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ORIGINAL PAPER

Fear of Deportation May Limit Legal Immigrants' Access to HIV/AIDS-Related Care: A Survey of Swedish Language School Students in Northern Sweden

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Abstract The increasing rates of HIV infection that are currently being reported in high-income countries can be partly explained by migration from countries with generalized epidemics. Yet, early diagnosis of HIV/AIDS in immigrants remains a challenge. This study investigated factors that might be limiting immigrants' access to HIV/AIDS care. Data from 268 legal immigrant students of two Swedish language schools in Northern Sweden were analyzed using logistic regression. Thirty-seven percent reported reluctance to seek medical attention if they had HIV/AIDS. Fear of deportation emerged as the most important determinant of reluctance to seek care after adjusting for socio-demographic factors, knowledge level, stigmatizing attitudes and fear of disclosure. Targeted interventions should consider the heterogeneity of migrant communities and the complex interplay of various factors which may impede access to HIV-related services. The myth about deportation because of HIV/AIDS should be countered.

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Introduction

Increasing numbers of reported HIV infections are being observed in high-income countries, it is thought due to migration from high-prevalence countries [1–4]. For instance, 43 percent of all new HIV cases reported in the European Union (EU) as acquired heterosexually in 2007 were migrants from high-prevalence countries [1]. However, there is also evidence of immigrants becoming infected after migration to EU countries [4–6]. Similarly, in Sweden, 54 percent of all new HIV infections reported in 2009 were immigrants from countries with generalized epidemics [5, 7].

The current association between migration from high prevalence countries and the epidemiology of HIV has raised concerns in many receiving countries, where governments are responding by adopting laws and policies specifically targeting migrants [2–4, 8]. In Sweden, foreign-born persons from high risk countries are systematically offered a medical screening that also includes voluntary HIV-testing soon after arrival [9]. Furthermore, the Swedish Communicable Disease Act (2004:168), which classifies HIV infection and AIDS disease (HIV/AIDS) as 'public health threats' urges anyone who suspects being infected to consult a physician without delay for diagnosis and treatment, to assist clinicians in contact tracing and to protect others from the risk of infection including disclosing one's HIV status to those at risk [10].

Most investigators acknowledge that care, treatment and prevention of HIV/AIDS in immigrants are influenced by a wide range of social, cultural and political factors [3, 8, 11–15]. Immigrants bring with them not only their

disease profiles, but also their socio-demographic and cultural backgrounds. Thus, the meaning of HIV diagnosis and perceptions of people living with HIV/AIDS (PLWH) are likely to be grounded in the knowledge and experience from their country of birth [13, 15–17]. Additionally, immigrants living with HIV/AIDS may be unlikely to disclose their HIV status if they expect stigma and prejudice from their own/host communities [12, 16, 18–21]. Finally, concerns about deportation following disclosure of HIV status may impede contacts with official government agencies, including health care services [3, 8, 13, 21, 22]. In the present study we aim to assess the relationships between socio-demographic characteristics, HIV knowledge, stigma towards PLWH, fear of disclosure, fear of deportation and willingness to seek care.

Methods

Participants

Over the period October 2007 to September 2008, a total of 592 immigrants were registered as students in the Swedish for Immigrants' (SFI: *Svenska för Invandare*) and Individual Programme's Introductory Course (IVIK: *Individuellt Program Introduktionskurs)* in Umeå, a university town in Northern Sweden with about 111,600 inhabitants, including 9,577 immigrants. We adopted Statistics Sweden's definition of an immigrant, which was: foreign-born, legally admitted, and expected to stay at least 12 months in Sweden [23].

The study followed the guidelines for ethical clearance provided by the Regional Ethical Review Board in Umeå, and its protocol was approved by the Doctoral Education Board (Faculty of Medicine) at Umeå University [24]. Permission was obtained from the principals of the schools before commencement. Participation in the study was voluntary, and written consent of parents/guardians was required for minors.

The schools were visited six times and, of the 592 students formally registered, 214 students were not included for various reasons such as: sick/parental leave, drop-outs, part-time students, or duplicate records. In addition, 69 students could not participate due to lack of interpreters for their languages (SFI: 10/276; IVIK: 23/102) or missing guardian's consent (36/102)—this resulted in a sample of 309 students (SFI: 266/276 and IVIK: 43/102). We could not ascertain the reason for 29 students failing to participate. The analysis was thus based on 268 (96%) of the 280 individuals who completed the questionnaire, which gave an overall response rate of 71 percent (268/378—276 adults and 102 youths).

Data Collection

An original questionnaire developed by the first author, based on other Knowledge, Attitudes and Practices (KAP) surveys on HIV/AIDS, was pilot-tested, revised and then anonymously administered to participants [25–27]. It included 69 items concerning knowledge and beliefs about different aspects of HIV/AIDS, 17 items concerning attitudes towards PLWH and five items regarding fear of disclosure of HIV status (with which they could agree or disagree). Also added were a set of socio-demographic items and a series of items related to HIV/AIDS control in Sweden. The questionnaire was available in Swedish, English or French and language assistance was provided where necessary (in such cases, interpreters read and clarified items in the students' vernacular). Of the 268 respondents, six were interviewed in Amharic, 71 in Arabic, 38 in Badinani, nine in Chinese, three in Dari, 28 in English, 22 in French, three in Japanese, 13 in Persian, 23 in Somali, four in Sorani, 13 in Spanish, eight in Swahili, 23 in Thai and four in Tigrinya.

Measures

In addition to the following socio-demographic variables: geographic origin, age, sex, years of education and having undergone medical screening/health check up or not, other variables included:

1. HIV-knowledge score

For each individual item, correct answers were re-coded into '1', and incorrect or 'do not know' into '0'. A single summary score for each topic was obtained by summing the number of correct responses to correlated items and dividing it by the total number of the items in the topic. An aggregate measure was then computed, summing the values of each of the nine topics, thus yielding a knowledge score for each participant. The score ranged from 0 to 9 with higher scores reflecting higher levels of knowledge. For the purpose of logistic regression analysis, the cumulative scores were further dichotomised into 'low' and 'high' levels of HIV knowledge. Respondents who scored at least six were coded as having 'high/good' knowledge and the remaining were coded as having 'low/poor' knowledge.

2. Stigmatizing attitudes towards PLWH score

Attitudes towards PLWH were assessed through responses to three categories of correlated statements about attitudes towards PLWH. This construct measured "external" or enacted stigma which refers to perceptions, discriminatory attitudes and rejection of persons because of their

confirmed or suspected HIV status [28]. The same process as for HIV knowledge was repeated and an attitude score for each participant was then generated, ranging from 0 to 3. Higher scores reflected lower levels of stigma. For the purpose of logistic regression analysis, the cumulative scores were dichotomized into 'positive' and 'negative' attitudes. Respondents who scored at least two were coded as having a 'positive' attitude (=0) and the remaining as having a 'negative/stigmatizing' attitude (=1).

3. Fear of disclosure of HIV status

A new variable was created, based on respondents' summary scores for answers to five attitudinal items about concerns or feelings of shame associated with disclosure of their own or a relative's HIV status (range 0–1). This construct measured the expression of "internal" or felt stigma which refers to the shame and fear of being stigmatized or discriminated against associated with being HIV positive that affects PLWH and their family members [28]. The variable was further dichotomized by coding. Respondents who scored less than 0.7 overall were classified as 'being afraid of disclosure' (=1) and the remaining respondents as 'not being afraid of disclosure' (=0).

4. Fear of deportation

Participants were asked whether they would fear being deported if they had HIV/AIDS. Participants who answered 'Yes' or 'Don't know' were coded as 'being insecure/afraid of expulsion' (=1) and those who answered 'No' were coded as 'not being afraid of expulsion' (=0).

5. Reluctance to seek HIV/AIDS care

Participants were asked whether they would be afraid to contact health care services if they had HIV/AIDS. Those who answered 'Yes' or 'Don't know' were coded as 'reluctant or uncertain to seek care' (=1), and those who answered 'No' were coded as 'not being reluctant to seek care' (=0).

Analysis

Descriptive statistics were performed to summarise the data. To assess the relationships among variables logistic regression analyses (with 95 percent confidence intervals) were performed using the Statistical Package of Social Science (SPSS Inc, Chicago, IL) for Windows version 15.0. A P-value of <0.05 was considered statistically significant.

The association of key demographic variables with knowledge level was evaluated, treating all demographic characteristics as independent variables. Then, the same process was successively applied to 'stigmatizing attitudes towards PLWH', 'fear of disclosure', 'fear of expulsion' and 'reluctance to seek care'. Thereafter, bivariate and multivariate analyses for the relationships between predictors and the dependent variable of interest, reluctance to seek care were performed.

Results

Sample Characteristics

The demographic characteristics of the 268 respondents are summarised in Table 1. Slightly more than half of participants were male (55%) and the mean age was 30 years for both men and women (range 16–63). Respondents originated from 133 different countries, but the majority (95%) originated from low-income countries. More than 70 percent of participants underwent medical screening that also included HIV testing. We believe that some tested positive, but HIV being such a sensitive issue we avoided to collect information regarding HIV status.

Knowledge About Different Aspects of HIV/AIDS

The mean and median HIV-knowledge scores for the sample were 4.9 and 5.3 respectively (SD = 2.2, maximum = 9). Only 34 percent of respondents were classified as having 'high' knowledge. Common misconceptions are summarized in Table 2.

The majority were aware of effective ways to prevent sexual transmission of HIV, with 76 percent mentioning the use of condoms, 70 percent citing a monogamous sexual relationship, and 62 percent mentioned abstinence. Nevertheless, some respondents wrongly agreed that birth pills (18%), spermicidal substances (16%) and taking a shower after sex (16%) could effectively prevent sexual transmission of HIV.

Nearly eight in ten respondents were aware that an HIV-positive test result means that a person is not only infected with HIV (79%) but also infectious (76%); however, about one in four equated it with imminent death (23%).

Respondents with fewer years of education ($OR_{0–6} = 3.3$, CI: 1.33–8.03, $P = 0.010$; $OR_{7–12} = 2.8$, CI: 1.25–6.46, $P = 0.013$) were more likely to have 'low/poor' HIV knowledge than were persons with more than 12 years. Of all geographic regions, only those from the Middle East (OR = 11.3, CI: 2.58–49.19, $P = 0.001$), were more likely to have 'low/poor' HIV knowledge compared with those from high income countries.

Attitudes Towards Persons Living with HIV/AIDS and Fear of Disclosure

Attitudinal items were grouped in two main categories to study the extent and ways in which stigmatizing attitudes

Table 1 Respondents' socio-demographic characteristics by geographic origin (N = 268)

Characteristic	Asia N = 40 N (%)	Latin America N = 13 N (%)	Middle East N = 133 N (%)	Sub-Saharan Africa N = 68 N (%)	High income countries N = 14 N (%)	Total N = 268 N (%)
Sex						
Male	6 (15)	4 (30.8)	94 (70.7)	37 (54.4)	6 (42.9)	147 (54.9)
Female	34 (85)	9 (69.2)	39 (29.3)	31 (45.6)	8 (57.1)	121 (45.1)
Age						
16–24	2 (5)	4 (30.8)	35 (26.3)	36 (52.9)	4 (28.6)	81 (30.2)
25–35	24 (60)	–	56 (42.1)	15 (22.0)	10 (71.4)	105 (39.2)
35–44	11 (27.5)	8 (61.5)	25 (18.8)	8 (11.8)	–	52 (19.4)
45+	3 (7.5)	1 (7.7)	12 (9)	4 (5.9)	–	20 (7.5)
N/A	–	–	5 (3.8)	5 (7.4)	–	10 (3.7)
Schooling						
0–6 years	12 (30)	1 (7.7)	27 (20.3)	15 (22.1)	–	55 (20.5)
7–12 years	4 (10)	6 (46.1)	53 (39.8)	37 (54.4)	1 (7.1)	101 (37.7)
13+ years	22 (55)	5 (38.5)	46 (34.6)	9 (13.2)	13 (92.9)	95 (35.5)
N/A	2 (5)	1 (7.7)	7 (5.3)	7 (10.3)	–	17 (6.3)
Marital status						
Single	–	4 (30.8)	52 (39.1)	31 (45.6)	2 (14.3)	89 (33.2)
Married/cohabiting	37 (92.5)	7 (53.8)	55 (41.3)	23 (33.8)	12 (85.7)	134 (50)
Divorced/separated/widowed	3 (7.5)	2 (15.4)	21 (15.8)	13 (19.1)	–	39 (14.6)
N/A	–	–	5 (3.8)	1 (1.5)	–	6 (2.2)
Legal status						
Refugees	–	8 (61.5)	98 (73.7)	36 (52.9)	–	140 (52.2)
Students/workers	2 (5)	1 (7.7)	5 (3.8)	–	3 (21.4)	11 (4.1)
Dependent to migrants	9 (22.5)	3 (23.1)	15 (11.3)	24 (35.3)	2 (14.3)	53 (19.8)
Dependent to Swedes	28 (70)	1 (7.7)	3 (2.2)	4 (5.9)	8 (57.1)	44 (16.4)
N/A	1 (2.5)	–	12 (9)	4 (5.9)	1 (7.1)	20 (7.5)
Religion						
Muslim	2 (5)	–	122 (91.7)	26 (38.2)	–	150 (56)
Christian	4 (10)	8 (61.5)	6 (4.5)	41 (60.3)	8 (57.1)	67 (25)
Atheist	11 (27.5)	3 (23.1)	–	1 (1.5)	5 (35.7)	20 (7.5)
Other	23 (57.5)	2 (15.4)	4 (3)	–	–	29 (10.8)
N/A	–	–	1 (0.8)	–	1 (7.2)	2 (0.7)
Health check up						
Yes	23 (57.5)	7 (53.8)	104 (78.2)	53 (77.9)	6 (42.9)	193 (72)
No	15 (37.5)	6 (46.2)	23 (17.3)	8 (11.8)	8 (57.1)	60 (22.4)
N/A	2 (5)	–	6 (4.5)	7 (10.3)	–	15 (5.6)

towards the disease and those affected were expressed (Table 3). Overall, the mean and median attitude scores were 1.4 and 1.5 for stigmatizing attitudes towards PLWH (SD = 0.8, max = 3), and 0.4 (mean = median) for fear of disclosure (SD = 0.3, max = 1) respectively.

Although most respondents claimed that they would care for their sick relatives (69%) and not try to avoid contact with them (63%), merely 29 percent of respondents were classified as having a 'low level' of stigma.

Respondents from the Middle-East (OR = 37.02, CI: 7.40–185.28, $P < 0.001$), those with low level of education ($OR_{0-6} = 5.9$, CI: 2.01–17.39, $P = 0.001$; $OR_{7-12} = 4.2$, CI: 1.58–11.31, $P = 0.004$) were more likely to express stigmatizing attitude towards PLWH than those from high income countries and with high level (>12 years) of education.

Up to eight in 10 (80%) respondents were classified as 'afraid' or 'uncertain' about disclosure of their own, or a relative's, HIV/AIDS status. Female respondents (OR = 4.2, CI: 1.71–10.16, $P = 0.002$), those with low levels ($OR_{0-6} = 13.9$, CI: 3.22–60.44, $P < 0.001$; $OR_{7-12} = 5.1$, CI: 1.78–14.56, $P = 0.002$) of education and those from

Table 2 Respondents' knowledge about some aspects of HIV/AIDS (N = 268)

Topic	Correct answers	Correctly agreed (%)	Incorrect answers	Correctly disagreed (%)
Cause of HIV infection	Virus	210 (78.4)	AIDS	62 (23.1)
			Sins	118 (44.0)
			Bacteria	119 (44.4)
			Curse	139 (51.9)
			Tuberculosis (TB)	132 (49.3)
Activities or conditions that facilitate HIV transmission	Multiple sex partners	224 (83.6)	Misfortune/bad luck	113 (42.2)
	Unprotected sex	220 (82.1)	Sins	117 (43.7)
	Sex between men	208 (77.6)	Taking care of a sick relative	144 (53.7)
	Polygamy	169 (63.1)	Shaking hands	176 (65.7)
	Getting pregnant	91 (34.0)	Donating blood	71 (26.5)
	Receiving blood	217 (81.0)	A bite from an HIV infected person	47 (17.5)
	Sharing needles	229 (85.4)	A bite from an infected mosquito	79 (29.5)
	Sharing a shaver	191 (71.3)	Drinking out of the same glass	130 (48.5)
	Sharing a toothbrush	173 (64.6)	Sharing a swimming pool	138 (51.5)
	Having Syphilis	95 (35.4)	Having Tuberculosis	89 (33.2)
	Having Chlamydia	91 (34.0)		
Body fluids that can transmit HIV	Blood	245 (91.4)	Saliva	82 (30.6)
	Semen	203 (75.7)	Feces	112 (41.8)
	Vaginal fluid	178 (66.4)	Urine	141 (52.6)
	Breast milk	151 (56.3)	Sweats	153 (57.1)
			Tears	170 (63.4)
Anti retroviral therapy	Reduces the amount of HIV in the bloodstream	109 (40.7)	Eliminates completely HIV from the body	150 (56.0)
	Delay the onset of symptoms in infected persons	96 (35.8)	Stops infected persons from passing on HIV to others	89 (33.2)
	Makes HIV manageable like other chronic diseases such as diabetes or high blood pressure	54 (20.1)	Makes HIV manageable the way antibiotics deal with common infections	104 (38.8)
			Stops infected persons from dying	100 (37.3)
HIV and Tuberculosis	People with HIV are at high risk of TB	166 (61.9)	Everyone with TB has HIV infection	158 (59.0)
	People with HIV are more likely to die from TB	157 (58.6)	TB is incurable in persons with dual infection	124 (46.3)

the Middle East (OR = 6.1, CI: 1.36–27.43, $P = 0.018$) were more likely 'to be afraid or uncertain about disclosure of HIV status' than were male respondents and those with high level (>12 years) of education and those from high income countries.

Fear of Deportation and Reluctance to Seek Medical Attention

Nearly half (49%) of the group expressed concerns or insecurity about being deported because of an HIV diagnosis, and almost four in ten respondents (37%) stated that they would be reluctant or uncertain to seek medical attention if they had HIV/AIDS.

Youngest (16–24 years) respondents (OR = 4.9, CI: 1.41–16.99, $P = 0.012$), those from the Middle East (OR = 5.8, CI: 1.35–24.68, $P = 0.018$) and female respondents (OR = 2.2, CI: 1.12–4.16, $P = 0.022$) were more likely to fear or feel ambivalent about deportation because of an HIV/AIDS diagnosis than were the oldest (>45 years), males respondents and those from high income countries.

Predictors of Reluctance to Seek HIV/AIDS Care

Table 4 displays the results of both bivariate and multivariate analyses for the outcome of interest.

Table 3 HIV/AIDS related stigmatizing attitudes as expressed by respondents (N = 268)

	Statement	Agreed N (%)	Disagreed N (%)	No opinion N (%)
Stigmatizing attitudes towards people living with HIV/AIDS	*Avoidance/rejection of PLHA:*			
	Would try to avoid contact with a related PLHA	47 (17.5)	170 (63.4)	51 (19.1)
	Would be willing to take care of a related PLHA	184 (68.7)	30 (11.2)	54 (20.1)
	Would feel comfortable to be seen as relative of a PLHA	126 (47)	70 (26.1)	72 (26.9)
	Would feel comfortable to share a toilet seat	124 (46.3)	71 (26.5)	73 (27.2)
	Would feel comfortable eating from the same plate	106 (39.6)	97 (36.2)	65 (24.3)
	Will not allow social visits	53 (19.8)	153 (57.1)	62 (23.1)
	Violation of PLHAs' rights:			
	They should not work	53 (19.8)	159 (59.3)	56 (20.9)
	They should not go to school	53 (19.8)	152 (56.7)	63 (23.5)
	They should not get married	117 (43.7)	82 (30.6)	69 (25.7)
	They should not have children	147 (54.9)	65 (24.2)	56 (20.9)
	They must refrain from sexual intercourse	166 (61.9)	55 (20.5)	47 (17.6)
	Their names should be made public	80 (29.9)	107 (39.9)	81 (30.2)
	Moral judgments/attribution of blame to PLHA:			
	It is their own fault that they have the disease	67 (25.0)	131 (48.9)	70 (26.2)
	They were punished by God because of their sins	53 (19.8)	132 (49.3)	83 (31.0)
	They were promiscuous	43 (16.0)	127 (47.4)	98 (36.5)
	They made a conscious choice to become infected	39 (14.6)	147 (54.9)	82 (30.6)
	They are innocent victims, it is fate that decides	91 (34.0)	75 (28.0)	102 (38.0)
Fear of disclosure of HIV status	Would feel ashamed and stop visiting friends if they had HIV/AIDS	93 (34.7)	101 (37.7)	74 (27.6)
	Would be afraid that others may keep physical distance if they discovered HIV status	129 (48.1)	66 (24.6)	73 (27.3)
	Would be worried about others finding out they were on treatment	88 (32.8)	115 (42.9)	65 (24.3)
	Would keep secret about a relative living with HIV/AIDS	121 (45.1)	81 (30.2)	66 (24.6)
	Feel ashamed about a relative with a HIV/AIDS diagnosis	47 (17.5)	154 (57.5)	67 (25.0)

At the bivariate level, seven of the nine predictor variables were significant. Youngest respondents were more likely to be reluctant to seek care than were oldest (>45 years). Respondents with lowest education (0–6 years) and those from the Middle East were also more likely to be reluctant to seek care than were those with more than 6 years of education and those from high income countries. In addition, those who had poor HIV knowledge and those who expressed stigmatizing attitude towards PLWH were more likely to be reluctant to seek care than were those who had good knowledge and those who expressed tolerant attitudes. Finally, those who were afraid of disclosure and deportation were also more likely to be reluctant to seek care than were those who were not afraid. However, at the multivariate level, only respondents with lowest education (≤6 years), those who did not undergo medical screening and those who feared disclosure or deportation were likely to be reluctant to seek medical attention.

Discussion

Almost 40 percent of our respondents reported that they would be reluctant to seek medical attention if they had HIV/AIDS. Our respondents were neither asylum seekers nor undocumented migrants, but despite their 'settled' immigration status, the key factor associated with their reluctance to seek care was fear of deportation. For successful interventions, there is a need to better understand underlying factors that are critical for migrants' decisions to seek care. In the current study, we have made some tentative assumptions regarding the role of certain of these factors on willingness to seek care

Low education and being from the Middle East were associated with a 'low level' of HIV knowledge. These findings first suggest a lack of access or poor understanding of available information for the low educated. Secondly, public education campaigns are not adequately targeting migrants from the Middle East in either their native

Table 4 Predictors of fear/reluctance to seek medical attention among respondents (N = 268)

Predictor variables	Fear of seeking medical attention Crude odds ratio (CI)	Fear of seeking medical attention Adjusted odds ratio (CI)
Sex		
Women	0.63 (0.38–1.40)	0.58 (0.26–1.31)
Men	1	1
Age (years)		
16–24	4.53 (1.23–16.69)*	4.74 (0.83–27.19)
25–34	3.35 (0.92–12.16)	4.42 (0.81–23.97)
35–44	2.75 (0.71–10.70)	2.61 (0.43–15.84)
45+	1	1
Education (years)		
0–6	4.20 (2.07–8.52)***	3.29 (1.19–9.06)*
7–12	1.62 (0.88–2.98)	0.88 (0.37–2.20)
13+	1	1
Geographic origin		
Middle East	16.81 (2.14–132.24)**	3.88 (0.31–48.21)
Asia	2.76 (0.31–24.67)	0.94 (0.07–12.07)
Latin America	3.90 (0.35–43.36)	1.31 (0.70–24.33)
Sub Saharan Africa	3.37 (0.41–28)	1.98 (0.15–26.83)
High-income countries	1	1
Health check up		
No	1.23 (0.68–2.22)	2.54 (1.05–6.17)*
Yes	1	1
Knowledge		
Poor/low	4.68 (2.50–8.77)***	1.81 (0.75–4.37)
High/good	1	1
Stigmatizing attitude		
Yes	8.02 (3.66–17.58)***	2.53 (0.88–7.30)
No	1	1
Fear of disclosure		
Yes	14.49 (4.39–47.86)***	5.45 (1.26–23.60)*
No	1	1
Fear of deportation		
Yes	8.16 (4.57–14.59)***	6.62 (3.08–14.23)***
No	1	1

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$

countries or Sweden due to low prevalence as compared to other regions/subgroups where the epidemic is more prevalent [2, 21]. These findings stress the need to adjust HIV education and preventative efforts to include low-educated immigrants and those from countries with low HIV prevalence, as their vulnerability to HIV acquisition might also increase as a result of the immigration process [2, 4, 8, 11, 15, 29]. The positive relationship between higher level of HIV knowledge and willingness to seek care at the bivariate level may be the result of a greater understanding of the disease, thereby the benefits of seeking care.

It also appears that stigmatizing attitudes towards PLWH were positively associated with being from the Middle East. This could reflect the fact that migrants from regions, where HIV/AIDS is common are more familiar with both the disease and PLWH, and thus more tolerant than those from the Middle East where the disease is still a taboo and mainly concentrated in groups of people already stigmatized. Furthermore, low educated (≤12 years) respondents who were also found to have poor knowledge may be likely to hold misconceptions about different aspects of HIV/AIDS. This could result in more fear of transmission through casual contacts and more anxiety about their ability to protect themselves, and thus more stigmatizing attitudes towards PLWH [19, 30]. The positive relationship between stigmatizing attitudes and reluctance to seek care at the bivariate level suggests that those who hold negative attitude towards PLWH are also likely to have a negative attitude towards the disease itself if they were affected. These findings support other studies that underscore the role of education and increased understanding of HIV in tackling HIV-related stigma as well as the importance of dealing with it in the scheme of HIV/AIDS care and prevention efforts targeting immigrants [2, 13, 19, 22, 31].

Fear of disclosure which was more common among the less educated and those from the Middle East both who were found to have low level of HIV knowledge and to hold stigmatizing attitudes towards PLWH calls for knowledge-enhancing programmes targeting these groups to change their attitudes. The positive relationships between fear of disclosure and reluctance to seek care at both bivariate and multivariate levels suggest that tackling this fear could improve care seeking behaviour. These findings indicate that in a social context where HIV remains misunderstood, interventions promoting knowledge and correcting misconceptions about different aspects of HIV may reduce stigma and encourage disclosure, which is important for HIV care and prevention activities [14, 18, 19].

Furthermore, female respondents were more likely to fear disclosure of their HIV status and deportation because of HIV/AIDS than their male counterparts. In most of the respondents' countries of origin, gender norms and social attitudes towards HIV and AIDS make women more vulnerable to the negative consequences of HIV and AIDS, in both familial and societal settings, and thus more reluctant to disclose and to return home [2, 16, 17, 19, 20, 32]—this calls for gender-specific interventions. However, fear of deportation which was common among youngest respondents and those from the Middle East might as well expresse concerns about a better future than HIV itself since the majority in this group originated from countries in conflict.

The most surprising findings to emerge from the present study is the strong association between fear of deportation and reluctance to seek care among this sample of 'settled' immigrants, which does not support most of the previous research findings [3, 8, 13, 16, 21, 22]. This urges policy makers to avoid conflating migration and HIV/AIDS control issues as it can undermine public health goals by inhibiting the very people at highest risk for HIV from seeking care [8, 21, 33]. The association between not being screened and being reluctant to seek care is an indication that contact with healthcare professionals during medical screening results in improved awareness about the benefit of seeking care.

Our findings also underscore the role of multiple factors on willingness to seek HIV-related care among this sample of settled migrants. These factors are likely to intervene through a web of causation, possibly explaining why some factors did not achieve significance at the multivariate level. Although much of the previous research has not supported fear of deportation as a predictor of health seeking behavior for legal migrants, we presume that its impact may be mediated by a series of intervening factors that are linked to each other. In fact, fear of deportation may be operating through a cognitive appraisal of negative consequences following disclosure of HIV that may be based on perceived social attitudes towards migrants in general and persons living with HIV/AIDS in particular, and individual's knowledge about HIV/AIDS, which, in turn may be influenced by socio-demographic characteristics [8, 11, 12, 15, 17, 19, 21, 30, 34, 35]. Further examination of the relationships among predictors is warranted.

There are a number of limitations in this study: First, it cannot inform us about asylum seekers and undocumented migrants whose fear of deportation might be even greater than what is reported here. Second, although great efforts were made to overcome language, legal and educational barriers, speakers of minority languages and some younger respondents could not be included due to lack of interpreters. Third, the questionnaire used was primarily developed for the purpose of this particular study and might need further modification for use with other migrant groups. Fourth, duration of stay and HIV status were not obtainable for most respondents in this study, so their effects on unwillingness to seek care are unknown. Finally, the questions were posed in hypothetical terms rather than actual situations, which may be quite different since people often answer in terms of what they think is the 'correct answer' and may actually act otherwise. Despite the above-mentioned limitations, one of the main strengths of this study is that we could include immigrants from all regions of the world, particularly those with the highest rates of emigration, which may make our findings applicable to other high-income countries with a similar influx of immigrants from the same regions.

Conclusions

The increase in reported HIV infections among immigrant communities in high-income countries raises concerns about the need for targeted interventions. Policy makers and health professionals need to take into account the wide range and complexity of different factors that influence health-seeking behaviours. The myths about HIV, as well as fear of deportation, and gender role issues, need to be addressed. Meanwhile more health promotion work is needed to reduce the stigma, empower women and raise awareness about the benefits of seeking care.

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