A Scientometric Study of Iranian Scientific Productions in the Field of Substance Use and Addiction Research in the Years 2008 to 2012

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Original Article

Abstract

Background: We aimed to evaluate the current status of scientific production in the field of substance use and addiction in Iran, to determine its trend and pattern during a 5 years period (2008-2012).

Methods: Using relevant keywords, we searched three international databases (Web of Science, Medline, and Scopus) and two local databases (SID and Iranmedex) to locate the papers published in the field of addiction by Iranian researchers during 2008-2012.

Findings: The results indicated a significant increase in the number of studies published in the field during the 5 years study period, with more than half of the papers published in the last 2 years. Results also indicated that over half (53.5%) of the papers were published in Persian-language Iranian Journals, but the rate of increase in the number of papers published in English was slightly higher than that of Persian ones. Opioid substances were found to be the topic of approximately 75% of the papers. Studies on key topics, including national surveys, evaluation of current programs, addiction in women and children, and so forth, were found to be highly lacking.

Conclusion: Results suggested a significant growth in the scientific production of Iran in the field of substance use and addiction. However, considering the significance of substance use and dependence in the country, and compared to the scientific production of developed countries, the amount of research conducted in the field of addiction in Iran is still limited.

Keywords: Substance-related disorders, Abuse, Dependency, Bibliometric analysis, Iran

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Introduction

Nowadays, addiction has become a major problem affecting almost every single population in the world. Studies have indicated that worldwide approximately 2000 million individuals use alcohol¹ and 200 million use illicit drugs.² Illicit drug use directly accounts for 0.8% of global disability-adjusted life-years (DALYs), in which opioid dependence has the largest contribution.³ It has also been estimated that 3.8% of all global deaths and 4.6% of global DALYs are attributable to alcohol.⁴

In Iran, substance use is one of the top health risk factors, especially in young men.⁵ In the 2011 national household survey on mental health (Iran MHS), 2.8% of the population aged 15 to 64 received a diagnosis of substance or alcohol use disorder.⁶

Substance abuse, on the one hand, has a multifaceted and interdisciplinary nature, and on the other hand, is in large magnitude affected by cultural, economic, and social aspects.⁷⁻⁹ In the field of addiction research, a major contribution belongs to US by the National Institute of Drug Abuse (NIDA) and the National Institute on Alcohol Abuse and Alcoholism (NIAAA), together with a budget of approximately United States dollar (USD) 1.5 billion annually.¹⁰

It was estimated that about 85% of the world research in the field of addiction was significantly funded by the NIDA, 10 making it a major provider of scientific knowledge in this field. Apparently, a great part of the knowledge produced by these two institutes can be used in other countries, especially in case of basic research. However, as mentioned above, due mainly to the cultural, economic, and social differences between different countries, the implications of substance and dependence and, therefore, appropriate preventive measures and treatment options may also differ. This necessitates conducting research in a wide variety of economic, cultural, and social backgrounds in order to provide more efficient preventive and treatment options, suitable for each community.

The assessment of scientific research in a specific domain is of vital important, mainly in order to measure and enhance productivity, which is an important indicator of development.¹¹ Scientometric studies provide researchers a useful

tool to determine the current state of research in a field and broaden our horizon for future research. ¹² Using this type of study allows us to obtain useful information on characteristics of the studies conducted in a field, those who have conducted them, and the developments of scientific production in that field. ¹³ In addition, this type of study allows us to study the scientific production of a country in different fields, to detect fields and areas of science in which studies are concentrated, to assess the collaboration of researchers, institutions, and countries, and to provide useful directions for conducting further studies. ¹⁴⁻¹⁶

Traditionally, Iran has been facing the challenge of substance use and dependence for centuries, due mainly to its distinct historical, geographical, cultural, and social characteristics. As with other eastern countries, the pattern and implications of substance use in Iran are considerably different from those of western countries, where the greatest share of knowledge in the field of addiction is being produced. Therefore, Iranian researchers are becoming increasingly aware of the need for conducting scientific research in this field, and an ever-increasing number of studies is being conducted by them.¹⁷

The previous scientometric study on substance abuse in Iran showed that limited research had been conducted in this field over the 20 years (1973-1992); during the next 10 years (1993-2002), however, the number of relevant studies increased significantly. The aim of the present study was to evaluate the current status of scientific production in the field of addiction in Iran, to determine its trend and pattern during 5 years of 2008-2012, and to provide insight into the current shortcomings and identify the existing gaps that need to be bridged by future studies.

Methods

We formulated a comprehensive search strategy in five databases, of which three were widely used international databases (Web of Science, Medline, and Scopus) and two were Iranian databases (Iranmedex and SID).

The MeSH terms and text words (and their combinations and truncated synonyms) were adapted to search each database by combining the following two sets of terms: (i) English transcription of Iran and its cities with

universities of medical sciences and their names, adopted from Farhoudian et al.¹⁹ and (ii) terms related to substance use disorders and abusive substances used in Iran.

Iranian databanks were searched only with Persian terms related to substances, and drug use disorders.

Our search, conducted in May 2013, produced a total of 3032 hits, of which 426 were from Medline, 1056 from Web of Science, 1550 from Scopus, 1170 from SID, and 1804 from Iranmedex. After removing duplicates and irrelevant papers, a total of 1444 papers were included in the study.

We screened the papers retrieved by our systematic search based on the inclusion criteria developed beforehand:

- studies conducted on known substances and alcohol (excluding tobacco)
- Studies conducted on substance abuse and dependence
- Studies conducted on other health-related issues, with a mention of addiction or substance use in their abstract
- Studies conducted on an unknown herb, with a mention of its abusive or addictive characteristics in the abstract

The studies should have been conducted in Iran or on Iranian populations and published in the years 2008 up to end 2012.

The screening process was due based on title, abstract, and keywords of the potentially relevant papers; if necessary, the full-text of the article was retrieved for this purpose. In order to extract the relevant information from the papers included in the present work, we developed a data extraction form. We extracted information on bibliographic data (year of publication, language, nationality of the journal, and the field of the journal), type of the substance evaluated, field of study, study objective, study design, and the place where the data had been collected.

As a pilot, the abovementioned relevant information from 30 papers was separately extracted by two psychiatrists who are experienced in the field of addiction research, education, and therapy. Then, the difficulties, doubts, and inconsistencies in the information extraction process resolved in a session with the presence of a third psychiatrist. Any issues raised

later during the study were also resolved in similar sessions.

Results

Bibliographic data

During 2008-2012, a total of 1444 articles were published by Iranian researchers in the field of addiction. As given in figure 1, the trend for the number of studies published has been increasing, with over half of studies being published in 2011 and 2012. Additionally, it can be observed that slightly over half (53.5%) of the papers were published in Persian-language Iranian Journals. Of the other half, which was published in Englishlanguage journals, 54.1% were published in Iranian English-language journals. This means that only 21.2% have been published in foreign journals. Furthermore, it can be observed that the rate of increase in the number of papers published in English was slightly higher than that of Persian ones. The number of papers indexed in Web of Science was 42, 41, 95, 61 and 80 in the years 2008, 2009, 2010, 2011 and 2012, respectively with a total of 319 in the 5 years.

A vast majority of the papers (84.8%) were published in biomedical journals, while papers published in psycho-social journals contributed to only 15.2% of the total. The order of journals with the largest number of addiction-related papers was as follows: Iranian Journal of Psychiatry and Clinical psychology (38 papers), Addiction and Health (32), Addiction Research (32), Acta Medica Iranica (30), and Journal of Research in Health Sciences (29).

Type of the substances used

In 41.4% of the papers, the type of the substance was not mentioned in the title or the abstract. For those in which the type of the substance had been mentioned in the title or the abstract, opioid drugs contributed to approximately 75.0% of the cases; of these, more than half of the papers were related to the use of illegal opioid drugs. Ranked next were alcohol, stimulants/hallucinogens, and cannabis with a large difference (Table 1). Of the stimulants/hallucinogens-related studies, those conducted on ecstasy contributed most, followed amphetamine-like substances. other addition, 3.6% of the papers had assessed behavioral addiction, such as addiction to computer games.

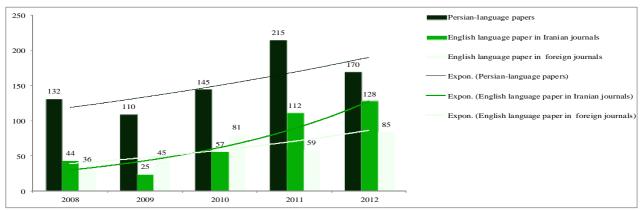


Figure 1. The trend for the number of papers published by Iranian researchers in the field of substance use and addiction between 2008 and 2012

Table 1. The substances studied in the papers published on substance use and addiction between 2008 and 2012, in Iran

2000 and 2012, in man	-
Type of substance	n (%*)
Opioid drugs	641 (44.4)
Non-prescribed opioids/illegal	351 (24.3)
Prescribed opioids/legal	327 (22.6)
Alcohol	140 (9.7)
Stimulants/hallucinogens	105 (7.3)
Ecstasy	52 (3.6)
Amphetamine, methamphetamine	49 (3.4)
Others (e.g. cocaine, PCP, etc.)	27 (1.9)
Cannabis	64 (4.4)
Sedatives	34 (2.4)
Herbs with addictive characteristics	33 (2.3)
Temgesic/norgesic	11 (0.8)
Steroids	7 (0.5)
Undetermined abusive substances	598 (41.4)
Behavioral addiction	52 (3.6)

*The percentage is from 1444 published papers. Each paper might have studied more than one substance. Therefore the sum of percentages is more than 100. PCP: Phencyclidine

Study domain

More than two-thirds of the studies on addiction had been conducted in the domain of health sciences, which was followed by those conducted in the fields of psychological sciences and basic biological sciences (Table 2). Additionally, the rate of increase was also greater for the studies on addiction carried out in health sciences domain.

Topic of research

Table 3 presents the number and contribution to the total of different research topics. As given in table 3, applied studies comprised 86.0% of the total, of which more than 40.0% were pertaining to the effects of substance use and high-risk behaviors accompanied by substance use; others

were mostly related to risk factors for substance abuse. Studies on therapeutic interventions, preventive measures, harm reduction, and those on drug control laws and policies had small contributions to the total number of studies. Of the studies on basic sciences, those conducted on receptors and neurotransmitters has the largest contribution, while genetic studies contributed least.

Table 2. The research domain of papers published on substance use and addiction between 2008 and 2012, in Iran

Research domain	n (%*)
Health sciences	983 (68.1)
Psychological sciences	235 (16.3)
Personality psychology	112 (7.8)
Knowledge and attitude	69 (4.8)
Cognitive psychology	61 (4.2)
Other psychological studies	3 (0.2)
Basic biological sciences	199 (13.8)
Social sciences	55 (3.8)

The percentage is from 1444 published papers. Each paper might have focused on more than one domain. Therefore the sum of percentages is more than 100.

Table 4 presents the number of studies on 10 important topics in the field of addiction. As presented in table 4, only seven papers from national surveys had been published during the 5 years of our study period. Injecting drug use and its consequences, like acquired immune deficiency syndrome (AIDS), had made up a significant portion of the studies. Studies on addiction in women contributed to 3.1% of the total number of studies. The contribution of studies on spirituality and religious beliefs and that of community-based studies were negligible.

Table 3. The subjects of papers published on substance use and addiction between 2008 and 2012, in Iran

2008 and 2012, in Iran	
Study topic	n (%*)
Basic sciences	198 (13.7)
Genetics	6 (0.4)
Receptors/neurotransmitters	98 (6.8)
Cellular/tissue	41 (2.8)
Others	53 (3.7)
Applied sciences	1244 (86.1)
Epidemiologic aspects of substance use and addiction	100 (6.9)
Factors associated with addiction	295 (20.4)
Addiction progression, risk behaviors, and consequences	517 (35.8)
Diagnosis and classification	29 (2.0)
Substance use and dependence in medical patients	21 (1.5)
Psychiatric co-morbidity	37 (2.6)
Medical interventions	127 (8.8)
Detoxification	34 (2.4)
Maintenance treatment	40 (2.8)
Psychological therapies	40 (2.8)
Self-help groups	6 (0.4)
Social support	2 (0.1)
Other interventional studies	18 (1.2)
Health care system	2 (0.1)
Studies on addiction prevention	35 (2.4)
Preventive interventions	33 (2.3)
Preventive care system	2 (0.1)
Studies on addiction side-effects and harm reduction	16 (1.1)
Interventions for harm reduction	15 (1.0)
Harm reduction services and system	1 (0.1)
Studies on supply reduction	15 (1.0)
Studies on drug-control laws and policies	37 (2.6)
Other applied studies	13 (0.9)
Medical applications of abusive substances	100 (6.9)
*The percentage is from 1444 published papers. Each paper might be	va more than one main

*The percentage is from 1444 published papers. Each paper might have more than one main topic. Therefore the sum of percentages is more than 100.

Table 4. The hot topics studied in the papers published on substance use and addiction between 2008 and 2012, in Iran

Hot topics	n (%*)
National surveys	7 (0.5)
Substance abuse in children and adolescents	69 (4.8)
Substance abuse in women	45 (3.1)
Injecting drug use	156 (10.8)
AIDS	120 (8.3)
Methadone	85 (5.9)
Death	46 (3.2)
Suicide	24 (1.7)
Spirituality and religious beliefs	9 (0.6)
Community-based studies	5 (0.3)

^{*}The percentage is from 1444 published papers. Each paper might have studied more than one of these hot topics or might not have studied any of these hot topics.

AIDS: Acquired immune deficiency syndrome

Study methods

The number and percentage of human studies conducted with different methods are given in table 5. As can be seen, approximately two-thirds the studies were observational while interventional and review (mostly narrative) studies contributed to 13.5 and 6.0% of the total number of studies, respectively. Additionally, it is noteworthy that only three studies had been published on program evaluation during the 5 years of the study period (2008-2012). An increasing trend was found for almost all of the study types, with observational studies having the largest increase rate during 2008-2012. Approximately, 80.0% of the studies were conducted on humans, from which close to half were on substance abusers. Study setting was

treatment centers in 72.0% of the papers, from which those conducted in hospitals ranked first, followed by those conducted in laboratories and drug treatment clinics.

Table 5. The Methods of studies in papers published on substance use and addiction between 2008 and 2012, in Iran

Study methods	n (%*)
Observational studies	926 (73.3)
Cross-sectional/descriptive	214 (16.9)
Cross-sectional/analytical	526 (41.6)
Case-control	67 (5.3)
Longitudinal	33 (2.6)
Case report	29 (2.3)
Case series	13 (1.0)
Other observational studies	47 (3.7)
Clinical trials	195 (15.4)
Randomized, controlled trials	129 (10.2)
Controlled trials	22 (1.7)
Other trials	44 (3.5)
Review studies	86 (6.8)
Meta-analysis	3 (0.2)
Systematic review	14 (1.1)
Narrative review	69 (5.5)
Tool development	26 (2.1)
Program evaluation	4 (0.3)
Content analysis	3 (0.2)
Economic assessment	3 (0.2)
Presentation of statistics	2 (0.1)
Other methods	7 (0.6)

*The percentage is from 1264 published papers. Animal studies are not included in this table. A few papers used more than one study method.

Discussion

The present scientometric analysis was conducted to evaluate Iranian publications in the field of substance use and addiction over the period from 2008 to 2012. Results indicated a dramatic increase in the number of papers published by Iranian researchers rising from 212 papers in 2008 to 383 papers in 2012. It is also noteworthy that above 50.0% of these papers were published in the last 2 years of the study period. Additionally, compared to the number of papers published in the field of addiction by Iranian researchers during 30 years (1973-2002), which was a total of 218.18,20 The dramatically recent numbers are suggesting a considerable growth of scientific production in this field during the last decade.

Studies conducted on publications in the field of substance use and dependence have indicated similar trends for other parts of the world, especially US and countries of European Union (EU). In a recent study by Bramness et al.,21 the scientific production in the field of addiction of the US and ten EU countries were compared during 2001-2011. Web of Science was used as the only database and Tobacco was also included in the study. Results indicated that the trend of the publication was increasing for almost every single country studied. US produced more than twice the number of papers produced by EU countries altogether during this time period (28211 vs. 13109); the rate of increase was also higher for the US. Among EU countries, England was found to be the leading country in the production of addiction research, followed by Germany, and The Netherlands. Authors have argued that the observed increasing trend for the rate of publications in the field of addiction research is most likely due to the general increase in the rate of publications in science. This increasing trend has also been observed by other bibliometric studies previously conducted.²²⁻²⁶

In the case of Iran, as mentioned above, although the rate of publications in the field of addiction has been increasing, these publications contribute to about 0.34% of the total scientific publication of Iran (319 from 95220 papers in Web of Science²⁷ from 2008 to 2012), which is considerable. In addition, this increasing trend also exists for the scientific production of Iran in other areas, so the relative rate has been almost constant during the study period. In addition, the scientific production of Iran in the field of addiction is comparable to that of the world. For example, Iranian researchers published an overall 61 papers in the field of addiction research in 2011 which were indexed in Web of Knowledge. The corresponding value (with addition of tobacco) for the US was approximately 3300;21 however, our figures are higher than some European countries, like Denmark and Norway and comparable with some other countries, like Finland, Italy, and Sweden.²¹

As opioid drugs constitute the major proportion of Iranian scientific substances and only a minor proportion in other countries, it can be concluded that Iran has a major contribution to global scientific production in the field of opioid addiction. A bibliometric study by Helinski and Spanagel²⁸ indicated that although opioids were a hot topic of research between 1988 and 2000,

fewer papers have been published worldwide on opioids since 2000. This clearly indicates the difference in the patterns of substance use in Iran compared to those of other countries and reflects the fact that the use of opioid drugs is one of the major problems in the field of substance dependence in Iran.^{20,29}

However, the number of studies on alcohol use is quite small. This relative lack of attention of the Iranian researchers to alcohol can be explained by the fact that the prevalence of problem alcohol use is relatively low in Iran,⁶ it also suggests a lack of attention of the Iranian researchers to the important challenge. It should be noted that more than half of the overall addiction research in USA and EU countries are related to alcohol.²¹

Results also indicated that most of the included studies were observational in design (mostly on the side effects of substances), and interventional studies, especially on preventive measures were highly lacking. Since 1996, extensive preventive measures and programs have been applied by different organizations in Iran, of which very few are based on the local evidence. Therefore, further studies in this area can produce useful evidence to be used by policy makers to improve the current prevention practice in the country.

A vast majority of studies on addiction had been conducted in the domain of health sciences (68.1%), while those in the domain of social sciences had a negligible contribution (3.8%) to the total number of studies, suggesting the obvious lack of such studies. It is noteworthy that although compared to the previous scientometric study for the period 1973-2002, the number of studies in the domain of social sciences has increased dramatically, 18,20 the number is still small. In Iran, the challenge of substance use and dependence is somehow amalgamated with cultural and social issues. Due to the sociocultural aspects of substance use in Iran which makes the challenge quite distinct from that of other countries, the conduct of scientific research in this domain is of paramount importance. However, it can be guessed that a number of such studies have been conducted by various governmental organizations, the results of which are neither published nor are made available to the researchers.

Results also showed a great lack of policy

research in the field of addiction in Iran. Although there have been significant changes over time in the strategies applied for addiction control and prevention in Iran, we could not place any policy research based on which the past, as well as the current strategies, have been adopted. This implies that the policies and strategies adopted by authorities are not based on the evidence produced by local research.

Another important area in which scientific research in Iran seems to be lacking is studies on substance use and dependence in children and women. In countries such as the US, however, studies on children and women have always had higher priorities and received better support from funding bodies and authorities. It has also been observed that school officials and parents are both highly interested in such studies.³⁰

We found a small number of studies conducted on behavioral addiction, namely, the internet, video games, and cell phone addiction. This is an emerging area in the field of addiction, the existence of which is still being questioned by some of the scientific researchers.³¹ A recent study conducted by Carbonell et al. indicated that the number of papers being published in this area is significantly increasing worldwide, with US and China being the most productive countries in this area.³² Since the pattern, implications, and type of behavioral addiction might be different from a country to another, conduct of further research in this area is warranted in Iran.

This study also showed that more than half of Iranian papers included in this study were published in Persian. Another study had also indicated that both National and International scientific databases should be searched in order to access Iranian research on addiction.³³ This suggests the importance of the access of international research community to the studies that are publishing in local languages.

There are two limitations to our study. First, we used papers published in peer-reviewed journals as a measure of scientific production. Although this is an acceptable measure, globally;³⁴ some good quality researches might not be published. However, as the strength of this study, we used a variety of databases in order to access a higher number of published papers. Second, we are limited by our search terms, which may or may not include or exclude relevant research, although we

used an inclusive list of search terms.

Conclusion

According to the results of this study, it can be suggested that the rate of scientific production of Iran in the field of addiction has substantially increased during the past few years. This has been in parallel with the interest of drug control authorities to promote evidence-based interventions. However, considering the significant prevalence of substance use and dependence in the country, and compared to the scientific production of developed countries, the amount of research conducted in the field of addiction in Iran is still limited. Results also suggest the need for setting

research priorities by authorities to focus the researches on the existing problems in the country that require scientific solutions.

Conflict of Interests

The Authors have no conflict of interest.

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مطالعه علمسنجی تولیدات علمی ایران در حوزه پژوهش بر مصرف مواد و اعتیاد در سالهای ۹۱-۱۳۸۷

دکتر آفرین رحیمی موقر 1 ، دکتر معصومه امین اسماعیلی 2 ، دکتر انوشه صفرچراتی 3 ، حمید صرامی 4 ، دکتر حسن رفیعی

مقاله يژوهشي

چکیده

مقدمه: هدف از انجام مطالعه حاضر، بررسی وضعیت فعلی تولیدات علمی ایران در زمینه سوء مصرف مواد و اعتیاد و الگوها و تغییرات آن در طول پنج سال (سالهای ۱۳۸۷ تا ۱۳۹۱) بود.

روشها: با استفاده از کلید واژههای مرتبط، سه بانک علمی بینالمللی (Medline ،Web of Science) و دو بانک علمی داخلی (Scopus) و Medline ،Web of Science) برای یافتن مقالات منتشر شده در زمینه مصرف مواد و اعتیاد در بازه زمانی سالهای ۱۳۸۷ تا ۱۳۹۱ مورد جستجو قرار گرفت.

یافته ها: در مجموع ۱۴۴۴ مقاله به دست آمد. یافته ها حاکی از افزایش تولیدات علمی در طی دوره پنج ساله بود؛ به گونه ای که بیش از نیمی از مقالات این پنج سال به دو سال آخر آن اختصاص داشت. ۵۳/۵ درصد از مقالات در مجلات فارسی زبان منتشر شده بود و میزان افزایش مقالات انگلیسی کمی بیش از مقالات فارسی بود. در میان مقالاتی که نام ماده مورد بررسی در چکیده آنها مشخص بود، مواد اپیوئیدی حدود ۷۵ درصد موضوع پژوهش را تشکیل می داد. دو سوم مطالعات به موضوعات بهداشتی - درمانی ارتباط داشت. مطالعه برخی مسایل اصلی مانند مطالعات ملی، ارزشیابی خدمات و برنامه ها، علوم اجتماعی و پژوهش بر اعتیاد زنان و کودکان اندک بود.

نتیجه گیری: در سالهای گذشته رشد قابل ملاحظهای در تولیدات علمی ایران در زمینه مصرف مواد و اعتیاد رخ داده است، اما با توجه به اهمیت این موضوع در کشور و در مقایسه با تولیدات علمی مرتبط در کشورهای توسعه یافته، هنوز پژوهش در این حوزه در کشور محدود میباشد و نیاز به رشد و پیشرفت دارد.

واژگان کلیدی: اختلالات مرتبط با مواد، سوء مصرف، وابستگی، تحلیل کتابخانهای، ایران

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