Research Article

The Hidden Aspects of A Century of Substance Use Policymaking in Iran

Emran Razaghi[1], Mohammad Binazadeh[2], Rahimeh Negarandeh[2], James Bradford[3], Kaveh Khoshnood[4]

1. Tehran University of Medical Sciences, Iran, Islamic Republic of; 2. Independent researcher; 3. Liberal Arts Department, Berklee College of Music, United States; 4. Yale University, United States

The use of substances, especially opiates, has been a longstanding and significant problem in Iran. In response, Iran has experimented with a wide range of policies including nonintervention, regulation, legalization, prohibition, and criminalization. Exploring Iran's substance use policies suggests that the Iranian government has been more concerned with byproducts of policies such as financial revenue, promoting diplomacy, and maintaining power, rather than genuinely alleviating the substance trade and addiction. First, we explore how opium taxation was the core substance use policy before oil became the main source of government income. Second, we discuss how conflicts of power between the health sector and other stakeholders relegated the role of the health sector and medical professionals. Lastly, we analyze the post-1979 revolution policies when Iran experienced social desolations, such as during the Iraq-Iran war and the subsequent economic recessions. We reveal that stigmatization and scapegoating of people who use substances have been used as a cover-up to obscure deeper social problems. This historical analysis ultimately reveals that Iran's substance use policies have largely neglected medical approaches in favor of more oppressive, but politically expedient options.

Corresponding author: Emran Razaghi, emran.razaghi@gmail.com

Introduction

Iran has long struggled with substance use, particularly with the use of opiates [1][2][3]. The prevalence of substance use among the general population or specific groups has been estimated to be between 2 to more than 10 percent in the past century [4][5][6][7][8]. Besides the astounding estimate of 11 percent

prevalence of opium dependence in the general population in 1949 [5], other estimates have mostly been between 2 to 5 percent. Interestingly, a recent study has estimated that 24.1 percent of the male population has tried substances more than once [9]. Although in the past two decades the authorities have questioned and underrated the authenticity of prevalence estimates of substance use, the official data has not dropped below 5 percent. The problem has been so profound and peculiar that numerous poets [10], historians [11], and international tourists [12] have referred to it in recent past centuries. Iran's long historic experience in dealing with the problem provides valuable substance for policymaking scholars. Tackling the substance use problem, Iran has experimented with the widest variety of approaches and cycling paradigms including nonintervention, legalization, prohibition, and criminalization [13]. More often than not, a thorough historical analysis of previous policies has failed to guide the application of policy shifts. This template of switching policymaking characterized by a lack of historical justification may result in methodological errors, namely error tolerance [14][15], where the observer assumes a causal relationship between coincident or subsequent phenomena, without considering an evidence-supported examination of that assumption. Even when standard measurements and scientific methods are utilized, methodological errors could lead to another conceptual error called linearity [14]. In this condition, the property of a relationship or the function between two variables disables the capacity for the proper prediction of the future (e.g., harsher substance use criminalization will result in more decrease in the prevalence of substance use).

Despite the ahistorical paradigm of Iran's substance use policymaking, the current review strives to analyze the latent sociological dynamics [16] that might better explain the motivations behind the application of certain types of policies at different moments in Iran's history. In fact, instead of focusing on well-being and health of individual citizens, substance use policymaking in Iran has largely been dominated by political exigencies rather than scientific principles. To better understand the alternating nature of the Iranian policy, we review the history of substance use policymaking within a broader perspective of Iran's history.

Revenue over Citizens Welfare: The Shanghai Conference and the Push for Regulation 1909-1930

The first important involvement of Iran in substance use policymaking in modern times dates back to the participation of an Iranian delegation in the United States-convened conference of thirteen

nations, called the International Opium Commission, from 5 to 26 February 1909 in Shanghai, China. The conference became an array of dynamics of power between Britain and the United States in the Far East [17]. Even though under the influence of Adam Smith's theories of capitalism [18] and thanks to the two opium wars of 1839-1842 and 1856-1860 [19] the British had accomplished military and trade dominance in the region, the US had begun competing with Britain over China as a potential market for US economy. Therefore, the conference resolution became more in favor of China's interests compared to forgoing British policies [20]. The timing of the conference coincided with one of the deepest political unrest in Iran when the Russia-backed king, Mohammad Ali, was trying to abolish the recently ratified decree of constitutionalization of the monarchy by his father, the late king. The political upheaval was a direct consequence of interference, the exercise of power, and competition between Britain and Russia over Iran [3][21]. Given its limited ties with the US in 1909 and its low share of opium production — no more than two percent of total world production [17] it appears that it were the British who insisted on inviting Iran to the conference to save more votes in rivalry with the US. Some scholars have even argued that Britain was acting as a narco-empire [22] and had to defend itself from the US prohibitionist approach. Despite all the odds, the ultimate result of the conference for Iran was to levy a tax on opium production and export. This was the first time that the Iranian government had officially decided to use opium production and export as a source of revenue [23]. The government learned that substance use policy was not simply limited to controlling the supply of opium. It was, therefore, contemplated that similar to other governments — such as Britain, the Netherlands, and France — the control of opium production and its market through taxation, would not only turn into a source of revenue for the government but also would provide the government with foreign exchange gained from opium export [5]. In the 1912 Hague conference, some countries pushed for more stringent limits on opium exports. The conference's demand on Iran to limit opium production, however, was not welcomed. By 1912, Iran had replaced India as China's primary source of opium import and had become one of the largest producers of opium [3]. In addition, in 1922 Iran hosted a US financial mission that one of their objectives was to help the government in collecting opium taxes; before that time 80% of all opium produced in Iran had evaded taxation [23]. By 1923, 25 percent of the whole export revenue of the government was from opium [24].

Before 1880 the government approach to opium cultivation, trade, and consumption had been a *laissez-faire* regime [25] and interactions among generally private stakeholders of the opium trade were based on free-market rules. However, prohibitionist approaches to opium and alcohol also have

a long history — upwards of 400 years [6][26]. From 1880 to 1946 pressures to control the substance trade led the Iranian government to regulate the cultivation and use of substances [27][28]. As we will discuss in the following paragraphs the government recognizing the value of opium as a regulated good first imposed taxes on the consumption and export of opium and eventually monopolized its production and sales in the 1920s [25][28]. The monopoly program was later expanded under the supervision of Arthur Millspaugh, who had served as an adviser to the US State Department's Office of Foreign Trade, and was hired by the Iranian government 1922-1927 to renovate Iran’s financial management [25]. The model proposed by Millspaugh was adopted from the US Harrison Narcotics Tax Act of 1914 [29].

The financial benefits of the opium trade were so lucrative that in 1928 the government introduced a bill to monopolize the opium trade [25][30]. The exclusive focus of the initial draft on the opium trade caused the parliament to insist on the inclusion of an additional clause to the bill committing the government to provide treatment for people who used opium. A government that had long been struggling to generate revenue and foreign currency, began to facilitate opium consumption for tax revenue. The opium taxation was so remunerative that in (many) instances opium was forcibly sold to people as an obligatory accessory to necessary goods such as sugar [24]. Despite the common belief that by opium taxation the government revenue would increase progressively, however, in 1926, the upward trend of revenue stalled, and by 1929 the revenue began to decrease (See Table 1) [23].

Year	Current (Krans)	Adjusted (1965)
1922	11,866,365	182,559,4662
1923	11,113,870	185,231,1667
1924	14,899,000	232,796,000
1925	16,391,000	256,109,000
1926	15,701,000	241,553,000
1927	13,482,000	224,700,000
1928	16,745,000	293,771,000
1929	9,963,000	166,050,000
1930	10,545,000	170,080,6645

Table 1. Impact of opium taxation on state revenue.

Source: Hensen (2001)

It may, therefore, be concluded that Iran's substance use policy in this period was a product of the government's need for revenue, rather than a commitment to tackling the problem of a huge number of people dependent on opium. Perhaps the Iranian authorities were not aware of the Chinese experience and the negative consequences of taxation over opium during the sixteenth to nineteenth centuries that led to a huge national crisis of opium dependence [31]. Possibly even if they were aware of that experience but as the grand strategy of the government in the early 1900s was a hastened industrialization of the country and there was an immediate need for revenue and foreign currency, that grand strategy had cast a shadow over the potential negative health consequences of substance use.

Medical Discourse: The Rise and Fall of Physicians 1930-1960

Opium has been known to people living on the Iranian plateau at least since the second millennium BC. Traditional healers and premodern physicians prescribed opium as a potent pain killer [25][32]. However, in the 1930s Iranian physicians began to systematically react to the epidemic of opium dependence. Key Iranian physicians from different disciplines established the Association Against Opium and Alcohol (AAOA) [33]. During the period of their activity (1930-the 1960s), AAOA had a position of criticizing the government's opium taxation policies and demanded prohibitionist approaches including treatment of dependent individuals [25][26]. A 1936 report of the office of the prime minister revealed that most of the privates who enlisted for military service were opium dependent. The report sent shock waves through the medical and political establishment and resulted in the creation of the Council Against Opium and Alcohol (CnAOA), consisting of representatives from the ministry of health and other sections of the government, tasked with policy development and decision making [25][33]. The orientation of CnAOA, however, was in favor of the government monopoly and the government's fiscal revenue from opium taxation and export. But one difference from earlier periods was that the council also suggested plans for the treatment of people who were dependent on opium. CnAOA also recommended the control of alcohol. However, the ministry of finance and the customs office never practically followed the resolutions of CnAOA.

The differences in objectives and priorities of the CnAOA members ultimately led the council of ministers to direct the ministry of health to establish and chair the Commission Against Opium and Alcohol (CmAOA) on behalf of the office of the prime minister and with other ministries as members [33]. Under the chairmanship of the ministry of health, CmAOA was ordered to supervise operations to control opium cultivation and trafficking. During the 1940s a morphine derivative (ethylmorphine) — known as dionin — with analgesic and antitussive effects was introduced for the treatment of opium dependence [11]. The CmAOA widely advocated for dionin as an effective treatment and tried to make it available through pharmacies. The orchestrated efforts of AAOA and CmAOA resulted in a total ban on opium production and prohibition of opium consumption in 1955 [28][33].

The involvement of the ministry of health in substance use policymaking during the 1930s and 1940s and the medicalization of the problem could be described as clinging to power by the health sector. With their focus on dionin, one could argue that the medical community tried to take greater ownership in shaping the Iranian substance use policy. By banning opium cultivation and reducing the

government revenue from opium taxation the dominance of medically oriented substance use policy was further reinforced by the elimination of the role of the ministries of finance and agriculture. The dominance of the medical community was also strengthened by CmAOA chairmanship of a psychiatrist who performed regular opium-related health awareness radio programs. With the introduction of dionin, the health sector seemed to be grasping the economics of opioid dependence by replacing opium with pharmaceutical opiates. The capital invested in the opium trade was tried to shift to a new pharmaceutical market. The efforts of the health sector could be interpreted as exercising the pharmacological determinism of substance dependence [13] for an inherent financial quest rather than a health-based approach.

Dionin, however, did not prove potent enough to become a widely accepted replacement for opium. The health sector's push for power and its failure, therefore, was compromised by introducing the opium voucher program which distributed opium as a form of maintenance medication. With the failure of the medicalization of substance use policy and with the opium voucher program — which was a mere dispensing method with no medical services accompanied — in place, other players who benefited from the monopoly of the government on the opium trade, such as ministries of finance and agriculture, once again had the opportunity to influence substance use policy. Interestingly, a somewhat similar scheme is being followed by the authorities in recent years as buprenorphine is being labeled as a "new" medication for substance use treatment and promoted over methadone.

With other physicians not interested in substance use-related health problems, psychiatrists were the only group that had the potential to deal with substance dependence. But at that period psychiatrists and clinical psychologists were few in number, and many were overwhelmed in dealing with patients with other mental problems. Psychiatrists in academia were not interested either. There were few public health facilities under direct observation of the ministry of health, such as Vanak Addiction Treatment Facility, as the only clinics providing opioid detoxification and tapering of opioid dependence by methadone [27]. The Vanak center, in a sense, was a miniature of programs developed during the 1950s and 1960s in the United States, such as the US Public Health Hospital in Lexington, Kentucky, and the Riverside Hospital in New York City [34].

The medical community was only familiar with the dualism of disease and health, with no gray area in between. Therefore, methadone maintenance was not welcome as a treatment. There was also a technical problem with the dosing of methadone. Methadone was generally prescribed in low doses. In the late 1960s and early 1970s, heroin dependence was replacing opium use and low doses of

methadone did not result in promising effects [34][35][36]. Accordingly, psychiatrists, too, became frustrated with the treatment of substance dependence. Fed up with the management of substance dependence, the medical community no longer discussed medical, psychological, and behavioral aspects of substance dependence. Therefore, it appears that psychiatrists were not interested in substance-use-related problems and in the management of substance use during that period [27]. Iran was gradually embracing more law enforcement strategies and ignoring health-based approaches.

Trafficking of Opiates and the Position of Pahlavi Royal Court 1960-1979

With Iran's increasing oil export from the 1940s, the opium trade began to sideline. But when under the leadership of premier Mohammad Mosaddegh 1951-1954, the parliament nationalized the British-controlled petroleum industry the Iranian government was boycotted internationally over Anglo-Iranian oil company discord, and oil export revenue came to a standstill. As a result, opium production and export as an auxiliary source for government revenue gained attention again and opium-related earnings escalated to 20% of government revenues [23][25][26]. In 1953, however, the government of premier Mosaddegh was overturned by a US-supported coup and King Mohammad Reza was reinstated in power. The emerging US-Iran coalition began to shape Iran's substance use policy. As the export of oil again became the main source of income for the government the opium share of the government revenue dropped to under two percent [23]. As addiction rates began to rise across the US in the 1950s, Iran and Turkey were accused as the main sources of heroin smuggled into North America [37]. In response to US pressure, in 1955 the Iranian parliament passed a bill prohibiting the cultivation of opium [26][28]. Severe sanctions including capital punishment for trafficking of substances were also imposed [25][28][38].

The harsh substance use policy that was put into effect in the late 1950s and early 1960s did little to relieve the addiction problem [39]. Some scholars argue that Iran's late 1960s harsh supply reduction policy was merely a trial testing of President Nixon's 1971 "war on drugs" policy [40]. The royal decree of 1969 that resumed the legality of poppy cultivation, however, was regarded as an aberrant move that was not welcome by the United States [25][28]. The driver for this decision was the rise of Turkey and Afghanistan as opium producers, owing to Iran's policy of banning production. The resumption of opium production was planned to block heroin trafficking from Afghanistan. The main characteristic

of Iran's substance use policy in this period was keeping a low profile, discordant policies, and following American approaches. However, not only did opium use and dependence continue to remain a major problem, but heroin use also surged as a new epidemic with serious consequences [41].

Either because of the high load of patients or the limited skills of psychiatrists, in that period the practice of psychiatry was focused on the prescription of medications. Psychological and behavioral approaches were yet to set foot in mainstream psychiatry in Iran. As a result, one would expect that Iran's psychiatry should have welcomed methadone maintenance therapy. However, there were practical issues that prevented psychiatrists from becoming optimistic about methadone maintenance.

Revolution: Reinforcement of Harsh Approaches (1980-onward)

By unfolding the 1979 revolution, and based on revolutionary logic, social problems such as addiction were attributed to the misconduct of the old regime. The new government's prohibitionist solution was simple and absolute. The total prohibition of substances reflected a primordial ethical dualism and, therefore, justified a criminalization approach [42][43]. Incidentally, a psychiatrist who had been in charge of "addictive medications" at the ministry of health for a long time and who did not believe in medicalized approaches to behavioral problems became a substance use policy adviser to the new government. By 1980, the revolutionary legislature banned opium production, trade, and consumption, and put severe punishments in place and capital punishment was executed extensively on individuals convicted for trafficking substances [28][42]. However, the number of people who used substances continued to soar. The medical professionals who'd been concerned about substance use policies remained silent *vis-à-vis* the demedicalization of substance use policy. Interestingly, though, the *coup de grâce* was triggered by a physician psychiatrist.

Pragmatism: (Re-) Emergence of Medical and Public-Health Models 1985-2010

The break out of the Iraq-Iran war in 1980 sidetracked substance-related concerns as a social priority. In the early years of war, the vast majority of addicts were simply incarcerated for the crime of substance use, whereas capital punishment was reserved for charges related to trafficking substances [42][43], bearing a resemblance to China's policy in the mid-1900s [44][45]. With prisons

becoming congested the management of substance-dependent inmates became a huge burden. Therefore, a boot camp regime under the supervision of the judiciary and provided by the welfare system was adopted [42]. Nevertheless, boot camps soon became overcrowded too. The bootcamps program was limited to "cold turkey" as the sole method of detoxification and meager social work. As expected, relapse of the clients upon release from the camp was a rule rather than an exception. Not counting the inmates of the boot camps, in the 1990s, Iran's prison population rate was one of the highest in the world — around 200 per 100,000 population — with over half of the inmates convicted over substance-related crimes including substance use [42].

Since the early 1990s substance use management in the welfare organization was revised with an abstinence-oriented approach. As boot camps had already proven to be a failure, replacement of boot camps with medically oriented programs were prioritized [46][47]. Self-help groups activity was also encouraged. The high relapse rate of detoxified clients, however, was a strong signal that the model was not effective. The predominance of abstinence-based orientation, therefore, was soon switched to primary prevention. The 1994 to 2000 prevention programs that mainly consisted of awareness-raising interventions were later shown not to be effective [48]. Therefore, the need for more tolerant substance use policies that were not limited to the dualistic approach of abstinence versus crime began to emerge [49]. In the late 1990s, the ministry of health learned of a surge in the number of HIV-infected individuals who had a history of injection of substances and/or imprisonment [50]. Based on ample evidence of its effectiveness, harm reduction soon became mainstream in the early 2000s [51]. Opioid replacement therapy as a bold harm reduction activity, for example, became available through more than 6000 clinics [52][53]. Harm reduction was so successful that according to the ministry of health later identified cases of HIV transmission routes shifted from unsafe injection to unprotected sexual contact [50][54].

It appears that despite the effectiveness of harm reduction in reducing HIV infection and its inherent effect in preventing substance-related crimes, at present, neither the ministry of health nor the psychiatric community is comfortable with the model of harm reduction and its management by private general practitioners. The objectives of harm reduction such as reduction of HIV, overdose, and antisocial behaviors [55] have been eluded instead of short-term seclusion of people who use substances from the community. For example, while licensure for running an opioid-substitution clinic under the regulation of the ministry of health requires fulfilling several requirements, running a

private boot camp with almost no medical supervision may even not require higher education. Although since the mid-1990s the field of substance use management in Iran has witnessed a rapprochement to medical and public health approaches [56], supply reduction has remained the core of Iran's substance use policy along with systematic scrutiny of the effectiveness of demand reduction and harm reduction. As a result of a lack of political will, even within the ministry of health, harm reduction programs face barriers to a level that sustainability of programs is far from guaranteed. The result of this negative trend can be seen in the HIV prevalence trend among people who inject substances during the period of before years 2000-2020 in Table 2. As seen in the table the growing prevalence of HIV injection before 2007 began to stabilize and even show a downward move after the early years of the introduction of harm reduction services in the 2000s. However, as harm reduction failed to remain a priority in substance policies the rate has kept constant and even worsened in some years [57][58][59][60][61][62][63][64].

Year	People who inject drugs	Adult HIV prevalence amongst people who inject drugs (%)	Adult HCV prevalence amongst people who inject drugs (%)	Reference
1997-2004		8.7		60
2005-2007		18		60
2008	240,000	12	35	57
2010	180,000	15		58
2012	170,000-230,000	15	50	59
2014	185000	15	50	61
2016	200000	14	50	62
2018	185000	14	52	63
2020	220000	14	52	64

Table 2. Comparison of indicators of harm reduction impact in Iran during the period of 1997-2020.

Discussion

Throughout this paper, we have provided a historical analysis of the hidden agenda of Iran's substance use policy during the past century. During this period Iran has adopted a wide range of policies with repeated swings and flashbacks. One reason that despite the evidence that many of the health approaches in dealing with the substance use problem have proven successful a firm position on a prohibitionist-criminal approach continues to dominate the substance use policy might be the fact that the government in general, and the ministry of health in particular, are more concerned in quantities rather than qualities. As substance use and dependence are relapsing behaviors, demand reduction and harm reduction as answers to these problems are of anthropological nature that might not directly be conducive for statistical quotas [65]. The ministry of health might also be reluctant to deal with substance use problems because of the attached stigma. Another explanation might rest in the fact that the dominant orientation of Iran's substance use policy has always had close similarities with the US substance use policy [66], albeit with a time lag. Therefore, one might conclude that the heavy influence of the US policies, which have played a role in Iranian substance use policy since the 1920s, is still affecting the process of Iran's substance use policymaking. For example, a policy drift in the United States that resulted in renewed efforts for substance use control in the mid-1980s and after a period of tolerant approaches in the 1970s [20] is quite similar to what happened in Iran after the 2000s. A more complex interpretation might arise from the fact that in no period of the past century Iran's substance use policies have followed the objective of tackling the problems of consumption of substances ahead of its legal state. Taking into consideration that the Iranian society has suffered catastrophic social problems in recent times, such as a decade of war with Iraq and severe pressure of international sanctions, this society is desperately in need of common values to buffer those pressures. Therefore, one may conclude that people who use substances are being scapegoated by society to protect and buffer social integrity [67][68]. As one would expect the blame game over people who use substances gets louder and stronger during social turmoils in Iran. For example, when talking of risk factors for using substances, a large number of social factors such as lack of faith in religion or irresponsibility toward social norms are listed. Furthermore, while low socioeconomic status and unemployment are blamed as risk factors for substance use individuals who use substances are often regarded as fully responsible for their behavior and their dependence. Based on this analysis the society might unconsciously make a preference for scapegoating and sacrificing people who use

substances as a practical and less expensive solution for stabilization and integration of the rest of the society [69].

When analyzing the history of Iran's substance use policies, and the under-emphasis of medical-oriented approaches, there are some clear parallels with the United States. The US substance use policy, compared to the European policies [49], is defined by the dominance of supply reduction orientation [70]. For example, at least since 1909 source-country control has always been an important component of US substance use policy [71]. While supply reduction and demand reduction are not necessarily dichotomous entities [71], the model in Iran seems to be intolerant of their coexistence. In other words, health approaches are unlikely to coexist with criminal approaches. For example, the drug court model that provides the option of treatment to convicted substance-dependent individuals is exceptionally underdeveloped in Iran. In addition, compared to substance use policies in some other parts of the world [55], criminalization of substance use has always been justified as a punishment for the behavior *per se* rather than a means to prevent substance-related crimes. Interestingly, Iran's substance use policy seems to reflect an interaction between the state's practice of power and the people who use substances while identified as victims of a wide range of risk factors [49][72].

A historical overview of Iran's substance use policies shows two linearity assumptions that seem to have been wrong. The first wrong speculation was related to opium taxation before 1946. The presumption was that higher rates of tariffs would increase government revenues. But, in1926 the upward trend in revenue began to reverse (See Table 1). The second linear assumption was (is) that criminalization of illegal and controlled substances trade and consumption would reduce the prevalence of people who use substances. The analysis of substance use prevalence, however, shows that the linearity assumption has been incorrect according to official data that has never changed the number of people who use substances during the past two decades. Fierce penalties have also not resulted in a reduced magnitude of smuggling (See Table 3) [73]. Referring to prevalence alterations in the period of 1980-2015, that show an increasing prevalence trend, one could argue that hypothesis behind the implementation of draconian penalties — put into effect since 1980 — was flawed.

	1990	2000	2010	2018
Heroin	1,800	6,189	27,141	25,436
Illicit morphine	4,500	20,764	8,098	20,611
Opium	20,300	179,053	401,395	643,683

Table 3. Iran's annual drug seizure (Kg)

Source: UNODC

Conclusion

Linearity assumption seems to have been the prominent fault of Iran's substance-related policy. The assumption that continuous enforcement or negligence of any type of substance-related policy will result in constant intensification of outcomes has been a persistent component of Iran's policies. Negligence of the context seems to be another weakness of substance use policymaking in Iran. The total ban on poppy cultivation in 1955, and intensification of penalties resulted in the smuggling of foreign-sourced opium into the country and an attempt at ending the illegal and controlled substances trade at home, arguably resulting in a dramatic increase in opium production in Afghanistan [74]. Therefore, the lack of consideration of the dynamics of substance use, and the habit of "in a vacuum" policymaking backfired to such an extent that to date its results are not only a major challenge to Iran's drug scene but a record high worldwide narcoterrorism problem to a record high [75]. From a game theory perspective [76][77] a lack of capability to observe the context, including other players or stakeholders, could easily result in the defection of players and make the condition more complex. Concerning the fact that the drug scene consists of multiple players, targeting absolute objectives instead of equilibrium points would be a systematic error. We believe that most of the substance use policy failures described in this paper have resulted from this weakness.

Conflict of Interest Statement

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial or non-financial interest in the subject matter discussed in this manuscript.

Funding Statement

The authors received no funding for this work.

References

1. ^Kuhi K. H. Taryak va Taryaki dar Iran. Tehran: Elmi Publications; 1945.
2. ^Ravandi M. Tarikh-e Ejtemaii-ye Iran. Tehran: Amir Kabir Publications; 2004.
3. a, b, cRegavim RB. The most sovereign of masters: the history of opium in modern Iran, 1850-1955 2012.
4. ^Moharreri MR. General view of drug abuse in Iran and one-year report of outpatient treatment of opia te addiction in the city of Shiraz. NIDA Res Monogr. 1978;19(19):69-81.
5. a, b, cMcCoy AW. The politics of heroin: CIA complicity in the global drug trade: Afghanistan, Southeast A sia, Central America, Colom-bia. Chicago: Lawrence Hill Books; 2003.
6. a, bMatthee RP. The pursuit of pleasure: drugs and stimulants in Iranian history, 1500-1900. Princeton, N.J.: Princeton Univ. Press; 2011.
7. ^Amin-Esmaeili M, Rahimi-Movaghar A, Sharifi V, Hajebi A, Radgoodarzi R, Mojtabai R, et al. Epidemi ology of illicit drug use disor-ders in Iran: prevalence, correlates, comorbidity and service utilization res ults from the Iranian Mental Health Survey. Addiction. 2016;111(10):1836-47. DOI: 10.1111/add.13453.
8. ^Pirdehghan A, Poor Rezaee M, Mirzababaee B. Epidemiology of Substance Abuse Among Iranian Adole scents (Yazd: 2014). Irani-an Journal of Psychiatry and Behavioral Sciences. 2017;11(4). DOI: 10.5812/ijp bs.3743.
9. ^Moradinazar M, Najafi F, Jalilian F, Pasdar Y, Hamzeh B, Shakiba E, et al. Prevalence of drug use, alco hol consumption, cigarette smoking and measure of socioeconomic-related inequalities of drug use am ong Iranian people: findings from a national survey. Subst Abuse Treat Prev Policy. 2020;15(1):39. DOI: 1 0.1186/s13011-020-00279-1. PMC7275311.
10. ^Nurian M. TE, F. T. Baztab-e Padideh-ye Etiad dar Sher-e Saeb. Journal of The Faculty of Literature a nd Humanities. 2005;41:167-84.
11. a, bMadani G. S. Etiad dar Iran. Tehran: Salis Publications; 2011.
12. ^von Kotzebue M. Narrative of a Journey into Persia, in the Suite of the Imperial Russian Embassy, in th e Year 1817: Cambridge Univ Pr; 2012.

13. a, b *Bickel WK, DeGrandpre RJ. Drug Policy and Human Nature: Psychological Perspectives on the Prevention, Management, and Treatment of Illicit Drug Abuse. 2013.*

14. a, b *Bertuglia CS, Vaio F. Nonlinearity, chaos, and complexity: the dynamics of natural and social systems. Oxford: Oxford Univ. Press; 2006.*

15. ^ *Rescher N. Scientific realism: a critical reappraisal. Dordrecht: Reidel; 2013.*

16. ^ *Loader I, Sparks R. For an Historical Sociology of Crime Policy in England and Wales since 1968. CRITICAL REVIEW OF INTER-NATIONAL SOCIAL AND POLITICAL PHILOSOPHY. 2004;7(2):5-32.*

17. a, b *UNODC. 2008 World drug report. 2009.*

18. ^ *Smith A. The wealth of nations. London: Dent; 1981.*

19. ^ *Beeching J. The Chinese Opium Wars. New York: Harcourt Brace Jovanovich; 1977.*

20. a, b *Musto DF. The American disease origins of narcotic control. 1999.*

21. ^ *Kazemzadeh F. Russia and Britain in Persia: Imperial Ambitions in Qajar Iran. 2014.*

22. ^ *Platt SR. IMPERIAL TWILIGHT: the opium war and the end of china's last golden age. [Place of publication not identified]: AT-LANTIC Books; 2019.*

23. a, b, c, d, e *Hansen B. Learning to Tax: The Political Economy of the Opium Trade in Iran, 1921-1941. JOURNAL OF ECONOMIC HISTORY. 2001;61:95-113.*

24. a, b *Navaii A. Majara-ha-ye Man-e Taryak. Ganjine-ye Assad. 1994;16:16-35.*

25. a, b, c, d, e, f, g, h, i, j *McLaughlin GT, Quinn TM. Drug control in Iran: a legal and historical analysis. [Iowa City]: [College of Law, State University of Iowa]; 1974.*

26. a, b, c, d *Collins J, London School of E, Political S. Regulations and prohibitions: Anglo-American relations and international drug control, 1939-1964. 2015.*

27. a, b, c *McLaughlin GT. The poppy is not an ordinary flower: a survey of drug policy in Iran. [New York]: [Fordham University Schoool of Law]; 1976.*

28. a, b, c, d, e, f, g *Rahmdel M. Tahavvolat-e Siasat-e Jenaii-e Iran dar Ghalamro-e Mavadd-e Mokadder 1289-1397. Juridical Journal of the Judici-ary. 2001;32:115-46.*

29. ^ *Terry CE. THE HARRISON ANTI-NARCOTIC ACT. Am J Public Health (N Y). 1915;5(6):518-. DOI: 10.2105/ajph.5.6.518.*

30. ^ *Fasihi S, Farzi F. The Issue of Opium in Reza Shah's Era: Addiction, Its Harmful Social Effects and Government's Solutions to the problem. Journal of History of Islam and Iran. 2015;23:137-63. DOI: 10.22051/hii.2015.2036.*

31. ^Polachek JK. The inner opium war: Harvard U.P.; 1992.

32. ^Zarghami M. Iranian Common Attitude Toward Opium Consumption. Iran J Psychiatry Behav Sci. 201 5;9(2):e2074. DOI: 10.17795/ijpbs2074. PMC4539585.

33. a, b, c, dLatifi-Nia M. Taryak va Eghdamat-e Anjoman-e Mobareze ba Taryak va Alcol. Ganjine-ye Ass ad. 1992;7&8:110-29.

34. a, bJoseph H, Stancliff S, Langrod J. Methadone maintenance treatment (MMT): a review of historical an d clinical issues. Mt Sinai J Med. 2000;67(5-6):347-64.

35. ^Dole VP, Nyswander ME. Heroin addiction--a metabolic disease. Arch Intern Med. 1967;120(1):19-24.

36. ^Strain EC, Bigelow GE, Liebson IA, Stitzer ML. Moderate- vs High-Dose Methadone in the Treatment o f Opioid Dependence. Jama. 1999;281(11). DOI: 10.1001/jama.281.11.1000.

37. ^Gingeras R. Poppy Politics: American Agents, Iranian Addicts and Afghan Opium, 1945–80. Iranian Stu dies. 2012;45(3):315-31. DOI: 10.1080/00210862.2011.637773.

38. ^Saleh JS. Iran suppresses opium production. United Nations; 1956.

39. ^Paoli L, Greenfield VA, Reuter P. Change is possible: the history of the international drug control regim e and implications for future policymaking. Substance use & misuse. 2012;47(8-9):923-35. DOI: 10.310 9/10826084.2012.663592.

40. ^Robinson MB, Scherlen RG. Lies, damned lies, and drug war statistics: a critical analysis of claims mad e by the Office of National Drug Control Policy2014.

41. ^Bradford JT. Poppies, politics, and power: Afghanistan and the global history of drugs and diplomacy. 2 019.

42. a, b, c, d, eMadani G. S. Advar-e Modiriyat-e Eatiyad dar Iran. Social Welfare. 2008;27(7):139-90.

43. a, bGhiabi M. Drugs and Revolution in Iran: Islamic Devotion, Revolutionary Zeal and Republican Mean s. Iranian Studies. 2014;48(2):139-63. DOI: 10.1080/00210862.2013.830877.

44. ^Zhou Y. China's anti-drug campaign in the reform era. 2000.

45. ^Dikˆtter F, Laamann LP, Zhou X. Narcotic culture: a history of drugs in China2016.

46. ^Brecher EM. Licit and illicit drugs: The Consumers Union report on narcotics, stimulants, depressants, i nhalants, hallucinogens, and marijuana -including caffeine, nicotine, and alcohol. Boston; 1988.

47. ^Razaghi E, Rahimi M. A, Hosseni M, Chatterjee A. Rapid Situation Assessment of Drug Abuse in Iran. T ehran: State Welfare Organ-ization; 1999.

48. ^UNODC. International standards on drug use prevention. 2015.

49. a, b, cChatwin C. Drug policy harmonization and the european union. [Place of publication not identifie d]: Palgrave Macmillan; 2014.

50. a, bSaberi Zafarghandi MB, Jadidi M, Khalili N. Iran's Activities on Prevention, Treatment and Harm Re duction of Drug Abuse. Int J High Risk Behav Addict. 2015;4(4):e22863. DOI: 10.5812/ijhrba.22863. PMC 4744908.

51. ^Razzaghi E, Nassirimanesh B, Afshar P, Ohiri K, Claeson M, Power R. HIV/AIDS harm reduction in Iran. Lancet. 2006;368(9534):434-5. DOI: 10.1016/S0140-6736(06)69132-0.

52. ^Ghiabi M. Could Iran Become An International Example Of Sound Drug Policy?: Mint Press, LLC.; 2016 [updated Jan 21, 2016. Available from: https://www.mintpressnews.com/212991-2/212991/.

53. ^Fallah F. Economical Treatment of Addiction at Iran's MMT Clinics. Financial Tribune Daily and Contri butors. 2017 July 31, 2017.

54. ^Enteghal-e Jensi-ye AIDS bayn-e Zanan 10 Barabar Shodeh Ast [press release]. Tehran: Addiction Ne ws Agency, Dec 30, 2018 2018.

55. a, bSeddon T. Explaining drug policy: Towards an historical sociology of policy change. Int J Drug Policy. 2011;22(6):415-9. DOI: 10.1016/j.drugpo.2011.06.002.

56. ^UNODC. From coercion to cohesion: treating drug dependence through health care, not punishment. N ew York: United Nations; 2010.

57. ^Cook CKNIHRA. The global state of harm reduction 2008: mapping the response to drug-related HIV a nd hepatitis C epidemics. London: International Harm Reduction Association; 2008.

58. ^International Harm Reduction A. Global state of harm reduction 2010: key issues for broadening the re sponse. London: Interna-tional Harm Reduction Association; 2010.

59. ^International Harm Reduction A. The global state of harm reduction 2014. London: International Har m Reduction Association; 2012.

60. ^Rahimi-Movaghar A, Amin-Esmaeili M, Haghdoost AA, Sadeghirad B, Mohraz M. HIV prevalence am ongst injecting drug users in Iran: a systematic review of studies conducted during the decade 1998-200 7. Int J Drug Policy. 2012;23(4):271-8. DOI: 10.1016/j.drugpo.2011.09.002.

61. ^International Harm Reduction A. The global state of harm reduction 2014. London: International Har m Reduction, Association; 2014.

62. ^Stone K. The global state of harm reduction 2016. United Kingdom: Harm Reduction International; 201 6.

63. ^K. S, S. S-B. The global state of harm reduction 2018. London: International Harm Reduction Associati on; 2018.
64. ^International HR. Global State of Harm Reduction 2020. London: Harm Reduction International; 2020.
65. ^Bourgois P. Anthropology and epidemiology on drugs: the challenges of cross-methodological and the oretical dialogue. Interna-tional Journal of Drug Policy. 2002;13(4):259-69. DOI: 10.1016/s0955-3959 (02)00115-9.
66. ^Reuter P. Why Has US Drug Policy Changed So Little over 30 Years? Crime and Justice. 2013;42(1):75-1 40. DOI: 10.1086/670818.
67. ^Quintero G, Nichter M. The semantics of addiction: moving beyond expert models to lay understanding s. J Psychoactive Drugs. 1996;28(3):219-28. DOI: 10.1080/02791072.1996.10472483.
68. ^Oksanen A. Deleuze and the theory of addiction. J Psychoactive Drugs. 2013;45(1):57-67. DOI: 10.1080/ 02791072.2013.763563.
69. ^Singer M, Page JB. The social value of drug addicts: uses of the useless. 2016.
70. ^Frank VA. DRUG POLICY: HISTORY, THEORY AND CONSEQUENCES: Examples from Denmark and USA. 2008.
71. a, bBoyum D, Reuter P. An analytic assessment of U.S. drug policy. Washington, DC: AEI Press; 2005.
72. ^Christensen JB. Drugs, deviancy and democracy in Iran: the interaction of state and civil society2011.
73. ^UNODC. World Drug Report 2021: UNODC; 2021.
74. ^Paoli L, Greenfield VA, Reuter P. The world heroin market can supply be cut? 2009.
75. ^Caulkins JP, Hawken A, Kilmer B. Drug Policy: What Everyone Needs to Know. 2015.
76. ^Leyton-Brown K, Shoham Y. Essentials of game theory: a concise, multidisciplinary introduction. San Rafael, Calif: Morgan & Claypool Publishers; 2010.
77. ^Jackson MO. A Brief Introduction to the Basics of Game Theory. SSRN Journal SSRN Electronic Journal. 2011.

Declarations

Funding: No specific funding was received for this work.

Potential competing interests: No potential competing interests to declare.