

Prevalence of HIV/AIDS among Iranian Prisoners: A Review Article

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Review Article

Abstract

Background: Worldwide, prisoners are more at risk of being infected by human immunodeficiency virus (HIV) as well as hepatitis C and B in comparison with other risk groups. The combination of acquired immune deficiency syndrome (AIDS), addiction and prison are factors that threaten the health of our society. Influence of risky behaviors is so common on transmission of AIDS into prisoners' bodies. This study used available information and reports to investigate the prevalence of HIV in Iranian prisons.

Methods: The following review of documents available in national and foreign databases, a total of 26 studies were investigated and required information was extracted from both the full papers and abstracts.

Findings: The selected studies differed methodologically in their sampling method and data collection tools. Within the 26 studies analyzed, there was a combined study cohort of 39707 people in whom HIV prevalence varied between 0% and 24.40%.

Conclusion: In this study, HIV prevalence ranged widely among the prisoners, and in most of these studies, the rate in Iran was higher than that of other countries. The prevalence of disease was highest among intravenous drug users. Unless proper preventive and control plans among risk groups such as prisoners are not implemented in a timely and suitable manner, the risk of infection in the broader society will increase.

Keywords: HIV; AIDS; Prisoners; Iran; Prevalence; Incidence

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Introduction

Prisoners worldwide are subject to infection by human immunodeficiency virus (HIV), hepatitis C and many other diseases with those who use intravenous drugs at greater risk.^{1,2}

Acquired immune deficiency syndrome (AIDS), addiction, and prison are a combination of risk factors that threaten the health of society. These risk factors contribute to the spread of AIDS among prisoners.^{1,3} Not only are prisoners subject to HIV infection but they are also considered as a source for spreading the virus into society.⁴ The prevalence HIV in prisons varies in different countries with this being 0-2% in Australia, 2% in America, 11% in Latin American countries, 10% in the Middle East, and 20% in African desert areas.^{5,6}

HIV infection prevalence in prisons is usually several times higher than its prevalence in society;^{7,8} for example, the rate is 4-6 times higher among American prisoners and 10 times higher in France compared to the common population,⁹ while this rate in Iranian prisons is 8 times that of the general population.² In recent years, in the Middle East area and along the Eastern Mediterranean Sea, including Iran, the number of intravenous drug addicts with HIV has increased and recognized cases in Iran include those who spend time in prisons and re-education centers.¹⁰ In 1990, a HIV epidemic was reported in some Iranian prisons and its main cause was insecure use of intravenous drugs in prisons. This resulted in planning and implementing plans for harm-reduction such as methadone maintenance treatment (MMT) and distributing disposable syringes among the prisons; this resulted in about 25400 prisoners participating in MMT programs by 2009.^{11,12}

The studies reviewed show that affliction by infections such as HIV, venereal diseases and hepatitis in prisons rises daily, and there is a universal need for an integrated plan to reduce the transfer risk of these diseases. Many believe prisons are appropriate places for preventive interventions from HIV infection.¹³ There have been diverse studies conducted in Iran assessing HIV prevalence among prisoners. Yet it seems this diversity and dispersal has resulted in a lack of planning. This study aimed to gather information from published reports to generate a

broader view about HIV prevalence in Iranian prisons and to provide valuable information that can guide policy makers and planners in this area.

Methods

Searching guidelines

In the study, the first step involved gathering published national documents by searching the academic Jihad database, Magiran and Iran Medex database, using keywords of "HIV," "AIDS," and "prisoners" with related cases then extracted. All documents, articles, and abstracts related to the research subject were gathered searching PubMed, ISI web of knowledge, Scopus and Science Direct databases with keywords HIV and AIDS and prison along with operator "AND" and keywords, Prisoner and Iran and their full texts were obtained. In addition, we used resources from the documents and experts' and professionals' opinions in the field of HIV/AIDS to access related titles. After extracting the documents, information of articles, abstract of articles in congresses and reports of research plans were all entered into the software program Endnote and repeated cases were omitted. In the next step, unrelated studies were deleted by reviewing titles and then the relatedness of remaining studies were assured, and unrelated cases were omitted by referring to the summary of the articles and their full text (Figure 1).

Quality assessment and information extraction

Following this data entry process, a checklist comprising six questions was used to evaluate quality of information and extract it, there were two questions about the research object, one about the place of research, one about the method of sampling and the remaining two questions related to the method of gathering information. Quality of information was evaluated by investigating the full text of the documents with the studies allocated into three groups of high, medium, and low quality based on quality score. Next, information related to research subject, including the year the study was conducted; statistical population, sample volume, sampling method, HIV prevalence, and sexually transmitted infections (STIs) were obtained by referring to the full text of articles.

Results

From 370 papers addressing different stages of

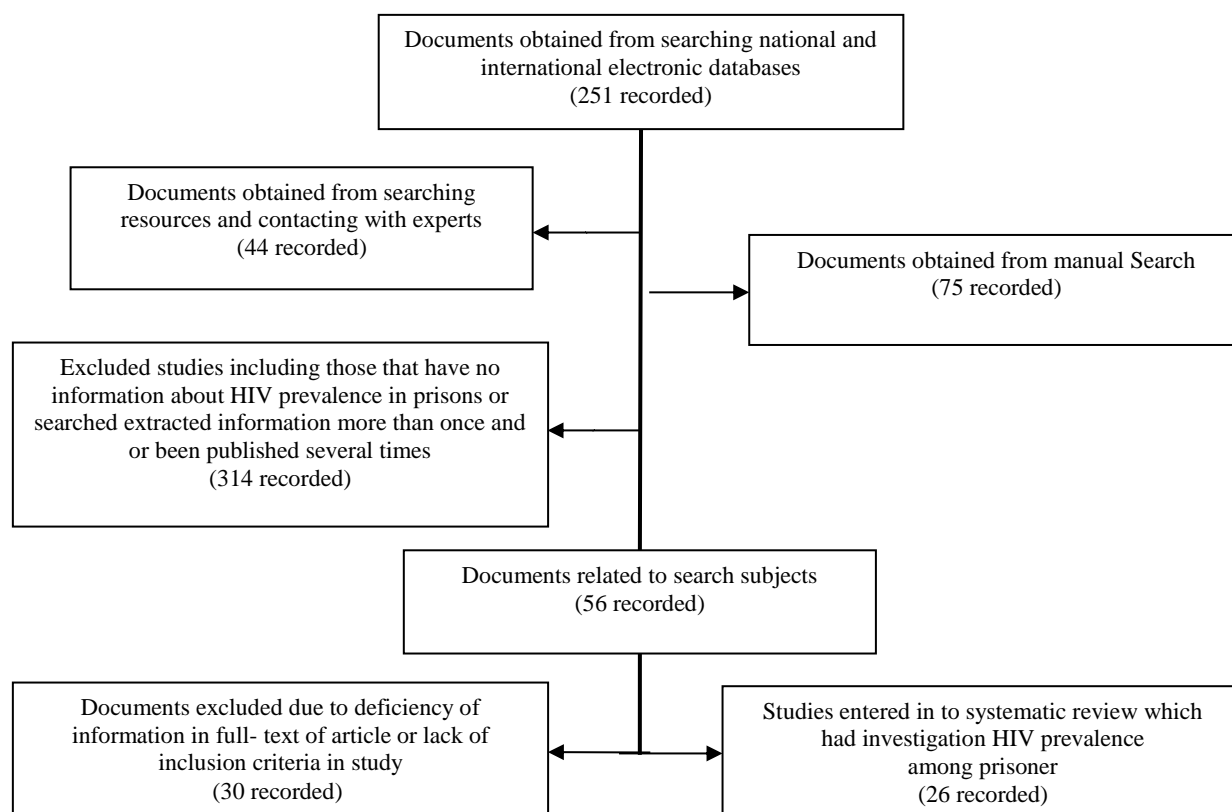


Figure 1. Trend diagram of studies selected and entered into systematic review

research, 26 studies met the selection criteria with 11 published in national reliable research journals, 11 were published in international reliable journals, one was reported by the World Health Organization and three cases were reported by the Health Ministry of Iran. Although these studies were performed in different provinces and used different methods and statistical population and sometimes had different aims, in most cases the results were similar. Among the studies completed using prisoners who inject drugs the highest prevalence of HIV was reported by universal studies,¹⁴ Kheirandish et al.,¹⁵ and Hosseini et al.¹⁶ with 24.40%; the lowest prevalence was related Azarkar and Sharifzadeh's study¹⁷ with 0 (Table 1).

The STI prevalence among prisoners varied between 2.38% in Khamisipoor and Tahmasebi's study³² and 28.60% in Rahbar et al.'s study²⁰ (Table 2).

Discussion

This study is one of many that have investigated HIV/AIDS prevalence in Iranian prisons. Although these diseases have not yet reached

epidemic levels among the public population and entered a stage of concentrated prevalence, they are increasing among at risk groups such as prisoners. In other parts of the world, the prevalence of HIV infection among prisoners was shown to vary depending on its prevalence in wider society, sampling method and current policy for dealing with drug users. It was shown to usually be higher in the prison society such that the rate of HIV/AIDS prevalence among Iranian, American and French prisons were 8, 5.5, and 10 times higher than in the wider society, respectively.¹⁰

In this study, general prevalence of HIV/AIDS varied between 0% and 24.40% among prisoners. Similarly, HIV/AIDS prevalence in different countries also varies. For example, its rate was reported as 0-2% in Australia,³⁸ 0-26% in England,³⁹ 0-1% in Ireland,⁴⁰ 1-10% in Canada,⁴¹ and 4% in six other European countries including France, Germany, Italy, Netherland, Scotland and Sweden⁴² and up to 35% in Argentina.⁴³ A number of factors are shown to influence incidence and prevalence of HIV/AIDS among prisoners; the most important of these are discussed below.

Table 1. HIV prevalence among prisoners of intravenous drug users

Author (resource)	Place of study performance	Year of performance	Sample volume	Prevalence STI (%)	HIV prevalence among women (%)	HIV prevalence among men (%)	HIV prevalence (%)
Jahani et al. ¹⁴	Tehran	2006	499	N/A	N/A	N/A	24.40
Hosseini et al. ¹⁶	Tehran	2006	417	7.40	N/A	24.40	24.40
Shahbazi et al. ²	Iran	1997	2022	N/A	N/A	N/A	0.15
Shahbazi et al. ²	Iran	1998	2367	N/A	N/A	N/A	0.30
Shahbazi et al. ²	Iran	1999	1670	N/A	N/A	N/A	0.48
Shahbazi et al. ²	Iran	2000	2553	N/A	N/A	N/A	3.17
Shahbazi et al. ²	Iran	2001	4556	N/A	N/A	N/A	2.17
Shahbazi et al. ²	Iran	2002	5881	N/A	N/A	N/A	4.01
Shahbazi et al. ²	Iran	2003	4515	N/A	N/A	N/A	3.39
Shahbazi et al. ²	Iran	2004	3824	N/A	N/A	N/A	4.11
Shahbazi et al. ²	Iran	2005	4920	N/A	N/A	N/A	4.86
Shahbazi et al. ²	Iran	2006	5226	N/A	N/A	N/A	2.99
Shahbazi et al. ²	Iran	2007	4571	N/A	N/A	N/A	2.34
Azarkar and Sharifzadeh ¹⁷	South Khorasan	2008	358	16.80	0	0	0
Kazerooni Afsar et al. ¹⁸	Shiraz	2007	363	N/A	N/A	N/A	6.60
Mir-Nasseri et al. ¹⁹	Tehran	2001	392	N/A	N/A	N/A	17.00
Rahbar et al. ²⁰	Mashhad	2001	101	28.60	N/A	7.00	7.00
Farhoudi et al. ²¹	Tehran	2003	740	N/A	N/A	23.20	23.20
MENA report ²²	Iran	2003	N/A	N/A	N/A	N/A	24.00
MENA report ²²	Iran	2009	N/A	N/A	N/A	N/A	24.40
MENA report ²²	Hamedan	2005	427	N/A	N/A	0.90	0.90
Khodabakhshi et al. ²³	Golestan	2002-2003	121	N/A	N/A	N/A	5.80
Khani and Vakili ²⁴	Zanjan	2001	346	N/A	N/A	N/A	1.20
Ilami et al. ²⁵	Yasooj	2009-2010	N/A	N/A	N/A	N/A	9.90
Pourahmad et al. ²⁶	Iran	2003	1431	N/A	N/A	N/A	6.40
Davoodian et al. ²⁷	Bandarabbas	2002	252	N/A	N/A	N/A	15.10

STI: Sexually transmitted infection; MENA: Middle East and North Africa

Table 2. HIV prevalence among prisoners (others)

Author (resource)	Place of study	Year of performance	Sample volume	Prevalence STI (%)	HIV prevalence among women (%)	HIV prevalence among men (%)	HIV prevalence(%)
Haghshenas et al. ²⁸	Mazandaran	1997-1998	650	N/A	0	0	0
Management Center of Diseases ²⁹	Khuzestan	2007	804	N/A	N/A	2.00	2.00
Control Center of Diseases ³⁰	Kerman	2008	400	N/A	N/A	N/A	2.00
Control Center of Diseases ³¹	Kermanshah	2007	806	N/A	N/A	N/A	5.20
Khamisipoor and Tahmasebi ³²	Bushire	2007	126	2.38	0	0	0
Nokhodian et al. ³³	Esfahan	2009	163	N/A	0	N/A	0
Moosazadeh et al. ³⁴	Mazandaran	2008	2450	N/A	N/A	N/A	0.30
Haghdoost et al. ³⁵	Iran	1990-2000	392	N/A	N/A	N/A	2.80
Navadeh et al. ³⁶	Iran	2009	5530	N/A	1.90	2.10	2.10
MENA report (Qanad) ²²	Iran	2009	N/A	N/A	N/A	N/A	2.50
MENA report (Qanad) ²²	Iran	2009	N/A	N/A	N/A	N/A	2.40
MENA report (Qanad) ²²	Iran	2009	N/A	N/A	N/A	N/A	1.90
MENA report (Qanad) ²²	Iran	2009	N/A	N/A	N/A	N/A	2.30
Ghanbarzadeh and Nadjafi-Semnani ³⁷	South Khorasan	2006	199	N/A	N/A	N/A	0
Tajbakhsh and Yaghubi ⁹	Chaharmahal and Bakhtiari	2007	600	N/A	16.00	66.00	0.82

STI: Sexually transmitted infection; MENA: Middle East and North Africa

Frequency of imprisonment

Prisons play a key role in expanding the incidence of HIV/AIDS in society, especially among intravenous drug users. Hence, effective and large is this role that many studies have shown a meaningful relation between the experience of being imprisoned in the past and associated drug use with disease infection. Being imprisoned is considered as a common event among intravenous drug users such that in low- and medium-income societies, more than 60% of people have experienced living in prisons.^{1,44} The rate of imprisonment in Middle East and North Africa region is very similar to other parts of the world. Its rate was estimated at 191 individuals per 100000 in Iran in 2007, 121 and 141 people per 100000, respectively, in Egypt and Lebanon.²² In this study, the rate of imprisonment in the past among prisoners was between 38.20% based on Ghanbarzadeh and Nadjafi-Semnani's study³⁷ and 81.30% according to Farhoudi et al.'s study.²¹

Intravenous drug using and addiction rate

In Iran, statistics show that about half of prisoners are addicted to drugs⁴⁵ and one of the most important reasons for imprisonment of these people relates directly to this addiction. They also show that number of individuals infected by HIV/AIDS has reached 26,556 cases in Iran in 2013, while 68.40% of infection related to intravenous addiction.⁴⁶ This highlights one of the important concerns about HIV/AIDS prevalence in prisons, particularly when many of prisoners were not drug users at first but later became addicted through the conditions dominant in the prisons, notably by injectable drugs where they were not initially intravenous users but became so by living in prisons.⁴⁷

The lack of availability of drugs and ability to pay its high prices has contributed to prisoners becoming intravenous users as a way to reach highest satisfaction with minimum use as compared with other methods. This point highlights the important role of prisons in increasing disease prevalence and outbreak. HIV prevalence was higher in this group relative to other groups such that in many countries including China, Thailand and Malaysia, HIV has become an explosive epidemic.^{10,21} Experience of drug using has been reported between 30.7% and 54.3% among prisoners of Iran and 67.0% among

those in Algeria. In this study, the experience of drug use in prison has varied; the maximum being 80.0% based on Pourahmad et al.'s study²⁶ and the minimum being 16.5% according to Haghdoost et al.'s study.³⁵

Drug using rate in Iranian prisons has not shown an upward trend over the years, with some exceptions, this decreasing rate is due to increased knowledge about the harmful effects of drug using, a relative improvement of prisons' status in welfare and sport facilities, establishing centers for addiction treatment and using replacement methods as MMT. Intravenous addiction in prison has been reported between 27.60% and 53.60% among prisoners of Iran.²²

In published studies, the intravenous addiction rate varied, including 3.2% in Nokhodian et al.'s study,³³ 6.1% in Kheirandish et al.'s,¹⁵ 37.0% in Khani and Vakili's,²⁴ and 37.4% in Kazerooni Afsar et al.'s.¹⁸ Investigation of intravenous drug using in studies has shown a decreasing trend of the rate in recent years such that this amount has fallen from 37.0% in 2001 based on Khani and Vakili²⁴ to 6.5% in 2006 based on Hosseini et al.¹⁶ This reduction can be attributed strategies such as harm reduction, greater coverage with methadone maintenance therapy, increased knowledge level in society and a better-informed media. Most studies related to Tehran in this study with high amounts not observed in other province. This highest prevalence noted in Tehran needs further research. In spite of a relatively tangible reduction observed in amount of drug using in recent years, Iran remains among the countries with a higher prevalence of intravenous drug using. For this reason, it seems necessary to implement preventive measures to reduce prisoners' tendency to drug using and intravenous addiction.

Sharing non-sterile syringes in drug use

It has been noted in the literature that 56.0% of recent infections occurring in 2010 in Iran are due to insecure intravenous drug using.⁴⁸ Intravenous drug using has been strongly related to HIV infection in 10 European cities.^{49,50} In current research, a high percentage of participants mentioned that disposable syringes (71.0%,³¹ 68.1%,¹⁶ and 54.4%²⁹) were available, but the rate of sharing on-sterile syringes was still high among prisoners. Incidence rates relate values of 16.8%,²² 58.8%,²⁶ 48.5%,²⁰ and 55.0%.³⁶ Of course, these

values are similar to other countries' statistics including Ireland (70.5%), Greece (49.8%), Belgium (47.0%), Italy (34.0%), France (32.0%), and Sweden (30.0%).^{21,40} This suggests that measures implemented in the form of harm reduction programs in the prisons have not shown considerable results without training and knowledge.

Sex

Intravenous drug using and risky sexual behaviors have been identified as the most significant factors increasing the HIV infection rate in Iran. In this research, unsafe sexual activity rate in Iranian countries was 17.0%²² and 5.0%^{15,16} and sex between males in prison was 5.4%¹⁵ and 5.8%;¹⁶ in comparison, experience of illegal sexual intercourse out of prison showed different values of 18.4%,³³ 27.8%,²⁶ 9.5%,¹⁹ 6.1%,²⁴ and 28.4%.²⁹ Male-male sexual intercourse has been estimated as being 2.60% in Lebanon and 4% in Pakistan.²² Although intravenous addiction has shown a descending trend, epidemiological variation trends of AIDS transfer among drug addicts and youth has changed from same syringe use to risky sexual behaviors. Measures taken by Health Ministry, Prisons Organizations, and Welfare Organizations have increasingly controlled intravenous addiction, but in recent years, drug users especially among younger people have trended more toward psychotropic drugs and amphetamines. This increases HIV/AIDS transfer probability by risky sexual behaviors because of influences that these drugs have on individuals' sexual activity. For this reason, preventive and controlling training programs are needed in this group.

Tattoos

Tattoos can be risk factors that increase incidence and prevalence of HIV/AIDS in prisons. In some studies, a high prevalence for disease from sharing tattooing devices has been mentioned.^{15,16} The transfer danger of HIV infection can be decreased by training and raising individuals' knowledge to avoid tattooing altogether or by doing it in a safe way.

Strategies for harm reduction in prisons

MMT

Worldwide, there is a popular belief that the main method for controlling HIV/AIDS among

intravenous drug addicts is by systematically and successfully implementing damage reduction plans. In Iran, as in other countries, measures are taken for reducing the prevalence and incidence of HIV/AIDS in both the wider society and among groups at greater risk such as prisoners. Damage reduction includes different strategies such as MMT and distributing disposable syringes. In addition to its advantages for preventing infections from intravenous injection, MMT has a key role in reducing the economic load related to drug abuse. Universally, MMT is considered as the principle preventive measure for reducing infections by drug injection in prisons and plays a significant role in preventing new cases of HIV.⁵⁰ For example, in a study conducted in China in 2007, HIV infection has been respectively prevented by 3722 and 1960 cases during 10 years in high and low risk regions by performing MMT plan for 5 years.⁵¹ At present, damage reduction programs are in progress with acceptable coverage in Iranian prisons such that between 2002 and 2008, the number of prisoners received methadone has fallen from 100 to 25000 people. Iran now has one of biggest profiles of implementing this program among the world's prisons by supporting about 38000 persons with MMT.⁵⁰ Initial estimates were that this program would be able to save more than 100000 dollars for each case of HIV prevented and would reduce state costs.⁵¹ Although using this type of program may not completely interrupt drug abusing, it leads to improvement in drug addicts' social function; as well reducing physical effects, guilt and crime, school drop-out, professional decline, psychological effects such as depression, and social and familial conflicts. Enforcement of individuals' participation and continuous application of this method even after leaving the prison represent its positive and acceptable influences. Thus, continuing damage reduction programs such as MMT must be of even greater interest to authorities and those responsible for prevention and control of HIV/AIDS.

Using condoms

Correct and proper application of a condom has significantly reduced exposure to venereal diseases; the rate reduction has reached 80% or more in some studies. Using a condom is

therefore considered as one of the main parts of HIV prevention.⁵² One study showed 12.10% of prisoners experienced sexual intercourse and of this population only 15.4% used condoms.⁵³ In a study involving 5530 prisoners in 27 Iranian prisons in 2001, 24.7% of prisoners had not used a condom in their last sexual intercourse.⁵³ Incidence of HIV among groups at risk such as prisoners can be prevented by appropriate distribution of condoms within prisons and training about disease transmission.

Using disposable syringes

As mentioned previously, more than half of infections by HIV/AIDS in Iran are due to risky intravenous drug addiction. Although the prisoners' access to sterile and disposable syringes was high in various studies, there remains a large gap from the desired coverage and reducing incidence cases related to this method of addiction. In 2008, there were about 250000 intravenous drug addicts in Iran, of which 5-20% had been infected by AIDS virus. Of interest is that only 7.5% intravenous drug addicts have access to centers for syringe distribution and healthy injective devices.⁵⁴ With the daily expansion of intravenous drug addiction, it seems that increasing damage reduction by providing syringe and injection sterile devices, as well as training programs that inform society and at-risk groups can be effective in controlling HIV in Iran.

Training

Prevention is proposed as the most important way to deal with the HIV/AIDS epidemic worldwide. Training and developing the knowledge level within society is also one of its key preventive principles. One important obstacle for improving and developing AIDS prevention is a general lack of knowledge about variant aspects of the disease.⁵⁵ In a study that assessed knowledge and attitude in Iranian society toward HIV/AIDS, knowledge level has met acceptable minimum but need of purposive and practicable planning is felt to promote society's knowledge and attitude level comparing global criteria.⁵⁶ Only 20.50% of Iranian prisoners Hassan acceptable knowledge level and possesses information about HIV/AIDS.³⁵ It seems that AIDS knowledge and attitudes still need development and promotion, as well as through the use of correct training methods and making

training processes more widely available.

In spite of the existing capacity and potential in Iran to offer control and prevention services for AIDS, we are still observing a continued incidence of this disease. Groups in danger, such as prisoners, have a high chance of infection and because they have a role in the prevalence and transfer of this disease from groups with high risk to the wider population; they must be further supervised and controlled and encouraged to take advantage increased education, services and facilities regarding reducing infection and transfer to others.

Limitations

Limitations in this research measuring HIV prevalence among prisoners relate to the nonspecificity of the subjects; different methods, objectives, and tools used; diverse tools and methods of gathering information; limited availability; limited accuracy of analysis of the tools used. We must note, of course, that it is necessary to undertake regular and periodical studies in varied settings to evaluate variation trends, including variations in disease prevalence.

Conclusion

In this study, HIV prevalence among prisoners and different subgroups in different studies varied widely and in many cases, this value was higher in Iran than other countries. The highest prevalence of HIV was due among intravenous users. If proper preventive and control plans are not implemented in a timely and suitable manner in at-risk groups such as prisoners, there is a risk that HIV/AIDS infection will increase in the wider society. It is critical that we prevent and manage this disease in society by having better understanding about the current status of the diseases, facing risks and threats, as well as implementing harm control and reduction programs for at-risk groups.

Conflict of Interests

The Authors have no conflict of interest.

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جمع‌بندی اطلاعات و گزارش‌های منتشر شده در زمینه شیوع HIV در زندان‌های کشور

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مقاله مروری

چکیده

مقدمه: در سراسر دنیا، زندانیان بیشتر از گروه‌های پرخطر دیگر در معرض ابتلا به عفونت HIV (Human immunodeficiency virus)، هپاتیت B و C قرار دارند. ایدز، اعتیاد و زندان عواملی هستند که سلامت جامعه را تهدید می‌کنند. رفتارهای پرخطر مؤثر در انتقال ایدز در بین زندانیان بسیار شایع است. این مطالعه با هدف جمع‌بندی اطلاعات و گزارش‌های منتشر شده در زمینه شیوع HIV در زندان‌های کشور انجام گرفت.

روش‌ها: پس از جستجوی مستندات در پایگاه‌های اطلاعاتی داخلی و خارجی، در مجموع ۲۵ مطالعه مورد بررسی قرار گرفت و با مراجعه به خلاصه مقالات و متن کامل آن‌ها، اطلاعات مورد نیاز استخراج گردید.

یافته‌ها: مطالعات وارد شده از نظر متدولوژی (شیوه نمونه‌گیری و ابزار جمع‌آوری اطلاعات) تفاوت‌های زیادی با یکدیگر داشتند. در مجموع، ۲۵ مطالعه با مجموع حجم نمونه ۵۹۵۲۴ نفر مورد بررسی قرار گرفت که شیوع HIV در این مطالعات از صفر تا ۲۴/۴۰ درصد متغیر بود.

نتیجه‌گیری: در این پژوهش، شیوع HIV در زندانیان دامنه وسیعی داشت و در بسیاری از مطالعات این مقدار از بسیاری از کشورهای دیگر بالاتر بود. بیشترین شیوع مربوط به مصرف کنندگان تزریقی مواد بود. چنانچه برنامه‌های پیشگیرانه و کنترلی مناسبی در گروه‌های پرخطر مانند زندانیان به موقع و به طور شایسته صورت نگیرد، خطر گسترش عفونت به کل جامعه افزایش می‌یابد.

واژگان کلیدی: HIV، AIDS، زندانیان، ایران، شیوع، وقوع

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