



Determination the Research Priorities in the Field of HIV/AIDS in Iran: A Systematic Review Article

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Abstract

Background: HIV and AIDS have many different epidemiological, social and political aspects. The aim of this study was to determine the research priorities according to the necessary aspects of HIV and AIDS in Iran.

Methods: The national and international databases were searched to obtain the published articles regarding HIV and AIDS in Iran. All Epidemiologic studies were included in this review for assess research priorities.

Results: Of 3059 retrieved references, 362 studies were included. The most studies were conducted in Tehran, Kermanshah, Fars and Kerman provinces. The cross-sectional studies with 71.55% have higher proportion. Studies related to adherence to treatment (0.55%), drug resistance (0.83%) and experience, perception and behavior of HIV/AIDS patients (0.83%) had the lowest proportion of conducted studies. Proportion of studies regarding prevention of HIV was 2.76%. The authors of studies on female sex workers (FSWs) (63.64%) and prisoners (58.82%) suggested further studies on these groups.

Conclusion: According to our results, the high-risk groups such as female sex workers, injecting drug users and prisoners are in priority for research. Moreover, topics related to the prevention of HIV and AIDS, adherence to treatment and antiretroviral drug resistance are other research priorities in Iran.

Keywords: HIV, AIDS, Research priority, Iran

Introduction

AIDS is an emerging viral disease throughout the world (1). HIV in many parts of the world is due to poverty, unemployment, addiction and prostitution (2). In 2013, about 1.5 million people died from HIV globally. Its estimated approximately 35 million people living with HIV at the end of 2013, also about 2.1 million people becoming newly infected by HIV in 2013 (3). HIV is a major global public health threat for young and active people. Unfortunately, the HIV pandemic still rages through the world, especially in low-income and poor countries (1). This threat is dominant for East Mediterranean Region countries, included Iran (4). The present epidemic status of HIV in Iran is in the concentrated level (5).

Number of people who living with HIV in Iran was estimated 70000 [47000, 110000] and the number of deaths due to AIDS was 4400 [3000, 6200] in 2013 (6).

In an evidence-based policy-making system, the prioritizing of health interventions must be based on the results of researchers that aimed to answer the specific questions formed under this system (7).

HIV prevention and effective care of people living with HIV and AIDS require suitable knowledge of HIV status in each region (8). The proper knowledge can be produced by conducting good research with standard methods (9). On the other hand, the results of researches in the field

of HIV and AIDS must be quickly transformed for the community and health care providers in order to perform efficient actions, especially preventive activities. Therefore, an active collaboration between the policy makers and health care providers with researchers is necessary in order to provide more effective preventive and care services in this field (10).

Since the arrivals of HIV in Iran, many researches were conducted in Iran. Does all conducted researches in this field are necessary, and the results of them are practical for prevention and care services?

HIV and AIDS have different aspects, from molecular, epidemiological, social and political aspects (11), so we think research in the field of HIV, and AIDS should be covered all of these aspects. On the other hand, conducting research requires specialist human, financial resources and time. Therefore, with determining research priorities, we can spend our resources in the required aspects of HIV and AIDS and save our resources. The aim of this study was to determine the epidemiologic research priorities according to necessary aspects of HIV and AIDS in Iran.

Methods

Searching

The major national and international electronic databases were searched to obtain published research in the field of HIV and AIDS in Iran with the following keywords: HIV, AIDS and Iran. The international databases searched included, Medline (Jan 1950 to Oct 2014); Scopus (Jan 1973 to Oct 2014) and Ovid (Jan 1860 to Oct 2014). The national databases searched, included Scientific Information Database, MagIran and IranMedex up to Oct 2014.

The criteria for including studies

All Epidemiologic studies included, cross-sectional, case series, case-control, retrospective cohort, prospective cohort, clinical trial, systematic review and molecular epidemiology, which conducted in Iran, were included in this review. The case report studies, letters to the editor, re-

view articles and basic research (non-epidemiologic studies) were excluded.

Data collection

The title and abstract of retrieved studies were screened and the full texts of studies that met criteria for inclusion were reviewed. The variables such as the language of study, title, year of publication, year of study conduction, location of study conduction (province or University of Medical Sciences), type of study, study population, the aim of study, age of participants, sex of participants, sample size, recommendations for further study and keywords were extracted for analysis.

Analysis

Microsoft excel was used for data extraction and management of extracted data, also, Stata 11 (Stata Corp, College Station, TX, USA) was used for data analysis. Analysis was performed to obtain the frequency and distribution of included studies according to year of publication, year of study conduction, location, type of study, aim and study population. Arc Map version 9.3 was used for produce a map for conducted studies according to location. For map generation, we normalized the number of studies according to the population that covered by each university for health care services. In addition, we categorized the aim of conducted studies based on the proportion of recommendation of their authors for further researches, included low (0-32%), moderate (33%-49%) and high ($\geq 50\%$) priority.

Results

Description of studies

We retrieved 3059 studies until Oct 2014, including 2897 references from international databases and 162 from the national databases (Fig. 1). Of the studies 38 excluded because of duplication, 2502 were excluded because not related to the Iranian population, and 150 studies were excluded because not met the inclusion criteria and seven studies excluded because unknown sample size or study population. Finally, we assessed 362 epidemiologic studies that conducted in Iran involved 10,122,239 participants (Appendix 1).

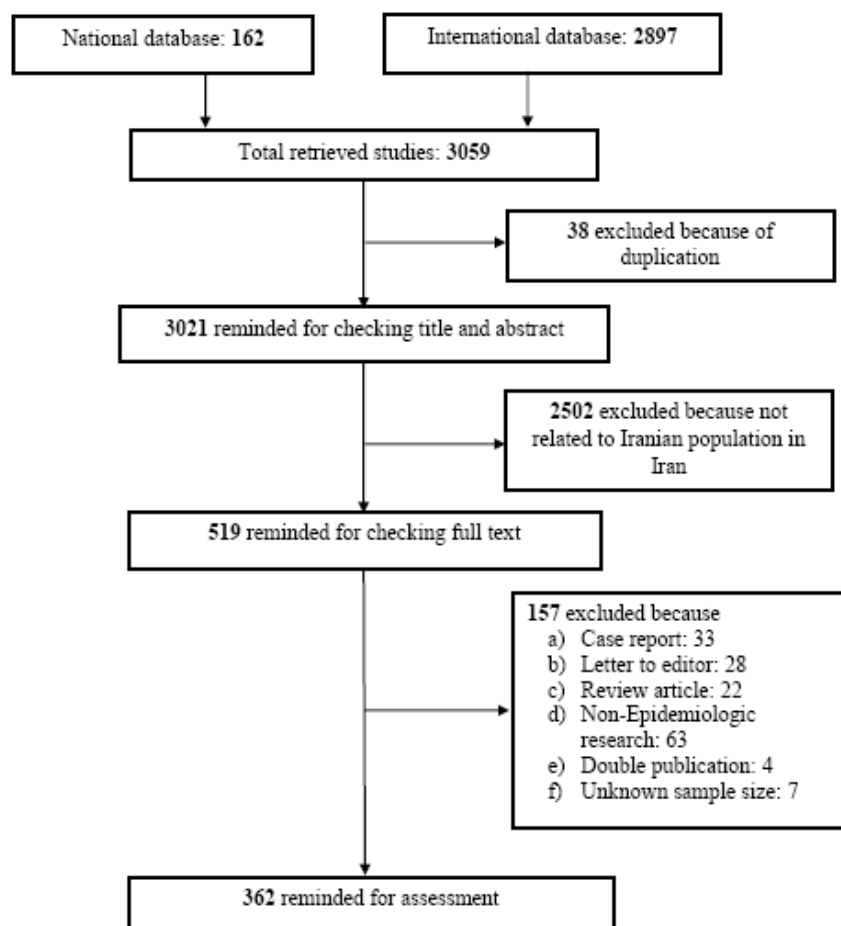


Fig. 1: Flow diagram showing the stages of retrieving studies, checking eligibility criteria, and including the articles into the assessment

The first and last studies in the field of HIV and AIDS, which included in this study, were published in 1996 and 2014, respectively. The trend of published studies from 1996 to 2013 was increasing. The most articles (59%) were published in 2013. Of included studies 267 (73.76%) were English and 95 (26.24%) in Persian.

Location

According to location of study conduction, the most studies (44.75%) were performed in Tehran province, which related to Tehran, Shahid Beheshti and Iran universities of medical sciences. Fras and Isfahan universities with 8.29% and 5.25% had second and third rank, respectively.

After normalization based on the population, the most studies were related to Tehran, Kermanshah, Fars, Kerman and south Khorasan universities. None of the conducted studies was related to population that covered by Semnan, Shahroud, Ghazvin, Ilam, Kashan, Jiroft, Jahrom and Gonabad universities of medical sciences. In addition, studies in some border universities such as North Khorasan, Khorasan Razavi, Boushehr, West Azerbaijan, East Azerbaijan, Ardebil and Zabol were lower than other universities (Fig. 2).

Type of studies

The cross-sectional studies with 71.55% have the most proportion of conducted studies in Iran since 1996 to Oct 2014. Interventional studies for

assessment effect of educational intervention and retrospective studies with 7.46% and 7.70% were in the second and third rank, respectively. Systematic review and meta-analyses with 0.83% have the lowest proportion of published studies in the files of HIV and AIDS in Iran.

Study population

HIV infected or AIDS patients (41.44%), general population (9.67%) and health care worker with 7.18% were the most study population in conducted studies in the field of HIV and AIDS in Iran. HIV, HBV or HCV co-infected patients (0.83%), HBV or HCV patients (0.83%), TB-HIV co-infected patients (1.10%), TB patients (1.10%) and drug users (1.38%) had the lowest proportion of studies in Iran.

Aim of conducted studies

Based on the aim of published studies in Iran Knowledge, Attitude and Practice (KAP) studies had the most proportion (20.72%). On the other hand, studies related to adherence to treatment (0.55%), drug resistance in HIV/AIDS patients

(0.83%), experience, perception and behavior of HIV/AIDS patients (0.83%) and description of HIV/AIDS patients, sign and symptoms (0.83%) had the lowest proportion of conducted studies. Ten studies (2.76%) were conducted regarding prevention of HIV (Table 1). Furthermore, based on the aim of studies and recommendation for further research by authors, the aim of studies categorized to low, moderate and high priorities (Table 2).

Recommendation for further studies

Based on the recommendations for more studies, 50.54% authors of cross-sectional studies suggested more studies in their field about HIV and AIDS. Moreover, authors of clinical trial (75%), prospective studies (71.43%) and case series (80%) suggested more studies in their field regarding HIV and AIDS.

The authors of studies that conducted on female sex workers (63.64%) and prisoners (58.82%) suggested further studies on these groups (Table 3).

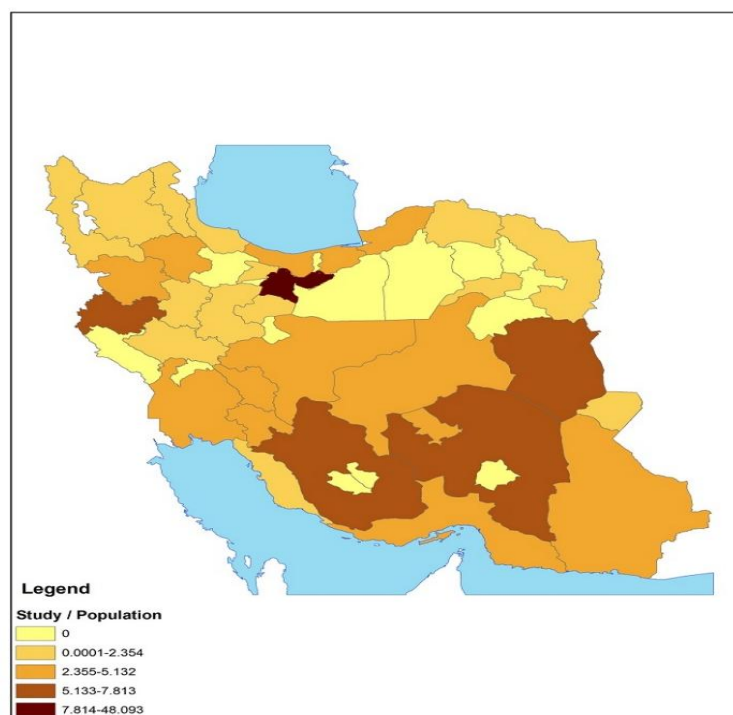


Fig. 2: Normalized map of conducted studies in Iran base on the population since 1996 to October 2014

Table 1: Frequency of conducted studies according to type of study, target population, topic and recommendation for further studies in Iran

Variables		Freq.	Percent	Recommendation for further studies		
				No (%)	Yes (%)	
Type of study	Cross sectional	259	71.55	154 (59.46)	105 (40.54)	
	Case control	12	3.31	6 (50.00)	6 (50.00)	
	Case series	5	1.38	1 (20.00)	4 (80.00)	
	Prospective cohort	7	1.93	2 (28.57)	5 (71.43)	
	Retrospective cohort	17	4.70	10 (58.82)	7 (41.18)	
	Interventional	27	7.46	22 (81.48)	5 (18.52)	
	Clinical trial	8	2.21	2 (25.00)	6 (75.00)	
	Qualitative	16	4.42	8 (50.00)	8 (50.00)	
	Systematic review and meta-analysis	3	0.83	1 (33.33)	2 (66.67)	
	Molecular	8	2.21	6 (75.00)	2 (25.00)	
	Study population	HIV/AIDS patients	150	41.44	88 (58.67)	62 (41.33)
Health care workers		26	7.18	19 (73.08)	7 (26.92)	
Female sex workers		11	3.04	4 (36.36)	7 (63.64)	
Injecting drug users		22	6.08	10 (45.45)	12 (54.55)	
Prisoners		17	4.70	7 (41.18)	10 (58.82)	
General population		35	9.67	23 (65.71)	12 (34.29)	
High school students		21	5.80	17 (80.95)	4 (19.05)	
Students		21	5.80	14 (66.67)	7 (33.33)	
HIV infected and healthy individuals		18	4.97	8 (44.44)	10 (55.56)	
Drug users		5	1.38	4 (80.00)	1 (20.00)	
Hemodialysis Patients		4	1.10	4 (100)	0	
TB patients		4	1.10	1 (25.00)	3 (75.00)	
TB/HIV co-infected patients		4	1.10	0	4 (100)	
Groups at High Risk of HIV/AIDS		15	4.14	8 (53.33)	7 (46.67)	
HBV or HCV patients		3	0.83	1 (33.33)	2 (66.67)	
HIV, HBV or HCV co-infected patients		3	0.83	2 (66.67)	1 (33.33)	
Others		3	0.83	2 (66.67)	1 (33.33)	
Aim of studies		KAP Study	75	20.72	51 (67.11)	25 (32.89)
		Prevalence of HIV/AIDS	26	7.18	11 (42.31)	15 (57.69)
		Co-infection of HIV and viral hepatitis	60	16.57	37 (61.67)	23 (38.33)
	Co-infection of TB-HIV	21	5.80	9 (42.86)	12 (57.14)	
	High risk behavior/ High risk group	14	3.87	6 (42.86)	8 (57.14)	
	Opportunistic infection in HIV	33	9.12	23 (69.70)	10 (30.30)	
	Co-infection of HIV/other STI and HPV	5	1.38	4 (80.00)	1 (20.00)	
	Assess effect of education	26	7.18	19 (76.00)	6 (24.00)	
	Survival and mortality	8	2.21	5 (62.50)	3 (37.50)	
	Quality of life	6	1.66	4 (66.67)	2 (33.33)	
	Cost and cost effectiveness	3	0.83	2 (66.67)	1 (33.33)	
	Adherence to treatment	2	0.55	1 (50.00)	1 (50.00)	
	Prevention	10	2.76	5 (50.00)	5 (50.00)	
	Stigma and prejudice	3	0.83	3 (100)	0	
	Depression neurologic disorders and HIV	7	1.93	4 (57.14)	3 (42.86)	
	Nutrition in HIV patients	4	1.10	3 (75.00)	1 (25.00)	
	Care and quality of care for HIV patients	10	2.76	3 (30.00)	7 (70.00)	
	Experience, perception and behavior of	3	0.83	1 (33.33)	2 (66.67)	
	Drug resistance in HIV/AIDS patients	3	0.83	2 (66.67)	1 (33.33)	
	Other diseases in HIV/AIDS patients	27	7.46	12 (44.44)	15 (55.56)	
	Description of HIV/AIDS patients, sign	3	0.83	0	3 (100)	
	Other studies	13	3.59	7 (53.85)	6 (46.15)	

Table 2: Research priorities in the field of HIV and AIDS based on opinions of authors for further studies

Field	Priorities	Published	Recommended more studies (%)
Type of studies	Clinical trials	8	6 (75)
	Cohort studies	7	5 (71.43)
	Systematic review and meta-analysis	3	2 (66.67)
	Case series	5	4 (80.00)
Study population	Female sex workers	11	7 (63.64)
	Injecting drug users	22	12 (54.55)
	Prisoners	17	10 (58.82)
	TB patients	4	3 (75.00)
Aim of studies	Care and quality of care for HIV patients	10	7 (70.00)
	high risk behaviors, high risk groups	14	8 (57.14)
	Co-infection of TB-HIV	21	12 (57.14)
	Prevalence of HIV/AIDS	26	15 (57.69)

Among KAP studies, 32.89% of their authors suggested more studies (Table 1). Seventy percent authors of studies related to caring and quality of care for HIV/AIDS patients recommended more studies. Among the studies related to prevalence of HIV and AIDS, co-infection of TB-HIV and high-risk behaviors or high-risk groups 57.69%, 57.14% and 57.14% of their authors suggested further studies, respectively (Table 2).

Discussion

According to our results, the most published studies were concentrated in Tehran, Kermanshah, Fars, Kerman and south Khorasan universities of medical sciences. The conducted studies on some groups such as HIV, HBV or HCV co-infected patients, Hepatitis B and C patients, TB-HIV co-infected patients, TB patients and drug users were lower than other groups. Proportion of studies that conducted on other high-risk groups such as FSWs (3.04%), injecting drug users (6.08%), drug users (1.38%) and prisoners (4.70) was low. A reason for lower studies on FSWs and injecting drug users is due to these groups are hidden, hard-to-reach and marginalized population in Iran (12, 13). Therefore, we recommended more studies for the size estimation of these high-risk groups in Iran.

The proportion of studies that conducted on TB (1.10%) and TB-HIV co-infected patients was low. The mortality rate among TB-HIV patients

in Iran is high (14), also the risk of opportunistic infections is more than among these patients. However, many dimensions of TB-HIV are unknown in Iranian patients (15). Therefore, design and perform more studies on these issues, especially on the risk factors of mortality among TB-HIV patients is necessary in Iran.

Based on the aim of conducted studies in Iran, the frequency of studies that related to adherence of treatment and drug resistance in HIV/AIDS patients were lower than other studies. Treatment effectiveness depends to complete adherence in patients who getting highly active antiretroviral (ARV) therapy (16). Moreover, perfect adherence is essential to prevention of ARV drug resistance and decrease in the risk of HIV transmission. Multiple factors may affect the adherence to ARV and led to the discontinuation of treatment (17). Moreover, design and perform of more studies in people who living with HIV and AIDS is necessary to identify factors that could affect adherence to ARV among Iranian patients.

Studies that related to the prevention of HIV were low (2.76%) in Iran. On the other hand, the authors of studies that related to the high-risk groups such as FSWs and prisoners suggested more studies among these groups. These findings emphasize preventive research, especially on high-risk groups. This result of our study is concordant with another study in Iran using the Delphi method (11).

Qualitative studies regarding experience, perception and behavior of HIV/AIDS patients with 0.83% had a low proportion of conducted studies in the field of HIV in Iran. Some dimensions of life among people whom living with HIV and AIDS are better understood using qualitative studies, and with quantitative research, we cannot assess all aspects of HIV/AIDS individuals. Therefore, we suggested qualitative research, especially among high-risk groups. In addition, qualitative researchers with the produce hypothesis are useful for researchers in designing quantitative research (18).

Based on the type of published studies, the more authors of analytic studies such as clinical trials and prospective studies suggested more studies. In observational studies prospective cohort and among interventional studies, randomized control trials are gold standard studies (19, 20). Therefore, design and performs a cohort study on people with HIV and AIDS in Iran is necessary. In addition, for evaluation of new treatment or other interventions such as educational interventions design and perform randomized control trial recommended. Because of the high cost and methodological aspects of these studies, recommended experts such as epidemiologists and biostatisticians are as the main members of research teams.

In some fields of HIV and AIDS, many studies conducted up to now, such as KAP studies, HIV and viral hepatitis and assess the effect of educational programs; we recommended systematic review and meta-analysis. They can help determine whether further studies are required in an especial field (21).

The more authors of studies that conducted on high-risk groups such as FSWs, injecting drug users and prisoners were recommended further studies on these groups. On the other hand, the frequency of these studies was lower than other studies. Therefore, these groups are in priorities for research in Iran. We recommended such studies be done in the high-risk groups and high-risk regions of Iran.

Based on the aim of studies, KAP studies had the most frequency of conducted studies in the field

of HIV and AIDS up to now in Iran; the more authors of these studies were not recommended further studies. A meta-analysis that conducted on KAP studies in the field of HIV, and AIDS indicated the overall knowledge and attitude of Iranian population are near the at least acceptable level (22). Therefore, further KAP studies in the field of HIV and AIDS in Iran is not necessary, and it is better resources of such studies spend for other priorities.

According to our results, based on the aim of studies, high-risk behaviors; high-risk groups and co-infection of TB-HIV are the research priorities. These priorities presented as research priorities on another study (7) that is compatible with our results.

Finally, published studies in the field of HIV and AIDS have a rising trend in Iran that compatible with the result of other studies about science production in the field of HIV and AIDS in Iran (23).

This study has a main limitation; we developed a sensitive search strategy to obtain all published research; however, it may we lose some articles. We could not include unpublished studies.

Conclusion

The epidemiologic research priorities in the field of HIV and AIDS in Iran based on target and study population are high-risk groups such as FSWs, injecting drug users and prisoners. Based on the aim of studies, prevention, adherence to treatment and ARV drug resistance are other research priorities.

Ethical considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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script and her comments on this article. The authors declare that there is no conflict of interests.

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Table 3: Research priorities based on recommendation of authors for further research

Required information	KAP Study	Prevalence of HIV/AIDS	Co-infection of HIV and viral hepatitis	Co-infection of TB-HIV	High risk behavior/ High risk group	Opportunistic infection in HIV	Co-infection of HIV/other STI and HPV	Assess the effect of education	Survival and mortality	Quality of life	Cost and cost effectiveness	Adherence to treatment	Prevention	Stigma and prejudice	Depression neurologic	Nutrition in HIV patients	Care and quality of care for HIV patients	Experience, perception and behavior of	Drug resistance in HIV/AIDS patients	Other diseases in HIV/AIDS patients	Description of HIV/AIDS patients, signs and symptoms	
Available information	KAP Study																					
	Prevalence of HIV/AIDS	Green	Red																			
	Co-infection of HIV and viral hepatitis		Yellow	Red																		
	Co-infection of TB-HIV			Red	Red																	
	High risk behavior/ High risk group				Red	Green																
	Opportunistic infection in HIV					Green	Green															
	Co-infection of HIV/other STI and HPV						Green	Green														
	Assess the effect of education							Green														
	Survival and mortality								Yellow													
	Quality of life									Yellow												
	Cost and cost effectiveness										Yellow											
	Adherence to treatment											Red										
	Prevention												Red									
	Stigma and prejudice													Green								
	Depression neurologic disorders and HIV														Yellow							
	Nutrition in HIV patients															Green						
	Care and quality of care for HIV patients																Red					
	Experience, perception and behavior of																	Red				
	Drug resistance in HIV/AIDS patients																		Yellow			
	Other diseases in HIV/AIDS patients																			Red		
	Description of HIV/AIDS patients, signs and symptoms																				Red	

Green: low priority ; yellow: moderate priority ; red: high priority