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Review Article

Substance Abuse Policy in Thailand: Current Challenges and Future Strategies

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Abstract Substance abuse has been an important social and public health problem in Thailand for decades. The National Household Survey on Substance and Alcohol Use in Thailand, which has been conducted six times, shows that substance abuse has steadily increased. Extrapolated country-wide from recent data, the estimated number of people who have used at least one addictive substance at some time in their lives was 2,964,444 or 5.8% of the total population aged 12–65 years old. Kratom, methamphetamine, methamphetamine hydrochloride crystal (ice), and cannabis were the most prevalent substances of abuse. Historical documentation and policy reports were used in this study. The objectives of this study were to complete a document review, determine the effectiveness of previous measures to control illegal substance abuse in Thailand, and consider options for the future. Controlling illegal substance abuse in the future and minimizing total harm requires a delicate balance of efforts to reduce the prevalence, quantity, and harmful effects of substances. Drug policy interventions should be continually evaluated for their effectiveness. The strategies relevant to drug policy, apart from primary prevention, are provision of health services for chronic drug users, reform of criminal sanctions against drug addicts, and legalization of kratom.

Keywords substance abuse policy in Thailand; substance use in Thailand; control strategies in Thailand

1. Introduction

Substance abuse has been a critical social and public health problem in Thailand for decades. Every Thai government from 1999 to 2016 declared this problem a priority on the national agenda. Yet, although government strategy and policy embrace strong control and suppression of substance abuse, the number of drug users, quantities of seized drugs, prisoners being held on drug charges, and patients on drugs continues to increase.

More than 10 years ago, the Thai government declared a war on drugs and illegal substances in the hopes that one day Thailand would be free of them. Unfortunately, substance abusers increased from 2.5 million in 2007 to 2.9 million in 2016 [1,2].

In order to generate a clearer picture of the measures and policies focused on solving substance-abuse problems, this review paper describes the impact of these policies over the past 15 years, determines the effectiveness of previous measures against illegal substances use in Thailand, and explores the feasibility of measures against illegal substances for the future. Historical documentation and policy reports were used in this study.

2. Supply situation

Thailand has strict laws penalizing offenders, but drug abuse remains rampant. Many border areas of Thailand are used as trafficking routes for both the import and export of illegal substances to the global market. Opium, heroin, and methamphetamine are still being smuggled at the Thai border. Methamphetamine, methamphetamine hydrochloride crystal (ice), and heroin are being produced by powerful minority groups in neighboring countries that have the potential for an unlimited production of illegal drugs. They have their own armies to protect their territories and factories producing illegal substances [3]. Meanwhile, West African illegal substance syndicates are actively involved in smuggling and trafficking illegal substances in Thailand and across the region [4].

Kratom is a highly prevalent drug found in many drug seizures between 2007 and 2016. A methamphetamine-type stimulant (yaba) and cannabis are increasingly smuggled from neighboring countries. Methamphetamine hydrochloride crystal (ice) has been smuggled into the country via its border with Myanmar for domestic consumption. The trade in yaba, ice, kratom, and cannabis has increased over the past eight years. It seems that although many traffickers have been arrested, they are continually replaced in even larger numbers. Thailand is among the transit countries for heroin trafficking from the Golden Triangle to the global market. However, the amount of heroin seized in Thailand declined, from 776 kg in 2013 to 189 kg in 2016 (Table 1) [5,6].

Table 1: Drug seizures throughout the country in 2006–2016.

Year	Yaba (Ton)	Ice (kg.)	Heroin (kg.)	Dried cannabis (Ton)	Kratom (Ton)
2006	1.2	94.3	92.8	11.7	8.5
2007	1.3	48.3	294.6	15.0	42.1
2008	2.0	54.2	199.9	18.9	13.0
2009	2.5	213.3	143.2	18.1	22.0
2010	4.9	706.2	137.6	18.0	32.7
2011	4.9	1,244.4	542.2	13.1	24.9
2012	8.7	1,635.9	127.6	24.7	29.2
2013	11.6	1,417.3	775.8	27.1	40.2
2014	10.2	1,039.6	375.2	32.2	59.8
2015	10.0	1,141.7	237.1	25.2	72.8
2016	8.6	1,414.1	189.1	26.6	56.2

Source: data from ONCB (2016).

3. Demand situation

3.1. Prevalence of illegal substance use in Thailand

Illegal substance use impacts the physical and mental health of the Thai population and is an important cause of disease and premature death. According to the latest national household survey on substance use, in 2016 [2] among the Thai population aged 12–65 years (50.97 million people across the country) approximately 2.96 million or 58.16 per 1,000 people had used at least one kind of illegal substance. The estimated number of people who reported using one or more substances within the past 12 months was 1,425,342 (27.97 out of 1,000 people). Kratom, cannabis, yaba, 4 × 100, and ice were the most popular substances in use (Table 2).

4. Impact of substance abuse

Illegal substance abuse has had a notable impact on both public health and national security in Thailand. Since crimes related to illegal substance abuse have spread rapidly throughout the country, the Thai government has spent a substantial share of its budget each year to address this social problem. It was found that over 80% of all criminal cases in Thailand in 2013 were illegal substance related [4].

The total number of illegal substance users/addicts who registered for treatment throughout the country was the highest in 2003 (480,711 substance abusers) but fell between 2004 and 2010. It peaked in 2012 (568,000), but decreased again in 2013 (416,873) to 2016 (87,491) (Figure 1). Most of the illegal substance users/addicts were adolescents and young adults aged 15–24 years old. Methamphetamine addicts were still the biggest group of drug patients in treatment centers (Table 3). Most were skilled workers, agriculturists, or unemployed.

Among the adverse effects associated with substance abuse in Thailand are crime, morbidity, mortality, premature death, and burden of disease. Although the national data do not include the number of deaths caused by each drug, the magnitude of social and economic loss and health consequences of illicit substances are severe.

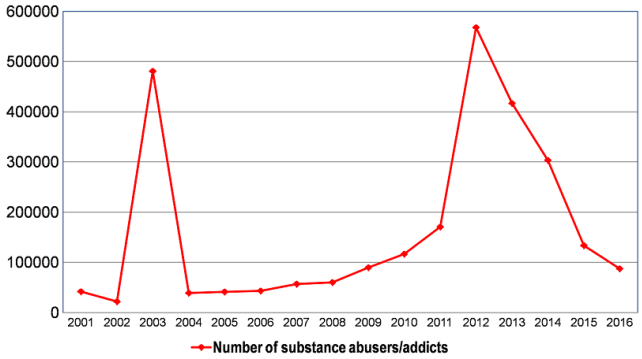

Figure 1: Number of substance abusers/addicts, 2001–2016. Source: data from ONCB, 2001–2016.

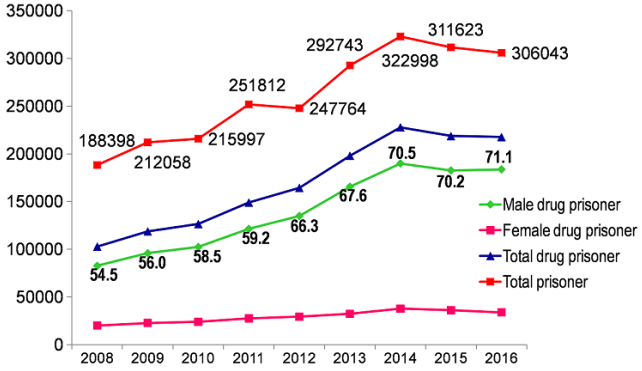

Figure 2: Number of prisoners held on drug charges, 2008–2016. Source: Department of Corrections.

Injection drug use (IDU) is a high risk factor for the transmission of the human immunodeficiency virus (HIV) among injection drug user groups and their partners. The estimated number of HIV patients in 2015 in Thailand was 1,526,028. Among these, 6,759 were new cases and 20.5% were injection drug users [7].

Since 2003, when the war on drug and illegal substances was announced, criminal gangs and drug syndicates have been suppressed and many major drug traffickers and drug dealers have been put in prison. According to data from the Department of Corrections (2008–2015) [8], the number of drug-related arrests continued to increase year by year from 54.5% of total prisoners in 2008 to 71.1% in 2016 (Figure 2).

5. The evolution of substance abuse policy in Thailand

There are many lessons to be learnt from Thai efforts to control substance abuse, which include the following:

- Thailand opium poppy eradication programs have been operating since 1984;
- the Act on Measures for the Suppression of Offenders in an Offence Relating to Narcotics was enforced in 1992;
- the Money Laundering Control Act was enforced in 1999;

Table 2: Estimated number of people who had used each kind of substance within the past year in 2001, 2003, 2007, 2008, 2011, and 2016.

Substance	Estimated population that used illegal substances (per 1,000)					
	2001	2003	2007	2008	2011	2016
Ever used a substance	1,942,100 (43.5)	455,500(10.0)	575,312 (12.4)	605,095 (13.0)	598,765 (12.38)	1,425,342 (27.9)
Kratom	643,800 (14.4)	344,700 (7.6)	378,214 (8.1)	511,160 (11.0)	404,548 (8.4)	843,861 (16.6)
Cannabis	667,200 (14.9)	83,400 (1.8)	57,527 (1.2)	73,688 (1.6)	109,040 (2.3)	188,496 (3.7)
Yaba	1,092,500(24.5)	83,800 (1.8)	66320 (1.4)	34,641 (0.7)	92,510 (1.9)	442,916 (8.7)
Ice	—	—	2,220 (0.0)	2,876 (0.1)	34,566 (0.7)	42,361 (0.8)
4×100	—	—	—	—	20,613 (0.4)	233,191 (4.6)
Cocaine	4,900 (0.1)	7,400 (0.2)	—	2,508 (0.1)	2,917 (0.06)	3,258 (0.06)
Heroin	22,700 (0.5)	1,400 (0.03)	3,907 (0.1)	—	2,650 (0.05)	6,460 (0.1)
Inhalants	199,700 (4.5)	21,200 (0.5)	48,849 (1.0)	19,265 (0.4)	4,205 (0.09)	27,575 (0.5)
Opium	38,600 (0.9)	600 (0.01)	3,059 (0.1)	7,324 (0.2)	—	34,490 (0.7)
Ecstasy	46,500 (1.0)	13,300 (0.3)	15,215 (0.3)	3,980 (0.1)	—	15,578 (0.3)

Source: data from the Administrative Committee of Substance Abuse Academic Network.

Table 3: Number of abusers using each type of substance and percentages of all drug users attending drug treatment centers from 2006–2016.

Year	Total	Yaba	Cannabis	Heroin	Ice	Kratom	4×100
		n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
2006	50,468	38,551 (76.38)	5,078 (10.06)	1,440 (2.85)	6 (0.01)	12 (0.02)	22 (0.04)
2007	62,366	49,279 (79.02)	5,949 (9.54)	1,214 (1.95)	13 (0.02)	274 (0.44)	159 (0.25)
2008	95,593	80,030 (83.72)	6,159 (6.44)	1,104 (1.15)	5 (0.01)	900 (0.94)	155 (0.16)
2009	125,181	103,009 (82.29)	8,749 (6.99)	1,381 (1.10)	19 (0.02)	1,580 (1.26)	372 (0.30)
2010	137,824	117,315 (85.12)	7,556 (5.48)	1,440 (1.04)	111 (0.08)	1,724 (1.25)	487 (0.35)
2011	201,546	175,413 (87.03)	7,624 (3.78)	2,209 (1.10)	643 (0.32)	2,087 (1.04)	646 (0.32)
2012	331,072	273,808 (82.70)	15,855 (4.79)	2,697 (0.81)	6,488 (1.96)	10,638 (3.21)	1,364 (0.41)
2013	325,973	278,124 (85.32)	15,464 (4.74)	2,757 (0.85)	14,459 (4.44)	7,739 (2.37)	1,304 (0.40)
2014	234,089	196,329 (83.87)	13,907 (5.94)	3,106 (1.33)	8,540 (3.65)	4,923 (2.10)	1,373 (0.59)
2015	133,280	105,392 (79.08)	9,460 (7.10)	3,269 (2.45)	6,005 (4.51)	1,964 (1.47)	1,021 (0.77)
2016	87,491	67,252 (76.87)	6,289 (7.19)	2,635 (3.01)	4,721 (5.40)	1,458 (1.67)	841 (0.96)

Source: data from the ONCB, 2006–2016.

– the Narcotics Addict Rehabilitation Act has been in operation since 2002 with the aim of diverting people charged with drug consumption into treatment and rehabilitation instead of prison for bringing them back to society;
– in 2009, the National AIDS Prevention and Alleviation Committee resolved to approve a draft policy on harm reduction for people who use drugs, which had been proposed by the National AIDS Management Center of the Department of Disease Control;
– in 2011, after parliament's review and approval, the draft policy was reviewed by the Council of State, which noted that the distribution of injecting equipment was in contravention of the Narcotics Act, and was perceived as "promoting drug use," which is a crime.

6. What are the appropriate measures for controlling drug abuse in Thailand?

6.1. Supply reduction

Basically, to control supply, law enforcement and alternative development programs seek to keep prices high and reduce the availability of drugs by arresting traffickers/dealers and forcing suppliers to operate in inefficient ways [9].

In the period 1998–2000, the main strategies to reduce supply included the control of narcotic crops and narcotics law enforcement measures.

In 2003–2005, the strategy involved the total suppression of narcotic drugs and drug traffickers throughout the country, and aimed to reduce and stop drug production outside the country. Measures to suppress drug trafficking networks included the interdiction of drug smuggling, investigation, tracking and repatriation of assets, imposition of tax regulations, control of precursor chemicals, and cooperation with relevant countries [10, 11].

In 2006–2007, the policies of disconnecting drug demand from drug supply, and encouraging and motivating addicts (as patients in need of treatment), while punishing traffickers under the rule of law were implemented [12].

"The Five-Fence Defensive Strategy" in 2009–2010 involved the collaboration of both government agencies and civil society. Measures for controlling substance abuse

were integrated, with the aim of keeping drug addicts, drug dealers, and risk groups away from drugs [3].

The "Kingdom's Unity for Victory over Drugs" in 2011–2013 involved strict law enforcement and drug suppression policies to address the supply side of the drug cycle, the drug producers, drug traffickers, drug dealers, drug distributors, and drug couriers [4, 13].

In each period, the strategies focused on suppressing drug traffickers and trafficking networks, intercepting drug smuggling along the borders, controlling precursor chemicals, being on alert for new illegal drugs, improving narcotics control acts and associated laws, and fully cooperating with relevant countries, especially neighboring countries.

6.1.1. Enforcement against dealers/traffickers

In the period 1998–2013, narcotic law enforcement (Psychotropic Substance Act B.E. 2518 (1975); Narcotics Act B.E. 2522 (1979)) was used as a major tool for the control of illegal substances. The confiscation of drug dealers' assets was among the most powerful of law enforcement countermeasures, as it took away their belongings as well as the capital and funds used to facilitate criminal drug activities [14].

Seizures, interdiction, and crop reduction

The quantity of drugs seized is one indicator of the extent of drug use, and is one of the few relevant figures readily generated by official systems [15].

Methamphetamine featured in the majority of drug seizures in the period 1998–2016; especially between 2008 and 2012 approximately 225.2 million pills of methamphetamine and 3,813 kg of ice were seized. Drug seizures are predicted to increase every year. Since the Thai government realizes that drug suppression is dangerous work, bribes are paid to anybody who gives useful information and reports drug crimes to the police/official agency; rewards are also paid to officials to raise the quality of law enforcement in controlling the drug trade. According to one report, from 2008 to 2012, total of 344,509,318 baht (USD 9,843,123.37) of bribes/rewards were paid for 976,803 drug seizures [16].

This drug suppression situation might reflect something such as drugs have been still severe epidemics throughout the country and had hidden agenda of officials about the seizure' bribe/ reward. It is possible that large number of arrests, seizures of great quantities of drugs which usually show and make a statement in the news, and dramatically rising imprisonment rates have had an important symbolic effect [15].

The indices of success for substance abuse measures and policies depended on the number of drug users who registered for treatment, drug traffickers, drug dealers, and illegal substance seizures. The reason why methamphetamine was used as an indicator of the drug trafficking trend in Thailand was that this drug has been seized in greater quantities than any other drug since the late part of the last decade [5].

For drug interdiction measure, the Thai government's continued cooperation with neighboring countries has resulted in the prevention and suppression of cross-border smuggling of illegal substances, precursor chemicals, and equipment used for drug production.

Thailand opium poppy eradication programs, which are carried out annually, have had an impact on the overall decline of opium production. Opium eradication has been conducted by the Royal Thai Army and ONCB since 1984 annually [14].

The Royal Project Foundation is an initiative of His Majesty King Bhumibol Adulyadej. The Royal Project established the model of the development-lead drug crop replacement. The heart of this program is agricultural extension or the process of introducing new and improved temperate crops and farming methods to local farmers. There are many achievements of the Royal Project such as opium elimination, hill tribes' poverty eradication, elimination of the slash and burn technique for cultivation, and environmental conservation. In 2013, the Royal Project supported nearly 200,000 people of nearly 38,000 families living in the highlands. It is widely agreed that this program to replace opium with legal cash crops is the most successful program of its kind in the world [17, 18].

6.1.2. Lessons for Thailand

In Thailand, the main measures to cope with drug suppliers and dealers have included arrest, prosecution, incarceration, and confiscation. This has resulted in overcrowding in the prisons.

As part of the "war on drug" policy in 2003, in the first three months of the campaign there were 2,800 extrajudicial killings. In 2007, an official investigation found that more than half of those killed had no connection whatsoever to drugs [19]. The government used a system of bribes and threats to ensure that regional governors and police chiefs carried out the campaign. Officials who failed to meet their quotas faced dismissal. Those who brought in a "major drug dealer" dead or alive received a bounty of one million baht (23,600 USD). Terrified of being shot or killed, users/addicts chose to voluntarily submit to a course of boot-camp style rehabilitation [20].

6.1.3. From research on effectiveness

Drug courts and police drug diversion programs are alternatives to the criminal prosecution of drug users/addicts. This strategy which sends the drug offender to treatment rather than might be the best way to reduce overcrowding in prisons.

A *drug court* is a collaboration between the criminal justice and public health systems or so called drug-diversion

strategies. It not only helps offenders avoid incarceration but also encourages their treatment and reintegration, through helping them effectively save money and break the drug-crime cycle [21].

6.1.4. Political and cultural barriers

Politicians and policy makers have believed that harsh law enforcement actions against those involved in drug production, distribution, and use can control the drug cycle and eventually achieve a drug free Thailand.

Incomplete data from documents and reports communicated via the public media show only one side of the coin, leading to misunderstandings. Since illegal drugs are pictured to be a horrible, disgusting, and dark side of society, the government does not freely co-operate with people in the community to address these problems.

The indices of success for measures and policies controlling substance abuse are the number of drug users who are registered for treatment, drug traffickers, drug dealers, and seizures of illegal substances. Those measures have resulted in the overcrowding of prisons and human rights' violations.

6.2. Demand reduction

In 1998–2000, the government mobilized the public to fight against drugs, increased pressure on drug criminals, and emphasized the importance of treatment and rehabilitation by supporting the enhancement of the potential and efficiency of the existing treatment and rehabilitation centers.

In 2003–2013, the strategies for demand reduction focused on reducing the number of substance abusers/addicts, and encouraging and motivating addicts who were patients in need of treatment. Appropriate treatments were provided to substance abusers/addicts in parallel with aftercare services to help them reintegrate into their own communities. Campaigns for re-establishing a positive attitude among the general public towards substance abusers/addicts were launched throughout the country in order to give them a second chance [4,5,10,13].

In 2009–2010, the government provided sufficient and appropriate services for drug users. Methadone was put on the list of medicines accepted under universal coverage, and free methadone maintenance programs in 147 treatment centers throughout the country were provided by the Ministry of Public Health to patients who were drug addicts [3].

6.2.1. Treatment

There are three drug treatment systems in Thailand: voluntary, compulsory, and correctional.

Drug treatment procedures under the public health system include screening and identifying drug users or addicts; providing information, advice, or brief interventions to those patients at low to moderate risk; and treatment, rehabilitation, and relapse prevention with an emphasis on psychosocial intervention such as the Matrix model and the Fast model. Drug addicts with psychiatric comorbidity such as amphetamine psychosis are the responsibility of psychiatric hospitals. In addition, military camps, temples, and mosques are used as alternative drug treatment and rehabilitation centers.

All drug addicts have equal opportunities to receive comprehensive treatment and rehabilitation. In order to offer them more job opportunities and reduce drug relapses, various skills and vocational trainings have been provided. Activities and campaigns have been carried out to encourage families and communities to have a positive attitude towards patients who have successfully undergone treatment and rehabilitation and create a positive environment for patients reintegrated into society [3,4,5,6,10,11,12,13,22].

However, the treatments for drug users/addicts do not differ by drug type, methods of drug use or quantity of use (treatment for new drug users or regular drug users/addicts is similar). Efficient drug treatment therapy should therefore be integrated with appropriate treatment planning based on an individual's drug problems. A gold standard screening test should be conducted to classify the severity level of drug use/addiction before treatment.

After 2005, when 18% of relapse cases were reported [22], no further relapse cases have been reported in each year. Presently, follow-up programs have not been implemented and the efficiency of each drug treatment system has also not been evaluated.

6.2.2. Prevention

In 1999–2013, the policy for the prevention of substance abuse centered efforts on schools, communities, the workplace, and special groups. The projects composed of (1) family, community, and school participation inactivities related to prevention of drug abuse, (2) the aim to free villages and/communities of drugs, (3) control of narcotics in the workplace, (4) support of antidrug campaign activities to mobilize public awareness of the disadvantages of substance abuse, (5) estimations of substance abusers in the Thai population, (6) development of narcotics data systems at the provincial level and of fundamental narcotics data systems in villages/communities, and (7) development of narcotics control measures in schools [14,23]. The most important aspect of the policies and strategies for the prevention of illicit substances was cooperation among government organizations, nongovernmental organizations/civil society, and health activists.

6.2.3. Lessons for Thailand

Many drug prevention programs in Thailand attempted to reduce the risk of drug use and were implemented throughout the country in specific areas and groups, especially among students. This was done through teacher training courses on counseling techniques; self-help groups; life skills education for the prevention of drugs

and deviant behavior; sport competitions; the production and dissemination of print and electronic media materials on the prevention of drug abuse; and family, community, and school participation in projects concerning the prevention of drug abuse, for example, the Drug Abuse Resistance Education (DARE) program [4,23]. However, evaluations of these programs have not been reported.

In Thailand, students have typically been expelled when teachers discovered them to be drug users. Those students had to find a new school while dealing with the stigma of being a known drug user. This kind of punishment started a criminal life cycle for these former students, and they became involved with drugs and gangs. Even if these students were accepted into a new school, they could relapse into drug abuse since they had not received drug treatment or counseling on behavior improvement.

6.2.4. From research on effectiveness

Although effective evaluation data of prevention programs and in-depth details of successful programs are rare, there are many countries that still believe that school-based prevention is the appropriate tool to prevent people from getting involved in drug abuse and drug-related activities.

DARE was implemented in the United States and more than 40 international countries, but the outcome of meta-analyses evaluations revealed that the program was ineffective. Drug testing in schools was not only ineffective but also had negative effects such as reduced trust between pupil and teacher/staff. In addition, mass-media campaigns had no effect on drug use, although in some cases they were capable of raising awareness of the negative consequences of drug use [9,24].

Drug prevention programs that taught social and coping skills through classroom instructional activities reduced drug use significantly, but programs that simply conveyed didactic information about drugs and their effects had no effect on drug use. In addition, the programs that altered the classroom or school environment were more effective than those that tried to change individual behavior. The programs focused on improving school discipline and atmosphere, and strengthening teachers' classroom management skills [9].

The United Nations Office on Drugs and Crime [25] recommends that community-based treatment, and care services for drug addicts are the most effective and low-cost methods. The interventions are concerned primarily with building skills that can be used towards community empowerment. The long-term results of these programs have shown that they address the risk factors that lead to drug use, and strengthen the protective factors that reduce the risk of drug use and drug-related activities within a community [24].

6.2.5. Political and cultural barriers

In Thailand, the stakeholders usually think that drug prevention is the duty of the Ministry of Education, while drug treatment is the responsibility of the Ministry of Public Health; in reality, however, many agencies have to cooperate and work together. In addition, since most of the politicians and policy makers tend to promote a harsh message about the disadvantages and impact of drug use, many people perceive drug users as criminals who indulge in extremely wrong and bad behavior. Therefore, community-based prevention, treatment, and care are quite difficult to implement and expand.

6.3. Harm reduction

6.3.1. Needle exchange

Needle and syringe programs (NSPs) were initiated in 1992 in three of the hill tribe villages in Northern Thailand. From 1992 to 1994, needle and syringe kits were provided by the government for vaccination and were subsequently distributed to people who inject drugs (PWIDs). On analysis of this program, it was found that the prevalence of HIV among PWIDs decreased from 33% in 1993 to 18% in 1995–1996 [26].

In 2008, the Global Fund awarded a grant to the Population Services International (PSI) (which was the principal recipient and worked in partnership with a range of recipients including 10 civil society organizations) to reduce HIV transmission among PWIDs in Thailand. Under this grant, the O-Zone Foundation implemented the Comprehensive HIV Prevention among Most-At-Risk Populations by Promoting Integrated Outreach and Networking (CHAMPION)-IDU project.

The CHAMPION IDU project aimed to strengthen and scale-up HIV services among PWIDs, build an enabling environment, and produce strategic evidence, all with the ultimate goal of reducing the prevalence of HIV. The project was a peer-led initiative based on the evidence that peer-to-peer contact among PWIDs greatly enhances the receptivity of clients [27].

The project supported 13 drop-in centers and 10 satellite outreach networks in 19 of Thailand's 77 provinces. CHAMPION-IDU partners distributed sterile injecting kits containing an array of equipment and also recruited private-sector pharmacies to assist with the distribution of sterile injecting equipment. The CHAMPION-IDU project reached 17,889 PWIDs in total [28].

6.3.2. Methadone maintenance

Methadone has been available in Thailand for detoxification since 1979 and approved for methadone maintenance treatment (MMT) since 2000 [29]. It is included in the Essential Medicines list, the clinical guidelines for its use are available, and its costs have been covered by the National Health Security Office (NHSO).

The enrollment into MMT was low among heroin users: an estimated 7% of PWIDs were enrolled in Opioid

Substitution Therapy (OST) programs, and the drop-out rate was high. Barriers to this included the distance to the clinics, especially for clients living in remote areas [29,30].

In 2013, the CHAMPION-IDU peer-led community-based methadone maintenance service was initiated in a small village in Northern Thailand and was operated by the O-Zone team. In the past, more than 100 people dependent on opioids had to travel everyday to get their methadone at the hospital, and the trip took them about six to eight hours. After the O-Zone team was trained, the staff picked up the methadone from the district hospital every day, drove up to the village, and provided it to clients [28].

6.3.3. Lessons for Thailand

The main challenges for PWIDs included living too far from needle and syringe distribution outlets, pharmacies being closed, and being refused needles and syringes. Thai PWIDs who have been denied health care services were almost seven times more likely to avoid health services. The interpretation of the draft policy by the Council of State (that the distribution of injection equipment was in contravention of the Narcotics Act and perceived as promoting drug use), social taboos against drug users, and a lack of financial resources for drug-related health services have constrained the harm reduction program in Thailand [28,29].

Although, evidence from CHAMPION-IDU revealed that the distribution of sterile injection equipment, including needles and syringes, was feasible and did not lead to any significant negative consequences in Thailand (similar to the international experience), the coverage of NSPs remains low. One of the major barriers to scaling up the distribution of sterile injection equipment is that PWIDs are afraid to carry more than a few needles and syringes at a time; if caught with these on them, they might be compelled to do a urine test or arrested [28,29].

The current harm reduction programs in Thailand should be evaluated to help policy makers support, improve, and expand these programs throughout the country and help addicts access alternative drug treatment programs easily. Harm reduction should be the government's mission, and comprehensive harm reduction services for drug addicts should be a new provision strategy used by the Thai government. The strategy should be focused on population groups that are most at risk, including prisoners and those abusing drugs through injections.

6.3.4. From research on effectiveness

Harm reduction services are a major component of global efforts to halt the spread of HIV. The four most effective interventions for HIV prevention, treatment and care are NSPs, OST, HIV testing and counseling, and antiretroviral therapy [31]. According to evidence-informed HIV interventions, countries that have invested in harm reduction services have remarkably lowered HIV transmission among PWIDs [25]. Previous studies of the needle exchange program (NEP) for HIV prevention in many countries found that the program was useful in preventing the spread of HIV and had been effective in reducing risk behaviors among injection drug users such as the United States, Canada, Bangladesh, China, Vietnam, Estonia, Thailand, and Taiwan [26,32,33].

6.4. Legalization/legal regulation of kratom

Kratom was first placed under regulatory control in Thailand in 1943 under the Kratom Act. Since kratom has been controlled for more than 70 years, the evidence regarding its effects on physical and mental health is scarce; severe problems related to pure kratom use have never been reported.

There have been a number of papers reporting the effects of kratom and its 25 alkaloids on various organs and its medicinal properties [34,35,36,37,38,39,40,41]. If high-dose mitragynine is used, its effects will be opium-like. At low doses, it has stimulant-like effects similar to the coca plant. Side effects such as anorexia and weight loss, which may be closely related to acid secretion, are known in persons who take kratom [42]. It also has a direct effect on skeletal muscle by decreasing the muscle twitches and has greater effect at the neuromuscular junction than on skeletal muscle or somatic nerve [43]. Pattern and effects of kratom use have been reported elsewhere [44,45,46].

A new type of kratom called 4×100 or the kratom cocktail has emerged in the past 10 years, and it is more harmful to its users than traditional kratom. The kratom 4×100 cocktail is a mixture of boiled kratom leaves with other addictive substances such as codeine cough suppressant syrup, and illegal substances, with cola soft drinks. The users of this new kratom are predominantly teenagers or young adults who use it socially for fun or relaxation after work. Due to the government's dissemination of information to the public via the media about the 4×100 formula of ingredients and methods of use, the epidemic of new 4×100 users has increased rapidly. The previous study of 4×100 was reported elsewhere [47] and the long-term effects on health still need to be explored.

According to the statements from the US FDA related to the death associated with kratom [48], it is important to point out that most kratom users in Thailand chew its fresh leaves and this differs from its use in other countries such as Malaysia, US, and European countries. Therefore, the policy intervention/implementation for this situation should be considered carefully. A clear warning message should be given to the public that, despite some benefits, kratom is addictive, and its use has disadvantages and side effects, especially when co-used with other substances.

Thailand should learn from Bolivia, where the government allows people to chew coca leaves. In 1961, the

coca leaf was listed on the Schedule I of the UN Single Convention on Narcotic Drugs together with cocaine and heroin. In 2009, Bolivia's government restored the dignity and lawful right of its people to use the coca leaf for traditional and medical purposes by removing the coca leaf from the 1961 Single Convention. Presently, millions of people chew coca in Bolivia, Columbia, Peru and northern Argentina, and Chile [49, 50].

Although the kratom leaf has an impact on health, its negative effect is less than that of alcohol and tobacco and many studies list the advantages of kratom use. Thus, legalizing kratom would not only show respect for the cultural tradition of chewing kratom leaves but also represent an important opportunity for Thai researchers to conduct research on the use of the kratom leaf in alternative medicine treatments, and would be a good chance for Thai agriculture to produce it as an herb or alternative medicine and to permit Thailand to export kratom-based products.

7. Recommendations for effective substance abuse measures

The framework for drug policy analysis includes (1) total harm, that is, the number of users (prevalence) $\times$ average dose $\times$ average harm per dose and (2) key tradeoffs, for example, efforts to reduce substance use often increase levels of harm and doses. Minimizing total harm requires a delicate balance of prevalence reduction, quantity reduction, and harm reduction.

Drug policy interventions should be continually evaluated for their effectiveness. This requires systematic annual efforts to estimate the number of users (user surveys), consequences of use (e.g., hospital data), prices, enforcement, treatment, and so on.

Thailand has a distinctive culture and some distinctive patterns of substance use (e.g., kratom). Nevertheless, Thailand can learn from research done in other countries, and other countries can learn from Thailand's experiences.

Apart from supporting civil societies who have worked on harm reduction, the government should draft provision strategies for comprehensive harm reduction services for drug addicts. The strategy should be focused on the population groups who are most at risk, including prisoners and those abusing drug injections.

Community-based treatment and care services for people affected by drug use are the most effective and low-cost methods for tackling the drug problem, and should be applied and implemented in Thai society. These could be alternative drug treatments until reintegration of the addict happens through cooperation with all sectors in the community such as family, school, religious place, hospital, and so on.

Kratom should be legalized. Efforts to eradicate the kratom tree and the arrests of traditional kratom users should cease. More research on the benefits of kratom as a medication for some diseases (such as diabetes, cough, diarrhea, etc.) and as a substitute for alcohol and other narcotic drugs should be conducted.

Mixing kratom with toxic substances should not be allowed. Strong law enforcement may be the most effective strategy to reduce and control kratom misuse among recreational users, among whom kratom use has only harmful effects on health. At the same time, it should be realized that one of the impacts of total control of kratom, including its traditional use, may have the effect of limiting the knowledge of traditional Thai medicine by restricting the opportunities for research, as well as disrupting the generally harmonious lifestyle of villagers.

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