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HIV infection among refugees, asylum seekers and unaccompanied foreign minors attending an outpatient clinic in Reggio Emilia (Northern Italy) in 2022–2023

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Abstract

Introduction In Europe, migrant populations demonstrated a high risk of infection disease, possibly due to both pre-migratory and post-migratory factors. In particular, investigating HIV infection prevalence is a public health priority. In this study, we aimed to assess the prevalence of HIV infection in refugees, asylum seekers and unaccompanied foreign minors (UFM) accessing a targeted outpatient clinic in the province of Reggio Emilia, Northern Italy.

Methods We analyzed data from the serological screening for HIV carried out among refugees, asylum seekers and UFM by a dedicated "Centre for Health of Foreign Family", at the time of the first medical examination in the 2022–2023 period.

Results Of 1351 subjects (mean age 25.3 ± 7.9), 85.2% were males and 19.5% were under 18 years. The majority (74.6%) were from Africa (51.4% and 23.2% from the sub-Saharan area and North Africa, respectively), and 20.5% from Asia (11.8% from Bangladesh, 7.7% from Pakistan and 1% from Afghanistan, respectively). We found 10 (0.74%) HIV-positive people, with a prevalence increasing from 0.26% (1/389) in 2022 to 0.94% (9/962) in 2023 with a relative risk of infection of 3.6 (95% CI 0.5–28.7). All positive cases were from sub-Saharan Africa (60% from Ivory Coast), and 80% were females aged between 23 and 44 years.

Conclusions Our findings suggest a possible increased risk of HIV infection among refugees and asylum seekers in 2023 compared to 2022, especially in females and in relation to the sub-Saharan area.

Keywords Refugees and asylum seekers · Unaccompanied foreign minors · HIV · Infectious disease · Prevention · Public health

Abbreviations

CI	Confidence interval
RR	Risk ratio
SD	Standard deviation
E-R	Emilia-Romagna
HIV	Human immunodeficiency virus

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AIDS Acquired immunodeficiency syndrome
CFF Centre for Health of Foreign Family
UFM Unaccompanied foreign minors
HBV Hepatits B Virus
HCV Hepatits C Virus

1 Introduction

In 2022, almost half of the new HIV diagnoses recorded in Europe relate to migrants, defined as people originating from a country other than the country where diagnosis was established [1]. In Italy, the incidence of new HIV diagnoses in 2022 was found to be 3.2 cases per 100,000 residents, with 31.2% of them in non-Italian people [2]. 'Foreign' and 'migrant' populations encompass very heterogeneous groups in terms of migratory background, legal status, vulnerability and social exclusion [3]. As a consequence, higher risk of HIV infection among these populations may be related to various factors, including pre-migratory (higher HIV prevalence in the country of origin), migratory (violence, overcrowding and poor hygiene) and post-migratory factors (marginalization, addiction, difficulty in accessing health services and risk of sexual exploitation) [4–6]. In particular, sub-Saharan African and South Asian origin (where World Bank data show a prevalence of 3.79% and 0.19% in the population aged 15–49, respectively), sexual behavior, injection drug use and irregular status are the most relevant risk factors for HIV infection [7].

In Italy, access to HIV test and treatment services is universally guaranteed. This includes immigrants regardless of legal status [8]. However, some deterring factors still exist [9]. Linguistic and logistical barriers persist, mainly in association with poor health literacy, resulting in an inability to navigate a foreign health system. Along with these, cultural and psychological barriers are equally relevant, whether in terms of lack of awareness of HIV transmission risks and fear of being reported to authorities or disclosing one's serological status. For these reasons, consistent data about HIV transmission, prevalence and risk factors in immigrants and particularly in the most marginalized and precarious subgroups, are generally scarce [4]. In this scenario, data from outpatient primary care clinics dedicated to recently arrived migrants, refugees or asylum seekers and unaccompanied foreign minors (UFM) appear to be a highly relevant source of information on the health status of these populations.

2 Methods

In the province of Reggio Emilia, an area of the Emilia-Romagna region (Northern Italy) with a population of around 530,000 on 1 January 2024, the Local Health Authority-IRCCS of the National Health Service provides health care to refugees, asylum seekers and unaccompanied foreign minors who have recently arrived in the area. Such assistance is provided at the 'Centre for Health of Foreign Family' (CFF), a dedicated outpatient clinic within the Primary Care Department's remit. The CFF offers disease prevention, treatment and rehabilitation activities, vaccinations, essential medicines, gynecological, obstetric and pediatric care to anyone who agrees. This type of health care implements the 2017 guidelines published by the Italian Society of Migration Medicine (SIMM), in cooperation with the Ministry of Health and National Health Institute [8, 10]. Cultural mediators are present at the CFF on an ongoing basis, clarifying health checks available to migrants upon arrival in the host country.

2.1 Participants

Regardless of age, all migrants who enter a reception center in the province of Reggio Emilia voluntarily undergo initial examination at the CFF. This is aimed at identifying signs and symptoms of the main chronic and infectious diseases, generally within two weeks of the arrival. Migrants are assisted by reception center operators, who also support them in arranging subsequent examinations or visits, and navigating the Italian health system.

2.2 Data collection

At the time of the first visit, we assessed demographic (e.g. sex, age) and migration data (e.g. country of origin and asylum seeker or UFM status). In addition, we collected blood samples to assess serologic status for HIV, HBV, HCV infection and syphilis, and to screen for latent tuberculosis [11]. Additional screening for Strongyloides and Schistosoma has been available since September 2024.

For HIV screening, we used immunometric assays to detect antibodies against HIV-1 and HIV-2 and the p24 antigen for HIV screening [11].

We collected data from all outpatient tests on refugees and asylum seekers admitted to the CFF for screening on arrival between January 2022 and December 2023.

2.3 Measures and analysis

We analyzed the main characteristics of the study population through absolute and relative frequencies. We used unconditional logistic regression models to calculate the odds ratio (OR) and its corresponding 95% confidence intervals (CI) for HIV positivity/infection in relation to the investigated factors. We used Stata statistical package Stata-18 (StataCorp LCC, College Station, TX, USA, 2023) for data analysis.

The study is the result of a collaboration between the University of Modena and Reggio Emilia and the Local Health Authority of Reggio Emilia, and the study protocol was approved by the Reggio Emilia Ethics Committee (approval no. 2017/DS/0038).

3 Results

In the two-year period (2022–2023), 1365 individuals were admitted to the CFF, 397 in 2022 and 968 in 2023. Of these, 1351 (98.9%) agreed to HIV testing.

The tested individuals amounted to 389 in 2022 (97.9%) and 962 in 2023 (99.4%).

As summarized in Table 1, migrants were aged 12–60 years, with a mean (SD) age of 24.5 ± 7.9 (Table 1). The population that arrived in 2023 was slightly younger compared to 2022, with a mean age of 23.9 and 25.9 years, respectively, due to an increase in the UFM percentage (12.9% in 2022 vs. 22.1% in 2023). Sex distribution changed during the two-year period. In particular, the percentage of females increased from 8.7% in 2022 to 17.1% in 2023 (Table 1).

In terms of geographic origin, the majority of subjects (74.6%) were from Africa (51.4% from sub-Saharan area and 23.2% from North Africa), while 20.5% were from Asia. Sub-Saharan Africans increased between 2022 and 2023, accounting for 38.1% and 56.9% of individuals, respectively. Sub-Saharans were mainly from Ivory Coast (29.2%) and Guinea (17.4%), while North Africans were mostly from Egypt (47.6%) and Tunisia (49.8%). On the other hand, Asians were mainly from Bangladesh (57.8%) and Pakistan (37.5%) For 4.5% of cases, nationality was not registered.

We found 10 (0.74%) positive serologic cases for HIV, 1/389 migrants in 2022 (0.26%) and 9/962 migrants in 2023 (0.94%) as shown in Fig. 1.

All subjects tested positive for HIV-1, while no HIV-2 cases were detected during the study period. The vast majority of positive cases (90%, 9/10) were migrants from sub-Saharan Africa, mostly (6/9) from Ivory Coast. In one case (1/10), the country of origin is unknown (Table 2).

Among positive cases, 8/10 (80%) were females aged between 23 and 44 years. HIV prevalence rates (Table 3) increased from 2022 to 2023, from 0.26% (1/389) to 0.94% (9/963), with a crude OR of 3.6 (95% CI 0.5–28.7). After adjusting for sex and age, an OR of 2.3 (95% CI 0.3–19.0) for HIV risk was observed in 2023, compared to 2022.

All positive cases were referred to the HIV outpatient clinic of the Infectious Disease Division. This performed resistance tests, an assessment of immune system status (including blood count, lymphocyte subsets and viral load), and offered free access to antiretroviral therapy and clinical follow up as suggested in the National HIV and AIDS plan [12].

4 Discussion

In the population under investigation, we detected a considerably increased prevalence of HIV positivity over the two-year period, especially among females and from sub-Saharan countries. The differences in prevalence between the two years among refugees and asylum seekers can be explained by variation in the composition of the population accessing

Table 1 Sex and age distribution of study participants tested for HIV in 2022 and 2023 in the Reggio Emilia outpatient service

	Overall period N (%)	2022 N (%)	2023 N (%)
All participants	1351	389	962
Sex			
Males	1152 (85.3)	355 (91.3)	797 (82.8)
Females	199 (14.7)	34 (8.7)	165 (17.2)
Age			
Mean (SD)	24.5 (7.9)	25.9 (7.8)	23.9 (7.9)
Range	12–60	16–58	12–60
Age groups			
< 18	263 (19.5)	50 (12.9)	213 (22.1)
≥ 18–24	538 (39.8)	146 (37.5)	392 (40.8)
25–34	380 (28.1)	134 (34.5)	246 (25.6)
35–44	144 (10.6)	52 (13.4)	92 (9.6)
≥ 45	26 (1.9)	7 (1.8)	19 (2.0)
Origin			
Sub-Saharan Africa	695 (51.4)	148 (38.1)	547 (56.9)
Northern Africa	313 (23.2)	94(24.2)	219 (22.8)
Asia	277 (20.5)	145 (37.3)	132 (13.7)
Other States	5 (0.4)	2 (0.5)	3 (0.3)
Not reported	61 (4.5)	0 (0.0)	61 (6.3)

Values are numbers (N) and percentages (%), unless reported otherwise
SD (standard deviation)

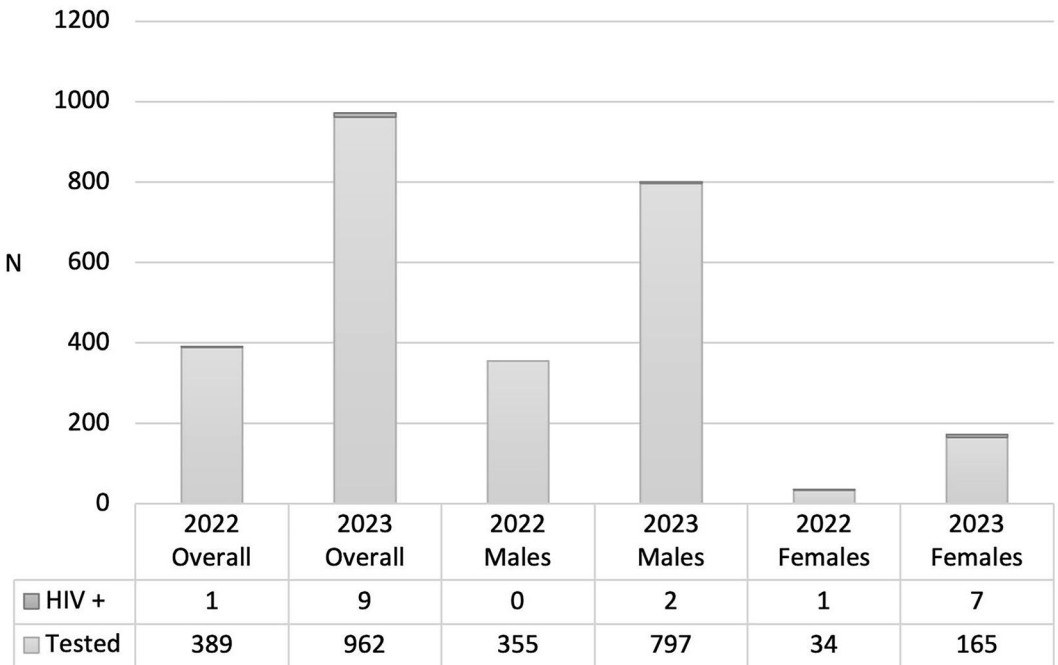

Fig. 1 Number of positive cases among subjects tested, by sex and year, and for the whole two-year period 2022–2023

the CFF over the years, in terms of both origin and sex and along with fluctuations in the global migratory phenomenon [1, 13–15]. Although no changes in CFF screening procedures have been applied, the number of migrants admitted to the center and screened substantially increased from 2022 to 2023. This is consistent with the total number of people crossing Italian borders, who increased in 2023 compared to 2022 and to previous years (157,652 versus 105,131) [16].

Table 2 Age, sex, and country of origin of positive cases tested for HIV (2022 and 2023)

Year	Age	Sex	Origin
2023	28	M	Sierra Leone
	23	F	Ivory Coast
	28	F	Not reported
	29	M	Cameroon
	28	F	Ivory Coast
	36	F	Nigeria
	44	F	Ivory Coast
	39	F	Ivory Coast
	25	F	Ivory Coast
2022	33	F	Ivory Coast

M = male; F = Female

Table 3 Prevalence of HIV infection in refugees, asylum seekers and UFM in 2022 and 2023

Year	Total tested	Total HIV +	% total HIV +	Tested males	Males HIV +	% male HIV +	Tested females	Females HIV +	% female HIV +
Overall	1351	10	0.74%	1152	2	0.17%	199	8	4.02%
2022	389	1	0.26%	355	0	0.00%	34	1	2.94%
2023	962	9	0.94%	797	2	0.25%	165	7	4.24%

It should be noted that the legislation on humanitarian ships carrying migrants rescued in the Mediterranean changed in January 2023. As a result, some Northern Italian regions have turned into a first landing and first reception due to the presence of harbor areas to host immigrants, including Ravenna in Emilia-Romagna [17]. Concerning the number of UFM examined by the CFF in the two years, this increase is also in line with national data: the presence of unaccompanied foreign minors in Italy has been growing steadily from 16,000 minors out of 105,131 total migrants in 2022 to 22,000 out of 157,652 in 2023.

Data on HIV diagnosis are in line with the few available other studies on HIV screening of refugees and asylum seekers in Italy, with prevalence ranging from 0.7% in one study from Rome in 2019 and 2020 [18] to 1.2% in Naples and Caserta in Southern Italy in 2012 and 2013 [19], and 1.3% in Verona, Northern Italy in 2014–2015 [20]. Most recent data from other European countries reported prevalence ranging from 2% in Cyprus (1 January 2023 and 31 December 2023 among 305 tested people) to 0.4% in Lithuania (1 January 2019 and 31 December 2019 among 239 tested people) [21].

The increased risk of HIV infection in females contrasts with data from Italian and European reports, which show a higher prevalence in males from the foreign population [2]. Our data also suggest that the main mode of transmission is heterosexual and can be placed in the context of the known increased risk of infection in heterosexual females. [1, 2, 22]. This further highlights the need for thorough screening programs, particularly for females of childbearing age in order to prevent mother-to-child transmission [23].

4.1 New contribution to the literature

The heterogeneity of data collection from different health services dedicated to recently arrived migrants, refugees or asylum seekers and UFM as well as the difficulty of systematizing these data do not allow for robust comparison. Our study is part of the limited recent evidence on this population.

4.2 Limitations

Our study has some limitations. First of all, the limited sample size, especially of HIV-positive subjects, hampered the implementation of further analyses, although all subjects are tested at the CFF with no risk of selection bias due to subjects' characteristics. Some data were not collected. This prevented us from gaining further insights into the study results, especially in terms of pregnancy status. In addition, the specific migratory patterns (with different distribution

of countries of origin) among the reception centers affect the generalization of our findings to other centers, e.g., with dominant migrants from Asia.

5 Conclusions

We found an increase in HIV infection among refugees and asylum seekers in 2022 and 2023 at a local outpatient clinic in Reggio Emilia, particularly among females. This finding is based on a limited number of subjects. However, it suggests that further investigation of HIV infection is needed in the migrant population, in order to assess this trend in other time periods and areas, and possibly reorient the organization of prevention, diagnosis and continuity of care services, especially for migrants in marginalized conditions.

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Data availability Individual data supporting the findings of this study are not publicly available due to security measures to protect personal data of participants. Aggregated data and source code used for the analysis are available from the corresponding author upon reasonable request and with the written permission of the Local Health Authority-IRCCS.

Declarations

Ethics approval and consent to participate The study was conducted in accordance with the Declaration of Helsinki. The study protocol was approved by the Reggio Emilia Ethics Committee (Reference no. 2017/DS/0038). Written informed consent was collected from all study participants.

Consent for publication Not applicable.

Competing interests The authors declare no competing interests.

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