (Figure 3). The flyers were distributed in places frequented by individuals from the target groups (public gardens, bars, shopping centers, supermarkets, etc.). It was assumed that word of mouth could be a valid method to make the project known.



Figure 3: Flyers were created and distributed in places frequented by individuals from the target groups (Public gardens, bars, shopping centres, supermarkets, etc.)

Identification of testing facilities Various delivery methods for counseling and tests were identified and pursued once the user expresses interest in participating in the examined (?) project: At recruitment agencies of Family Care (Brescia) or Private Assistance (Desenzano/Garda); at the Filo della Salute offices in Brescia and Padenghe sul Garda, at the private outdoor clinic (OPD) (POLIAMBULATORIO OBERDAN®).

In all these locations, the operator/counselor/physician conducted a comprehensive patient examination, including a complete medical history, and performed pre-test counseling. The patient was encouraged to undergo a rapid self-test for HCVAb (Ora Quick Rapid antibody test®-HCV Ora Sure Technologies, Inc.220EstFirst Street Bethlehem, PA 18015 USA) and for HBsAg (RightSign HBsAg Rapid Test Cassette (Serum/Plasma) Distributor nal von minden GmbH Carl- Zeiss Str 12,47445 Moers)

In the case of a positive HCV Ab or HBsAg test result, a post test counselling were performed and linkage to care was established at the nearest and convenient hepatological or infectious disease care facility. If another clinically significant condition was identified, linkage to care was proposed at the most suitable specialized facility studied population Risk factors. Three hundred and fifty individuals were tested: 300 women and 50 men, with an average age of 47 years (range 40-68). In (Table 2) are described the characteristics and the outcome of the testing phase. Thirty percent reported occasional alcohol use, and 10% reported smoking at least 10 cigarettes per day. Comorbidities identified included obesity (BMI > 30) in 70% of the sample, 55% reported taking medication for hypertension, known cardiac disorders/trouble were present in 10%, diabetes therapy was reported in 30% of the sample, and 70% reported arthralgia. Twenty-five percent of the subjects reported taking more than three medications daily.

Variables	N (%) Median (range)
Patients (n)	350
Gender	
Female n(%)	300(85.7%)
Male n(%)	50(14.3%)
Median age (years range)	47 (40-68)
Nationality	
Moldavia	215(61.4%)
Russia	70(20%)
Ukraine	40(11.4%)

Romania	15(4.2%)
South America	10(2.8%)
Risk Factors	
Smoke n(%)	35(10%)
Alcohol	105(30%)
Co-morbidities	
Obesity n(%)	245(70%)
Hypertension n(%)	192(55%)
Cardiomyopathy n(%)	35(10%)
Diabetes in therapy n(%)	140(40%)
Glucidic intolerance (diet)	118(33.7%)
Arthralgia	245(70.2%)
Autoimmune Thyroiditis	35(10%)
Dismetabolism	140(40%)
Respiratory Diseases	37(10.2%)
Pain	194(56%)
Fatigue	122(35%)
None	105(30%)
Polypharmacy	
No therapy	100(28%)
1-3 drugs	164(53%)
>3 drugs	88(25%)
Viral Hpe Auto test done	
HCV Ab	350
HBsAg	300(50 pts were vaccinated)
HCV results	
HCV Ab Positive	18/350(5.1%)
HCV RNA Positive	15/350(4%)
HBV results	
HbsAg Positive	25/300(8.3%)

Table 2: Sociodemographic and clinic characteristics of the studied population and results of HCV and HBV auto test.

Three hundred and fifty tests were conducted for HCV antibodies, and 300 tests for HBsAg (50 patients reported being vaccinated). Eighteen subjects tested positive for HCV antibodies, and out of these, 15 had a positive HCV RNA, accounting for 4% of the total. Among those tested for HBV, 25 subjects tested positive for HBsAg (7%). The linkage to care was carried out for HCV RNA-positive and HBsAg-positive patients at the treatment center nearest to their residence.

Discussion

The high number of migrants from Eastern Europe residing in the province of Brescia in Lombardy Italy, has prompted the creation of a project for the identification of previously unknown HCV and HBV infections. Caregivers are a group of easily identifiable and accessible workers, making them the ideal subjects to be tested within the project for the detection of submerged HCV and HBV infections.

The project focused on establishing contact between the caregiver population from Eastern and South America, residing permanently in Brescia and its province, and the national healthcare system. The objective was to identify as many previously unknown cases of HBV and HCV infections as possible and link to care for treating hepatitis.

The detection of the hidden cases of viral infections from HCV and HBV, conducted on this migrant population, has allowed the identification of a significant number of infected patients. Out of the total tested population, 8% tested positive for Hepatitis B, and 4% had active Hepatitis C.

The percentages are in line with the epidemiology of the countries of origin. Based on these data and the epidemiological data provided by the ISTAT [5], we can infer it is conceivable that in the province of Brescia reside at least 1086 male and 2527 female migrants with unidentified HCV and 2173 male and 5055 female with unknown hepatitis B. The project has allowed an assessment of the characteristics of the settled migrant population in terms of social features, acceptance of screening campaigns, and provided information on self-health. Furthermore, it has laid the groundwork for an analysis of the clinical characteristics of a well-characterized settled migrant population and for initiating awareness of access modalities to healthcare facilities, in line with the WHO objectives related to the elimination of the hepatitis virus.

Conclusion

In conclusion, the high number of settled migrants in the province of Brescia originating from areas of high prevalence of

hepatitis B and C justifies targeted screening campaigns for this specific population. Furthermore, for a public health point of view, in workers such as caregivers in close contact with the elderly and fragile population, the identification of parenteral transmitted infections is urgent [12,13].

Acknowledgments

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