Knowledge, attitudes and practices towards HIV/AIDS among Iranian prisoners in Mazandaran province in the south-coast area of the Caspian Sea

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المعارف والمواقف والممارسات تجاه مرض الإيدز والعدوى بفيروسه بين السجناء الإيرانيين في مقاطعة مازاندران الواقعة على الساحل الجنوبي لبحر قزوين

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الخلاصة: تتركز العدوى بفيروس الإيدز في جمهورية إيران الإسلامية أساساً بين معاقري المخدرات حقناً. وتستقصي هذه الدراسة المعارف، والمواقف، والممارسات تجاه الوقاية من مرض الإيدز والعدوى بفيروسه في عينة عشوائية من السجناء في خمسة سجون في مقاطعة مازاندران الواقعة على الساحل الجنوبي لبحر قزوين. من بين 1760 سجيناً في عمر 18–65 سنة أكملوا الاستبيان، بلغ متوسط أعمارهم 30.1 سنة (الانحراف المعياري 8.1) وبلغ مجال أعمارهم (من 18 حتى 59 سنة)؛ وكان ٪95.8 منهم ذكوراً. كانت معارف المستجيبين حول الإيدز والعدوى بفيروسه جيدة في المتوسط بدرجة ما، وتراوحت النسب المئوية للإجابات الصحيحة بين ٪11.9 و٪85.9. إلا أن العديد منهم كان لديهم أفكار خاطئة من قبيل «أن مرض الإيدز والعدوى بفيروسه لا يؤثران على إيران»، و«أنني لن أصاب بمرض الإيدز أو العدوى بفيروسه تحت أي ظروف»، ووافق ٪63.6 على أن عدم الالتزام الديني والأخلاقي يؤدي إلى نشر العدوى بالإيدز. وتَخْلُصُ الدراسة إلى أن هناك حاجة لجهود الوقاية من الإيدز والعدوى بفيروسه لدى السجناء في مقاطعة مازاندران.

ABSTRACT HIV infection in the Islamic Republic of Iran is concentrated primarily among intravenous drug users. This study investigated the knowledge, attitudes and practices towards HIV/AIDS prevention of a random sample of prisoners in 5 prisons in Mazandaran province. Of 1760 individuals aged 18–65 years old completing the questionnaire, the mean age was 30.1 (SD 8.1) years (range 18 to 59 years); 95.8% were male. Respondents had an average to fairly good knowledge about HIV/AIDS, with the percentages answering correctly ranging from 11.9% to 85.9%. However many had the misconception that "HIV/AIDS does not influence Iran" and "I will not be infected with HIV/AIDS under any conditions" and 63.6% agreed that lack of religious and moral commitment could spread AIDS infection. HIV/AIDS prevention efforts are needed for prisoners in Mazandaran province.

Connaissances, attitudes et pratiques concernant le VIH/sida chez les prisonniers iraniens de la province de Mazandaran sur la côte sud de la mer Caspienne

RÉSUMÉ L'infection à VIH en République islamique d'Iran est principalement concentrée chez les usagers de drogues injectables. La présente étude a évalué les connaissances, attitudes et pratiques concernant la prévention du VIH/sida chez des prisonniers sélectionnés aléatoirement dans cinq établissements pénitentiaires de la province de Mazandaran. Au total, 1760 personnes, âgées de 18 à 65 ans, ont rempli le questionnaire. L'âge moyen était 30,1 ans (E.T. 8,1) (extrêmes 18-59 ans) ; 95,8 % étaient de sexe masculin. Les répondants possédaient un niveau de connaissances moyen à satisfaisant concernant le VIH/sida. Les pourcentages de réponses correctes allaient de 11,9 % à 85,9 %. Toutefois, ils étaient nombreux à avoir des conceptions erronées sur le sujet, par exemple en pensant que « le VIH/sida n'avait pas d'impact sur l'Iran » et « qu'ils ne seraient jamais infectés par le VIH/sida ». De plus, 63,6 % étaient d'accord pour affirmer qu'un engagement moral et religieux défaillant pouvait contribuer à propager l'infection à VIH. Des mesures de prévention contre le VIH/sida sont nécessaires pour les prisonniers dans la province de Mazandaran.

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Introduction

Acquired immunodeficiency syndrome (AIDS) caused by the human immunodeficiency virus (HIV) has profoundly changed medical practice, contemporary society and public health initiatives worldwide [1]. Moreover, with no treatment or cure in sight, the disease continues to spread at an alarming rate [2]. Globally it has been estimated that 33 million people are living with HIV and 2 million people died of AIDS-related illnesses in 2007 [3].

An official report by the Iranian Ministry of Health in 2009 indicated that there were 20 130 HIV-positive individuals and 2097 AIDS cases in the country [4]. Among the individuals with HIV/AIDS, 69.8% acquired the disease through intravenous drug use, 8.5% through sexual infection, 1.2% through blood transfusion, 0.6% as newborns from infected mothers and 19.9% from unknown causes. These numbers, however, are considered inaccurate due to the inadequacy of the registration system and because people with sexually transmitted diseases do not generally attend health centres. According to the information provided by the Iranian Ministry of Health, HIV/AIDS is considered to be in its beginning phases.

Based on HIV/AIDS distribution models in human society, many epidemiologists believe that prevention of high-risk behaviours, including unsafe sexual activities and intravenous drug use, is critical for the reduction of AIDS-associated morbidity and mortality [5–7]. Prevention of high-risk behaviours in human society is related to increased knowledge and improved attitudes and beliefs concerning HIV/AIDS [8–11]. The World Health Organization (WHO) has advocated an important role for education in spreading knowledge about HIV/AIDS transmission [12].

The development and implementation of HIV/AIDS prevention programmes has been relatively slow in prisons in the area around the southern coast of the Caspian Sea [13]. As in other countries [14–16], inmates may fear that, by expressing an open interest in learning about HIV/AIDS prevention strategies or requesting testing, they are openly admitting to engaging in homosexual activities or using drugs, which may cause others to view them in a negative light [17–19]. This paper reports on data derived from an investigation of the knowledge, attitudes and practices towards HIV/AIDS prevention among prisoners in Mazandaran province, Islamic Republic of Iran.

Methods

Study design

This was a cross-sectional descriptive study investigating the state of knowledge, attitudes and practices towards HIV/AIDS of Iranian prisoners living in prisons along the southern coast of the Caspian Sea between 2006 and 2008. The study protocol was approved by the ethics review committees of 5 institutions to which the authors are affiliated, and all participants gave written informed consent.

Participants

In view of the lack of previous statistical data on acceptable knowledge about AIDS among prisoners in Mazandaran province, we estimated that 400 subjects were required for each cluster to achieve a suitable sample size. A random sample of 2000 individuals aged between 18 and 65 years old who were incarcerated in 5 prisons in 5 cities in Mazandaran province (Amole, Babol, Behshahr, Ghaemshahr and Sari) were selected and invited to participate in this study. Every prisoner had the same probability of being sampled.

Data collection

Data for the main study was collected by a group of trained interviewers in face-to-face interviews. Prisoners who agreed to participate were given a 4-page self-administered questionnaire. Those who had difficulty in reading the questionnaire were provided with assistance.

Questionnaire

The questionnaire used in this survey was adopted from the knowledge, attitudes, beliefs and practices survey of the WHO HIV/AIDS programme [20] and the previous literature [2,21–23]. However, some items related to sexual habits were modified in to suit Iranian culture and norms. The questionnaire consisted of 44 questions in 5 broad sections:

- Sociodemographic information: age, sex, marital status, educational level, employment status, self-reported economic status, number of family members, and type of criminal behaviour (8 items).
- Questions about HIV/AIDS-related knowledge covering 4 main topics: general information, diagnosis, risk of HIV/AIDS transmission and treatment (25 items).
- Statements about the individual's attitudes towards HIV/AIDS, covering social and cultural issues (6 items).
- Questions about the individual's participation in practices concerning HIV/AIDS prevention (2 items).
- Questions about the individual's source of information on HIV/AIDS and information needs (3 items).

The response categories for the section on knowledge were in a yes/no/I don't know format, and items on attitudes were assessed using a 5-point Likert scale ranging from strongly agree to strongly disagree.

Table 1 Respondents' characteristics (n = 1760)

Characteristic	No.	%
Age (years)		
≤ 24	442	25.1
25–34	846	48.1
35–44	360	20.5
≥ 45	112	6.4
Sex		
Male	1686	95.8
Female	74	4.2
Marital status		
Single	640	36.4
Married	1054	59.9
Widowed	66	3.8
Education level		
Illiterate	582	33.1
Primary	392	22.3
Secondary	632	35.9
Higher education	154	8.8
Employment status[a]		
Employed	846	48.1
Housewife	74	4.2
Student	60	3.4
Unemployed	780	44.3
Family's total annual income level[a]		
Low	688	39.1
Average	1002	56.9
High	70	4.0
Household size (no. of people)[b]		
1–3	534	30.3
4–5	766	43.5
≥ 6	460	26.1
Reason for imprisonment		
Drug abuse/addiction	594	33.8
Theft/ethical	630	35.8
Financial/penal	536	30.5

[a]Participants' self-reported estimates; [b]Before imprisonment.

Panels of 4 health professionals from 4 institutions (Baqhyatallah University of Medical Sciences, Iranian Institute for Health Sciences Research, Mazandaran University of Medical Sciences and Islamic Azad University) examined and validated the questionnaire. Following approval, the questionnaire was pre-tested on a sample of 75 participants (15 individuals per prison). Alpha coefficients for reliability and internal consistency of the questions were 0.82 and 0.68 for knowledge and attitudes respectively.

Statistical analysis

Descriptive statistics—percentages, mean and standard deviation (SD)—were used to report frequencies. Chi-squared analysis was used to test for the associations of knowledge, attitudes and practices with age, sex, educational level, marital status, employment status, total family income level, number of those living at home and type of criminal behaviour.

Results

Respondents' characteristics

Of the 2000 eligible participants, 1760 (88.0%) completed the questionnaire. The characteristics of the respondents are shown in Table 1. The mean age of the respondents was 30.1 (SD 8.1) years (range 18 to 59 years); 95.8% were male, 59.9% were married and 91.2% had received secondary education or lower. Most respondents (96.0%) identified themselves as having low or intermediate income and 44.3% were unemployed before imprisonment. One-third (33.8%) had been imprisoned for drug abuse/addiction.

Respondents' knowledge

On most items, respondents had an average to fairly good knowledge about HIV/AIDS, with the percentages answering correctly ranging from 11.9% to 85.9% (Table 2). The great majority knew that AIDS was caused by a virus (81.6%), that HIV/AIDS can be transmitted by sharing a razor blade with an infected person (85.8%) or using a needle previously used by an infected person (85.2%) and that HIV/AIDS can be transmitted from an infected person to his or her partner during sexual intercourse (85.9%). However, over 30% of respondents thought that AIDS was not a contagious disease (34.8%), that urine, X-ray, blood and biochemistry tests were used to check for the HIV virus in the blood (56.9%), that HIV virus can be transmitted through the bite of a mosquito (49.2%) or by using an infected person's belongings, such as clothes, combs, underwear and towels (35.9%).

On 19 of 25 knowledge items, HIV/AIDS related knowledge was significantly associated with age group; the

Table 2 **Respondents' knowledge about HIV/AIDS (*n* = 1760)**

Knowledge item	Correct		Incorrect		Don't know	
	No.	%	No.	%	No.	%
General knowledge						
A virus causes AIDS	1436	81.6	166	9.4	158	9.0
AIDS is an infectious disease	1006	57.2	612	34.8	142	8.1
AIDS is a hereditary disease	1218	69.2	362	20.6	180	10.2
AIDS is mostly seen in developing or undeveloped countries, unable to afford to care for infected people	1132	64.3	230	13.1	398	22.6
AIDS is not a serious disease. It is a simple disease like the common cold	1422	80.8	226	12.8	112	6.4
The appearance of HIV carriers does not differ from that of the normal population	1034	58.8	546	31.0	180	10.2
Resistance to other diseases in an individual with AIDS is rather low	1336	75.9	232	13.2	192	10.9
Diagnosis						
A person infected with HIV is usually diagnosed with symptoms of the disease	1040	59.1	504	28.6	216	12.3
An ELISA test is used to check for the HIV virus in the blood	848	48.2	184	10.5	728	41.4
Urine, X-ray, total blood count and biochemistry analyses are used to check for the HIV virus in the blood	210	11.9	1002	56.9	548	31.1
Risk of transmission						
Sharing public toilets and swimming pools with an infected person	946	53.8	542	30.8	272	15.5
Using an infected person's belongings such as clothes, comb, underwear and towel	936	53.2	632	35.9	192	10.9
Sharing a razor blade with an infected person	1510	85.8	114	6.5	136	7.7
Sharing an injection needle or surgical instrument previously used by an infected person	1500	85.2	140	8.0	120	6.8
Sharing the food utensils of an infected person	872	49.5	620	35.2	268	15.2
Touching an infected person, such as hugging, holding and shaking hands	1350	76.7	264	15.0	146	8.3
From a mosquito bite	586	33.3	866	49.2	308	17.5
Donating blood, organs or tissue of an infected person to another person	1432	81.4	172	9.8	156	8.9
From an infected pregnant woman to her unborn baby	1410	80.1	168	9.5	182	10.3
From an infected person to his/her partner during sexual intercourse	1512	85.9	130	7.4	118	6.7
From to an infected person who coughs or spits	930	52.8	570	32.4	260	14.8
From the urine, tears, mucus or nasal fluid of an infected person	748	42.5	674	38.3	338	19.2
From the breast milk of an infected person	1154	65.6	316	18.0	290	16.5
Treatment						
There is an active treatment for AIDS	1134	64.4	362	20.6	264	15.0
There is a vaccine for AIDS	1084	61.6	462	26.3	214	12.2

percentage of respondents aged 25–34 years with correct answers on all items was higher than that of respondents aged ≥ 45 years. On 9 items, the percentage of males responding correctly was significantly higher than that of females. On 24 items, respondents with a higher level of education were significantly more knowledgeable than those with a lower level of education. There were also significant differences relative to other demographic characteristics on most

Table 3 Respondents' attitudes towards HIV/AIDS (n = 1760)

Attitudes item	Strongly agree		Agree		Neither agree nor disagree		Disagree		Strongly disagree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Lack of religious and moral commitment could spread AIDS infection	670	38.1	448	25.5	304	17.3	244	13.9	94	5.3
AIDS is a punishment from God	236	13.4	162	9.2	390	22.2	536	30.5	436	24.8
AIDS does not influence Iran	222	12.6	380	21.6	514	29.2	376	21.4	268	15.2
Married couples do not contract AIDS	280	15.9	276	15.7	384	21.8	524	29.8	296	16.8
I will not be infected with AIDS	322	18.3	388	22.0	406	23.1	390	22.2	254	14.4
You cannot be infected with HIV/AIDS if you engage in sport and are well-nourished	226	12.8	124	7.0	318	18.1	638	36.3	454	25.8

knowledge items (data not shown, but available from the corresponding author).

Respondents' attitudes

The data concerning respondents' attitudes are listed in Table 3. The majority of respondents had negative attitudes toward HIV/AIDS. There were also a number of misconceptions: 34.2% of the respondents agreed (i.e. answered agree/strongly agree) with the statement "HIV/AIDS does not influence Iran", 40.3% agreed that "I will not be infected with HIV/AIDS under any condition" and 63.6% agreed that "lack of religious and moral commitments could cause HIV/AIDS infection". Overall, there were significant differences for almost all attitude items according to the demographic characteristics of the respondents (data not shown, but available from the corresponding author).

Table 4 Respondents' source of information about HIV/AIDS and their informational needs (n = 1760)

Item	No.	%
Level of information about HIV/AIDS[a]		
Excellent	244	13.9
Good	538	30.6
Average	638	36.3
Low	214	12.2
Very low	126	7.2
Source of information about HIV/AID		
Television	958	50.4
Newspapers	468	26.6
Friends	262	14.9
Books	182	10.3
Radio	112	6.4
Family	82	4.7
Information needs		
Transmission modes	722	41.1
General information	632	35.9
Prevention	574	32.6
Other	60	3.4

[a] *Participants' self-report.*

Respondents' practices

Of the respondents, 73.4% (n = 1292) reported that their sexual practices were safe, and based on religious and moral commitments to prevent HIV/AIDS. In addition, 92.7% (n = 1632) would agree to undergo a blood test to check for the HIV virus. Overall, there were significant demographic differences in responses to both practices items, except for marital status and number of family members (data not shown, but available from the corresponding author).

Respondents' source of information and their informational needs

As shown in Table 4, the majority of the respondents indicated that mass media (radio, television, and newspapers) were their major source of their information about HIV/AIDS (83.4%). Many, however, indicated that they needed more general information about HIV/AIDS (35.9%), as well as information on prevention (32.6%) and modes of transmission (41.1%).

Discussion

The prevention of HIV infection remains an important task for public health professionals. Understanding the dynamics of HIV infection within a

country, how it changes over time and who is currently at greatest risk is essential for guiding decisions about effective prevention programmes [24]. HIV infection in the Islamic Republic of Iran is concentrated primarily among intravenous drug users, suggesting an urgent need for prevention approaches targeted to this group [22]. Prisons and prison inmates are important targets for HIV/AIDS prevention interventions. Inmates often have a history of high-risk behaviour that place them at risk of contracting HIV/AIDS, and rates of HIV/AIDS tend to be much higher in this population. The present study therefore investigated the knowledge, attitudes and practices towards HIV/AIDS prevention among a sample of Iranian prisoners.

Our findings indicated that prisoners in Mazandaran province demonstrated average to fairly good knowledge about HIV/AIDS. However, misconceptions were present. For example, 34.8% of respondents believed that HIV/AIDS was not an infectious disease, 49.2% that mosquitoes were a vector of the virus and 31.0% that HIV carriers differed in appearance from non-infected individuals. In addition, the respondents showed limited knowledge about how HIV and AIDS can be transmitted. For example, only 52.8% said that AIDS could not be transmitted through coughing or spitting by an infected person. Overall, those who had higher levels of education and young adults (aged 25–34 years) were more knowledgeable about HIV/AIDS. Similar findings have been reported in other countries [9,10].

A study among prisoners in Lagos, Nigeria, showed that almost all of them had heard of AIDS, although only a few had seen or known a person with AIDS [25]. Although many knew the correct modes of HIV transmission, many indulged in high-risk behaviours. The study concluded that well designed information, education and communication programmes on HIV/AIDS were urgently needed for prisoners in low-income countries to work towards reducing the risk of HIV/AIDS transmission among prison inmates [25]. It has been argued that HIV/AIDS education interventions for male prisoners reduce the rate of high-risk behaviours [26]. Since the level of general education among our Iranian prisoners was only average, health education interventions may help to improve safe practices, especially as many of the respondents had been involved in high-risk behaviours (over a quarter had unsafe sex practices and one-third were imprisoned for drug abuse/addiction).

Most respondents had erroneous attitudes. For example many had the misconception that "HIV/AIDS does not influence Iran" and "I will not be infected with HIV/AIDS under any conditions". Several studies have shown that people with good knowledge about HIV/AIDS become more tolerant of people with HIV/AIDS [27]. Also 63.6% of the respondent agreed that "lack of religious and moral commitments could cause HIV/AIDS infection". Further investigation of the role of religion in HIV/AIDS prevention is needed, especially in countries such as Islamic Republic of Iran where religion has an important role in everyday life [22].

The majority of respondents (83.4%) indicated that their main source of information about HIV/AIDS was the mass media, especially television, showing that these methods have succeeded in raising AIDS awareness in Islamic Republic of Iran. In contrast, only 4.7% said that their main source of information was their family. A recent study in the Islamic Republic of Iran indicated that many people could not correctly identify the main message of anti-HIV/AIDS campaigns [28].

Our findings indicate the urgent need for HIV/AIDS prevention efforts for prisoners throughout Mazandaran province to increase their knowledge of HIV/AIDS, and to improve their attitudes and practices concerning this disease.

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