

# The Prevalence of Infection with the Human Immunodeficiency Virus (HIV) Among the Volunteers for Marriage Referred to the Health Center of Bandar Abbas in 2015

Mehdi Hassani Azad<sup>1</sup>, Parivash Davoodian<sup>1</sup>, Elham Boushehri<sup>1</sup>, Nikta Zade Saraji<sup>2\*</sup>

1. Infectious & Tropical Diseases Research Center, Hormozgan University of Medical Sciences, Bandar Abbas, Iran
2. Student Research Committee, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

*Corresponding author:* Nikta Zade Saraji

**ABSTRACT:** Introduction: HIV is made by viral RNA that attacks to lymphocyte cells. The interval between entering virus to body and symptoms of disease varied between different people. The affected patients are died because of catching opportunistic infections and cancers. The aim of this research was studying the prevalence of HIV in volunteers' couples who were coming to Health Care center in Bandar Abbas in 2015. Methodology: 600 couples in Bandar Abbas Health Care center was analyzed by cross – sectional approach in 2015. First, all the couples are notices about HIV, the way of catching and transferring of it, the consequences of this disease, then all of them is evaluated by a questionnaire intentionally. The blood samples for HIV test were taken. The results were analyzed by SPSS software and  $p < 0.05$  was significant. Results: among 600 participants, 15 participants (2.5%) was used drug including 10 men (66.66%) and five women (33.33%). The average age of population was  $25.4 \pm 6.45$  and average age of addicted people was  $35.78 \pm 16.13$  (the average age of men was  $39.36 \pm 16.26$  and average age of women was  $22.66 \pm 6.42$ ). 2 of them (13.33%) were used drugs orally and injecting (2 men and 0 women) and 13 of them (86.66%) were not injecting drug users (IDUs) (40% orally and inhaling, 20% orally and 26.66% inhaling), 1 person (6.66%) just used drug for some days, 3 persons (20%) for some months and 11 persons (73.33%) for several years. 6 participants (1%) with average age  $30.5 \pm 4.65$  had sentenced to prison and all of them were men. 2 of them (33.33%) sentenced less than 6 months and four of them (66.66%) spent more than 1 year in prison. 4 of them used drug (66.66%) and 1 of them (25%) used drug orally and injecting that he had used common syringe in jail. The others were not IDUs. 57 person (9.5%) with average  $31.01 \pm 11.09$  experienced sexual contact before marriage including 36 men (63.15%) with average of  $32.5 \pm 11.83$  and 21 women (36.84%) with average of  $32.64 \pm 9.38$ . 32 persons had protective sexual contact such as using condom (19 men (59.37%) and 13 women (40.62%). 248 persons had possible risk factors such as tattoo, traveling to abroad, injection of blood, surgery and diseases like thalassemia or hemophilia or sickle cell, or history of needle stick in hospital. There were significant relation between drug abuse and sex, age and education level and previous marriage condition, while there were no significant relation between drug abuse and job and monthly income. There was a significant relation between drug abuse and sentencing to prison but there was not a significant relation between IDU and time of sentencing to prison. There were significant relation between sexual contact before marriage with age, sex (male), previous marriage condition and drug abuse while there were not significant relation with education, job and monthly income. There is a significant relation between protective sexual contact before marriage with age and level of education, however, no significant relation was seen between monthly income and jobs. ELISA test was used to evaluate the HIV Ab and all the results were negative. Discussion and Conclusion: The findings showed that HIV is prevalent in high-risk and core groups and the rate of prevalence in normal population was less than 1%. Regarding to

high prevalence of risk factors among people, it is suggested in order to prevent the prevalence of HIV by sexual contact, all couples examine by HIV Test before marriage.

**Keywords:** AIDS, HIV, ELISA, Virus, Infection.

## INTRODUCTION

Human Immunodeficiency Virus (HIV) is one of the important health issues among the youth and growing population in developing countries [1]. The distance between the virus entry into the body and positive result of serology test is 1-3 months and the distance between infection with HIV and diagnosis of AIDS is 2 months to 10 years. This infection may be manifested as the flue, pharyngitis, myalgia, malaise and fatigue, weight loss, and lymph node involvement in the initial stages for 1-2 weeks [2]. According to a report of the World Health Organization (WHO) on 13 East Mediterranean countries in 2011, 561261 cases of HIV have been reported around the world, 82994 of which were new and 3418 of which have led to death. Most of new cases have been reported from Oman and then Iran (0.9 case in every 100000 women and 3.3 cases in every 100000 men). According to the infection World Health Organization, HIV test can play an effective and helpful role in preventing the epidemiological prevalence of this disease among people. Based on statistics published in 2011 on 14 countries, including Iran, 4263 cases of infection with HIV have been reported that 66.8% of them were men. The highest absolute number reported in Iran is 1247. In the period from 2000 to 2011, the number of people infected with the human immunodeficiency virus in Iran has been reported to be 65000. In 10 East Mediterranean countries, 568 deaths from HIV have been reported in 2011, 73.6% of which was related to Iran, with a domination among men (82.7%) (3).

Iran and developing countries are in a transitional phase in terms of heavy burden of diseases and injuries which indicates an increase by 35% in this regard that 66%, 24%, and 9% of which belong to non-communicable diseases, injuries, and infectious diseases, especially acquired immune deficiency. These diseases and injuries reduce the health level of people's lives [4].

In Iran, AIDS mostly occurs in the age group 15-49 (85%) and then affects people aged over 50 (10%) and under 14 (5%). Among the AIDS patients in Iran, 28% are women and 72% are men.

Transmission ways of HIV include transmission through blood that its likelihood is very high (90%), transmission from mother to fetus or baby (20-65% depending on the severity of the disease in mother), sexual contact (0.1-1% in one contact) (the risk of transmission from men to women is 20 times more than the risk of transmission from women to men), and injective addiction (0.5-1%) (The injury caused by infected needlestick is less than 0.5%).

According to the controlled studies, it has been found that AIDS patients have more homosexual partners than the control and they are more in touch with prostitutes. It has been also revealed that prevalence of positive serum testing for HIV is directly associated with the number of sexual partners and history of sexually transmitted disease.

Transmission ways of AIDS in Iran based on their prevalence include injective addiction (more than 65%), sexual intercourse (13%), unknown (12%), infected blood and blood products (9%), and from mother to baby (1%). Unsafe infection of drug, poverty, unemployment, and tendency to prostitution and risky behaviors are considered the risk factors in this regard [2].

Studies show the lowered age of onset of sexual activity and drug use, as two important risk factors, among Iranian youth [5].

## METHODOLOGY

The present research was a cross-sectional, descriptive study which was carried out in 2015 in Bandar Abbas Blood Transfusion Centre after the approval of the Medical Ethics Committee of University of Medical Sciences. The subjects were selected using the available sampling method. All the couples referred to the health center for premarital tests received consolation and information on human immunodeficiency virus and its transmission ways, likelihood of transmission in any of these ways, complications and consequences of infection with this virus by doctors offering premarital counseling and brochures. Then, they were asked to perform HIV test after obtaining a written consent. All couples who accepted to do the test were studied using a questionnaire about the risk factors and possible transmission ways of the disease. All the subjects were assured that all their personal information will be kept confidential. To study the specific antibodies against HIV 1 and HIV 2, the serum or plasma sample containing EDTA was prepared for each subject and then ELISA test that is highly sensitive was used for initial evaluation and screening test. In case of positive results, the samples were re-analyzed by ELISA in order to minimize the probability of error in sampling procedure or laboratory methods. Positive samples were retested and confirmed using the confirmatory test of WESTERN BLOT. The test kits used in this study had a sensitivity of 100% and specificity of 99.5-100% (at a confidence level of 95%) and their results were read using an ELISA fully automatic machine (A9 22 SPEEDY).

The samples which were initially detected positive by ELISA test and then found negative by WESTERN BLOT retest were considered negative and samples which were positive in both tests were regarded as positive. In case of a positive test result for each participant, they were referred to a behavioral diseases center in order to be trained on how to control the disease and prevent its transmission to other people and also to prevent its progression. In addition, the necessary measures were taken for them in this center.

The required data and information were collected using an author-made questionnaire developed based on similar studies and view of supervisors. This questionnaire consisted of two parts of demographic information (age, gender, education level, job, monthly income, and previous marital status) and specialized information such as record of blood transfusion and drug use (duration, method of use, and possibility of using shared needles), history of certain diseases (hemophilia, thalassemia, and sickle cell anemia), record of imprisonment (duration and possible history of drug use, method of use, and possibility of using shared needles), record of traveling to foreign countries, record of tattooing or surgery, and record of sex before marriage (whether it was done using the protective equipment such as condom or not).

After collecting samples and required information from the questionnaires, data and information were analyzed using Chi-square test and t-test in SPSS software. The level of significance was considered to be  $p < 0.05$ .

All couples referred to the health center of Bandar Abbas for premarital tests in the second 6 months of 2015 were included in the study. Exclusion criterion was dissatisfaction of couples with doing HIV test in their premarital tests.

**Findings**

In this cross-sectional, descriptive study, a total of 608 patients were consulted, 600 of whom accepted to enter the study. Among them, 4 people personally demanded an HIV test prior to consultation. Among the participants, 300 were men (with a mean age of  $27.2 \pm 6.22$ ) and 300 were women (with a mean age of  $23.73 \pm 6.22$ ). The demographic characteristics of participants have been presented in the following tables.

Table 1. The demographic characteristics of men participated in this study

Mean age	27.2			Income	Less than 1 million	203	67.66%
Education level	Elementary school	7	2.33%	Previous marital status	1-5 million	96	32%
	Guidance school	46	15.33%		More than 5 million	1	0.33%
Education level	High school diploma	172	57.33%	Previous marital status	Temporary marriage	6	2%
	Associate's degree	8	2.66%		Divorced	18	6%
	Bachelor's degree	58	19.33%		Widowed	3	1%
	Master's degree or higher	11	3.66%		Permanent marriage	0	0%
Job	Unemployed	19	6.33%	Previous marital status	Never married	284	94.66%
	Worker	37	12.33%				
	Self-employed	169	56.33%				
	Clerk	76	25.33%				

Table 2. The demographic characteristics of women participated in this study

Mean age	27.73			Income	Less than 1 million	267	89%
Education level	Elementary school	14	4.66%	Previous marital status	1-5 million	24	8%
	Guidance school	38	12.66%		More than 5 million	0	0%
Education level	High school diploma	163	54.33%	Previous marital status	Temporary marriage	3	1%
	Associate's degree	3	1%		Divorced	16	5.33%
	Bachelor's degree	67	22.33%		Widowed	2	0.66%
	Master's degree or higher	13	33.4%		Permanent marriage	0	0%
Job	Unemployed	234	78%	Previous marital status	Never married	279	93%
	Self-employed	32	10.66%				
	Clerk	32	10.66%				

Among the participants, 15 people (2.5%) had a record of drug use that 10 of them were men (66.66%) and 5 were women (33.33%). The mean age of the whole population was  $25.4 \pm 6.45$  and the mean age of drug users was  $35.78 \pm 16.13$  (the mean age of men and women using drug was  $39.36 \pm 16.26$  and  $22.66 \pm 6.42$ , respectively). Among all drug users, 2 persons (2 men and no woman) (13.3%) were oral and injectable users and 13 persons (86.66%) were non-injecting drug users (40%: oral-inhalation, 20%: oral, and 26.66%:

inhalation). Among them, one person (6.66%), 3 persons (20%), and 11 persons (73.33%) had the record of drug use for a couple of days, several months, and several years, respectively.

Among the participants, 6 persons (1%), with a mean age  $30.5 \pm 4.65$  expressed a record of imprisonment that all of them were men. Two persons (33.33%) were in prison less than 6 months and 4 of them (66.66%) were in prison more than one year. Among these persons, 4 of them (66.66%) used drug in prison that one of them (25%) used drug orally and by infection and also had the record of using shared needle for injection. Rest of them was non-injecting drug users.

The participants who had the record of imprisonment were interviewed on their awareness about possible risks and the chances of HIV transmission through shared injection needles or shared razorblade (or any other object causing injury). The results showed that most of them had enough knowledge and awareness about this issue.

In this study, 57 persons (9.5%), with a mean age of  $31.01 \pm 11.09$ , had premarital sexual relationships that 36 of them were men (63.15%) (With a mean age of  $32.5 \pm 11.83$ ) and 21 were women (36.84%) (with a mean age of  $28.46 \pm 9.38$ ). Among these persons, 32 of them (56.14%) had used protective methods such as condom when having sex that 19 of them were men (59.387%) and 13 were women (40.62%).

Among the participants in this study, 248 people had potential risk factors for the disease including 20 persons with the record of tattooing, 75 persons with the record of traveling to foreign countries, 53 persons with the record of blood transfusion, 92 persons with the history of surgery, 13 persons with the record of thalassemia (all cases were minor), 3 persons with the history of sickle cell anemia, and 2 persons with the record of needlestick at the workplace.

Information obtained from the population of women and a man participating in the study was analyzed using independent t-test and Chi-square test in SPSS software. The results showed that drug use has a significant relationship with gender ( $P=0.035$ ), age ( $P=0.0001$ ), education level ( $P=0.03$ ), and previous marital status ( $P \leq 0.05$ ). By contrast, job and monthly income of people showed no significant relationship with drug use.

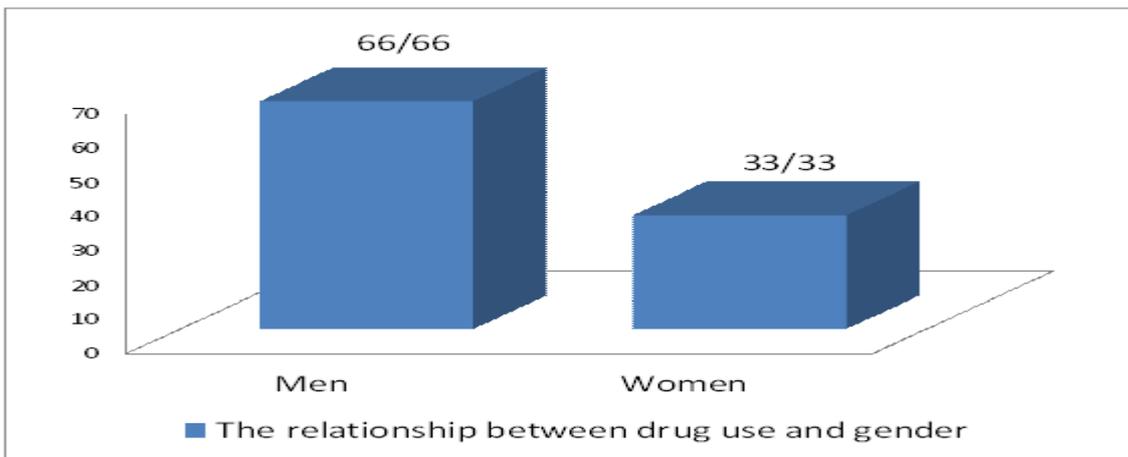


Figure 1. The relationship between drug use and gender

This figure shows that there is a significant and direct relationship between male gender and drug use.

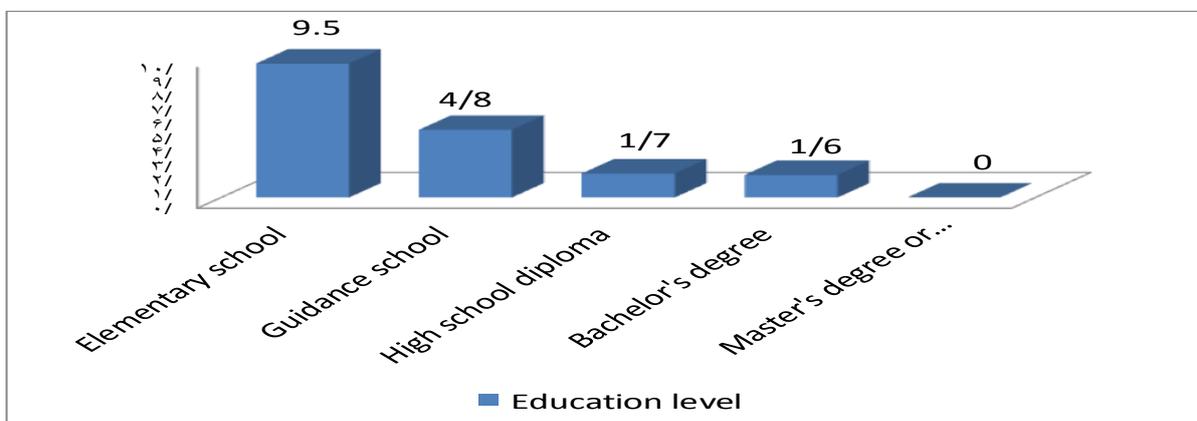


Figure 2. The relationship between drug use and education level

This figure shows that there is an inverse relationship between education level and drug use and lower level of education means higher use of drugs.

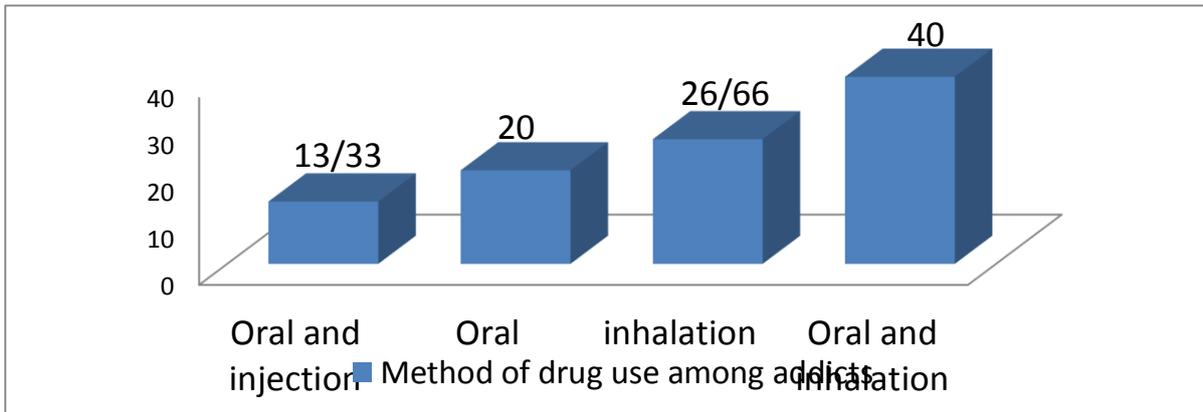


Figure 3

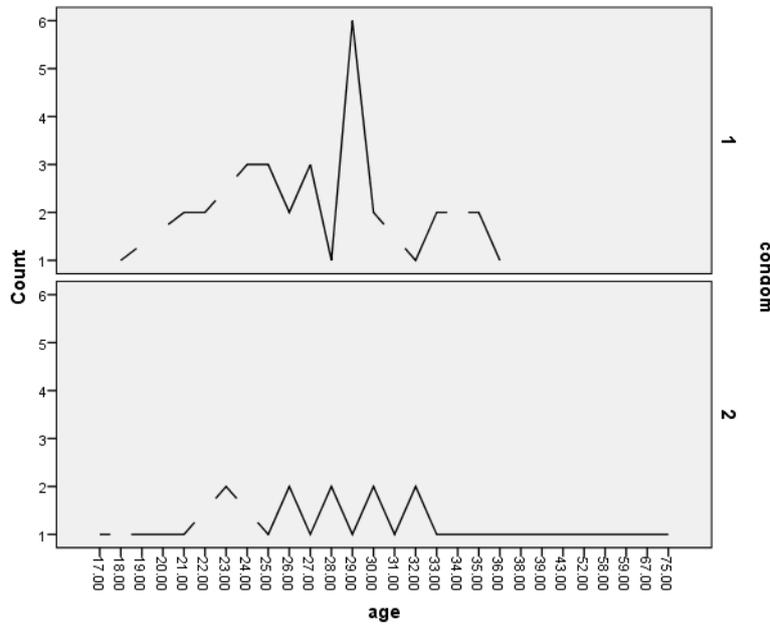


Figure 4. The relationship between age and the use of protective equipment in premarital sexual intercourse

This figure indicates that the mean age of persons who have used protective equipment in premarital sexual intercourse is higher than the mean age of all persons who had sexual activity before marriage.

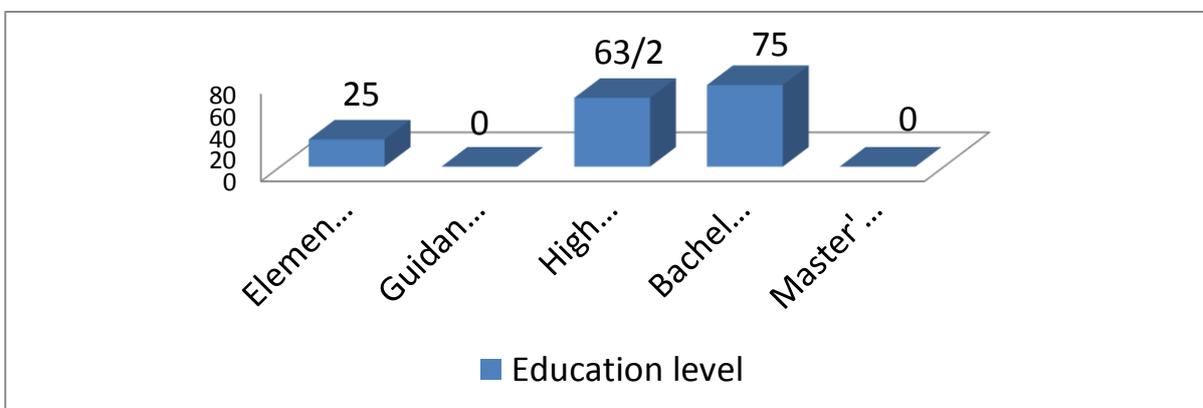


Figure 5. The relationship between education level and the use of protective equipment in premarital sexual intercourse

This figure shows that the use of protective equipment such as condom in premarital sexual intercourse increases with the increase in education level of people.

A sample of blood was prepared from all participants and ELISA test was conducted for evaluation of HIV Ab. The result of ELISA test was negative for all participants.

0%	Positive	ELISA test result
100%	Negative	

## DISCUSSION AND CONCLUSION

Compared to a study conducted by Jarlis *et al.* (2013) [1], the present study confirms the increased awareness and the effective role of syringe distribution program in prisons in reducing new cases of HIV infection among prisoners. In addition, the findings raise the need for more distribution and easier access of prisoners to injection syringe and needle in order to reduce the cases of using shared syringes and needles.

In comparison to a study conducted by Carolyn *et al.* (2006) [5], the number of injecting drug users was less but the number of non-injecting drug users was higher in the present study. In addition, the number of women using drugs was higher in this study (1.66% of women expressed the record of drug use). The mean age of people with a history of drug use was higher (35.78 compared to 30). The record of using shared injection needle was lower in this study (50% compared to 67%). The record of imprisonment among the injecting addicts was higher (50% compared to 19%).

In this study, the most common non-injecting drug use method among individuals with a history of prison was oral-inhalation method and then oral and inhalation methods. In a study carried out by Talaei *et al.* (2007), the most common non-injecting drug use method was reported to be oral and then oral-inhalation method. In addition, HIV infection rate was lower among non-injecting drug users (0% compared to 1.4%) [6].

In comparison with studies conducted by Ahmadi *et al.* in 2007 and 2006 [7], the mean age of the studied population in this study was lower (25.4 compared to 35.9) and the peak of drug use occurs at ages 20-30 (compared to 40-49).

The drug use rate in the present study was lower (2.5% compared to 4.4%) and also a significant relationship was observed between drug use and male gender and age, while such a relationship was not found between drug use and education level. This confirms the findings of Ahmadi *et al.* who reported that drug use increases with the increase in the age of people. In all walks of life, men more than women are at the risk of drug use and its complications. In addition, drug use may happen in all strata and groups of a society.

Compared to the study conducted by Vakilian *et al.* (2014) [8], the findings of the study confirm the high rate of sexual behaviors and relations before marriage among young people and especially men. The results also suggest that premarital sexual behaviors and relations increase with the increase in age of people.

In comparison of the results of this study with similar studies conducted on the prevalence of HIV, given the negative result of blood test for all participants, it can be concluded that HIV is still prevalent among the high-risk and core groups and its prevalence in the general population is less than 1%.

## REFERENCES

- Des Jarlais DC, Feelemyer JP, Modi SN, Abdul-Quader A, Hagan H. High coverage needle/syringe programs for people who inject drugs in low and middle income countries: a systematic review. *BMC public health.* 2013;13(1):1.
- Azizi F, Janghorbani M, Hatami H. *Epidemiology and control of common disorders in Iran.* Tehran: Eshtiagh. 2000;32.
- Bozicevic I, Riedner G, Haghdoost A. HIV case reporting in the countries of North Africa and the Middle East. *Journal of the International AIDS Society.* 2014;17(1).
- Khajehkazemi R, Sadeghirad B, Karamouzian M, Fallah M-S, Mehrolohasani M-H, Dehnavieh R, et al. The projection of burden of disease in Islamic Republic of Iran to 2025. *PloS one.* 2013;8(10):e76881.
- Day C, Nassirimanesh B, Shakeshaft A, Dolan K. Patterns of drug use among a sample of drug users and injecting drug users attending a General Practice in Iran. *Harm reduction journal.* 2006;3(1):2.
- Talaie H, Shadnia S, Okazi A, Pajouhmand A, Hasanian H, Arianpoor H. The prevalence of hepatitis B, hepatitis C and HIV infections in non-IV drug opioid poisoned patients in Tehran-Iran. *Pakistan journal of biological sciences: PJBS.* 2007;10(2):220-4.
- Ahmadi J, Pridmore S, Alimi A, Cheraghi A, Arad A, Parsaeyan H, et al. Epidemiology of opium use in the general population. *The American journal of drug and alcohol abuse.* 2007;33(3):483-91.
- Vakilian K, Mousavi SA, Keramat A. Estimation of sexual behavior in the 18-to-24-years-old Iranian youth based on a crosswise model study. *BMC research notes.* 2014;7(1):1-4.