Drug Use Among Agricultural Related Workers

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Abstract

Background: Agricultural products significantly contributed to Thailand's economy. In the context of the drug use epidemic, government statistics reported a portion of the population accessed a drug treatment system only 1.2% in 2016. The objective of the study has twofolds, to seek drug use prevalence among agricultural related workers, and to explore drug use behaviour for accelerating their productivity.

Material and Methods: combined research design, cross-sectional survey, and qualitative methods were integrated into the study. study was conducted. 2936 agricultural related workers from 10 provinces throughout Thailand were studied. trained interviewers conducted semi-structured interview. In addition, 124 current users were explore on their drug use pattern and behaviour qualitatively.

Results: It is emerged that drug use annual prevalence was 54.1%. Illicit drugs and non-medical pharmaceutical were used throughout agricultural process, from preparation to harvesting and transporting their products. Stimulants, cannabis, and depressants were popular and easily accessible. Methamphetamine was predominantly used to increased their productivity throughout agricultural process.

Conclusions: Agricultural work facilitated the spread of drugs. The design of the surveillance system should be taking into account.

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Introduction

Drug abuse has been recognized as social and health problems. The United Nations Office on Drugs and Crime (UNODC) estimated 5.6% of the global adult population used drugs in 2016. Moreover, over 10% of those drug users suffer from drug use disorders [1]. In ASEAN, the rate of drug users in 2016 who accessed to the treatment system was 27.8 in a hundred thousand population. Over 80% of the people who were given treatment were methamphetamine users [2]. In Thailand, the latest household survey was done in 2016 reported 1.4 million Thai population age 12-65 years old used drugs which correspond to 27.97 in a thousand population. Results from the last national survey emerged that the top three popular drugs used among general population were cannabis, kratom and methamphetamine respectively [3]. The government statistic reported only 12.9% of this estimate access to treatment system in 2016 [4]. Although drug use in Thailand was lower than its epidemic worldwide, it has been national target since 2001 [5].

Thailand has been burdened with the demand for illicit substances since 1360. The common indigenous natural products are cannabis, kratom (*Mitragyna speciosa korth*), and opium. The first heroin epidemic emerged in 1960. The sniffing of volatile substances, benzene, lacquer and glue first appeared in the late1970s. Amphetamines Type Stimulants, synthetic drugs, evolved into a major epidemic in the early 1990s [6]. In late the 1990's, the abuse of a new set of substances, ecstasy, ketamine, crystalline methamphetamine, cocaine and hashish emerged [7]. Finally, during recent years the abuse of prescription drugs and new psychoactive substances (NPS) has become evident [8]. However, official statistics reported that the biggest portion of drug users who accessed to get treatment was methamphetamine users [1]. Since cannabis and kratom are less harm than other drugs, only a few users need for treatment.

In general, people begin taking drugs for a variety of reasons. Stimulants are considered to reduce fatigue and enhance concentration eg. in performing protracted tasks requiring maintenance of attention in monotonous situations [9]. Methamphetamine, one among others Amphetamine-Type-Stimulants (ATS), was popularly used among ASEAN member states, in crystal form, powder or pill [2]. In Thailand, methamphetamine was used for recreational purposes, work related, and health/ beauty [3].

Thailand situates in the heart of mainland Southeast Asia. Its area of 200,000 sq.miles with around 67 million population, of these 30.9% are agricultural workers [1]. Although agricultural pro-

ducts accounted for 10% of annual GDP, reflecting agricultural workers as the most vulnerable group, lowest in economic chains. The Thai government declared development direction to become "World Kitchen" (NESDB). In addition, there is more competition in agricultural export products globally. This situation enforced agricultural-related workers to better living by working more productively. It is hypothesised that, perhaps, using stimulants both caffeine (legal) and amphetamine (illegal) is a mean to an end. Although evidences emerged that agricultural related workers use drugs, patten of use particularly functional use is unclear. The objective of this study has twofolds; to estimate the number of drug users among agricultural related workers, and to explore pattern of use for accelerating their productivity along agricultural activities.

Materials and Methods

This was a combined research design, cross sectional survey and qualitative methods were integrated. In the survey, Network Scale-up (NSU) method was used to estimated the number of drug users. The network scale-up method is a social network method for estimating the size of hard-to-reach populations. There are three steps;

1) to assume the relationship among personal network size, total population, and size of target sub-population,

2) to calculate personal network size, and

3) to estimate the group of interest.

Population and samples

In 2017, the Thai agricultural related workers registered was 5,911,567 individuals. [10] Only agricultural related workers who were staying in the household for >3 months in 2016 were eligible to participate in the survey.

No drug survey among agricultural related workers was conducted prior to this study; therefore, the parameter used was the prevalence of substances used from the previous national household survey in 2016 [2]. With an expected 10% non-response, sample size was calculated to estimate the proportion of drug use with an estimate of ±1%, resulting in a sample of 3140 individuals. To commence the survey, stratified three-stage cluster sampling was employed. Thailand was stratified into 10 zones based on geographical regional basis, each zone was systematically sampled province (one zone one province). Each province was mapped their agricultural zones, each zone comprising of 300-500 households. Fourteen zones were randomly selected from each province, 140

zones altogether. Households were systematically selected from updated map of individual zone. The number of households was determined probability proportional to size. Simple random sampling with table was employed to get the samples from each household (one household one sample). Of 3140 intended samples, 2936 individuals (93.5%) agreed to participate in the survey (age ranging from 16 to 69 years old with an average of 36.6, 61.3% (1799) were males).

After the baseline survey, however, non-drug users were exclusions editorial. 124 current users agree to participate as key informants in qualitative study (age ranging from 18 to 58 years old with an average of 27.4, 88.7% (110) were males).

Outcome of interest

The outcome of the study was prevalence of illicit drug and non-medical pharmaceutical use. The past-year prevalence or current use in this study defined as taking drug at least once in the past 12 months from the interview date.

Tools

The interview questionnaire, which was developed by 12 experts, comprised five sections: 1) socio demographics, 2) network size, 3) substance use, 4) treatment history, and 5) substance literlacy. The Thai Substance Literacy Scale: TSLS developed by Momen et.al. (Momen et.al. 2015). The internal consistency was 0.83. Concurrent validity was 0.67 and content validity index was 0.96. In addition, structured questionnaires and interview guidelines for the qualitative study were developed by the research team.

Data collection

Twenty research assistants (two for each province, one male, one female) were trained to complete fieldwork that included updating a community map, devising a household sampling frame, selecting samples, asking permission for informed consent, and interviewing the sample. The research assistants asked the intended samples to provide written consent, waited a few days to allow participants time to make their decision, and came back to collect the data. Data were collected from September to November 2017 through private, face-to-face semi-interviews. Participants regulated place and time for interview on their convenient basis (participants' households or other convenient place, and time). An average of 1–1.5 hours was spent with each interview. After the interview, research assistants asked drug users for written consent to become key informants. Only those who

consent as key informants (124) were studied qualitatively. again key informants regulated place and time for interview on their convenient basis. Participant observation was employed only those who gave permission to observe. Research assistants and research team conducted participant observation and in-depth interview during September 2017 to July 2018 (3-5 times for each informant interview, 2-3 days.

Data analysis

The data were double-entered into a computer and validated. The data set was analyzed by frequency, percentage, mean, standard deviation (SD).

Qualitative data was analyzed by content analysis, which involved transcribing the data, encoding the transcribed data and comparing the encoded data before extracting conclusions.

Ethics statement

This research project was approved by the Human Research Ethical Committee of Khon Kaen University (approval no. HE601238) and was conducted in accordance with the principles of the Declaration of Helsinki and ICH GCP standards. Written informed consent was obtained from the participants and from the parents/guardians of minors.

Result

Drug use among agricultural related workers was 36 years; 12.4 % of the workers were aged under 25 years and 24.6% had obtained elementary education and lower. One-third were below the poverty line. A few reported histories of drug treatment in the government system. 29.4% was currently smoked while 19.1% smoked habitually (over 20 days in past month), and 17.9% smoked over 1 pace daily. 48.7% currently alcohol drinkers while 30.4% drank habitually, and 24.1% drank over 50 mg/% every time. Everyone drank energy drink within past year. Although energy drink In Thailand are vary, the government control every brand of energy drink must contained 50 mg of caffeine or less. 46.0% of the sample drank energy drinks habitually, while 30.7% received caffeine over 100 mg daily. Among agricultural related workers, 73.5% (2158) experience using drugs (Illicit and non-medical pharmaceutical) in their life course.54.1% (1588) were currently used. The types of drug use were shown in Table 1. Among current users, 5.6% poly drug users (using combined drugs and applied more than one drug at once) while 0.7% used drug through injection. Shown in Table 1.

Table 1: Distribution of agriculture-related workers. Values are presented as number (%)

Variable	Male	Female	Total
Analgesics	81.08%	81.21%	81.13%
Opiates/Codeine	64.13%	63.52%	63.88%
Sedative	20.13%	22.36%	21.11%
Opioids	2.32%	0.50%	1.52%
Kratom	3.68%	0.49%	2.30%
Cannabis	7.00%	1.44%	4.72%
Opium	1.95%	0.49%	1.30%
Ecstasy	0.78%	0.49%	0.65%
Ketamine	0.39%	0.48%	0.43%
Cocaine	0.40%	0.48%	0.44%
Heroine	1.17%	0.49%	0.87%
Volatile	3.68%	1.45%	2.71%
Yaba/Meth Tab.	10.56%	14.21%	11.96%
ICE/Meth Crystal	5.00%	0.97%	3.29%

Among current users, Stimulants were used to accelerate their productivity in agricultural activities. 11.9% of workers used methamphetamine both tablet and crystal form.

Patterns of use during the working process are demonstrated.

There is a tendency to illicit drug in soil preparation, harvesting and marketing to four types: vegetable cultivation, rice farm, gardening, and cropping. As follows:

1. Soil preparation

1.1 Vegetables grow

Soil preparation is a sure way to keep up with the soil so that it can be up-to-date with the planting process. Hired the owner of the plow is a broker for land plots 400-700 Baht per rai depending on the area. If plowing 600-1,000 Baht per rai, the broker will prepare drinks, canned coffee, and alcohol, the driver will find amphetamine before starting work and be prepared to use it while working to tolerate drowsiness, work night, and drink alcohol after work.

"Use methamphetamine to work hard. If this is not smoked, it is not a work / turn to smoke. Can work twice (FP1)

If you do not use it, it will be sleepy, drink coffee / if morning shift is not used. Only use the late shift night"(FP3, FP7).

"Cannabis relaxed without pain"(FP1)

"Using amphetamines to promote instant work"(FP5, FP6, FP10)

"To suck it out, do not sleepy, when run out drink water and eat desserts."(FP12)

1.2 Rice growing

The owner of the farm will hire a tractor 2-3 times before releasing the water. This process must be rushed to the rain to catch the grain. The plowing procedure is to use drugs before work, increase diligence, work on time, and be weather resistant.

"When using amphetamine mixed with Ice, focus on happiness and think diligently"(FF5).

"Smoke 2 tablets a day before work, it will all day"(FF1)

"The plowed night is better than the long lasting"(FF2)

"Amphetamines only work nightly, do not use every day"(FF5, FF3)

"Used to work 8 hours a day if continue to use more"(FF4,).

1.3 Crops

The most common is sugar cane. Cassava and corn fields, it was found that the process of drug use in cassava and corn fields. Similarities from soil preparation. The plowing and plowing will be used before work and again around the night digging holes to work up, not sleepy.

"Amphetamine used to work for power to work"(FFC2)

"Using Amphetamine to work long"(FFC1, FFC3)

"Amphetamine makes the mood better, work continuously to be myself"(FFC5)

2. Care

2.1 Vegetables growing

The owner of a vegetable garden or contractor will bring the amphetamine mixed with water to drink for the workforce, sunlight, and work quickly to get more jobs. This will use the amphetamine to stimulate the night because it must be injected insecticides, insecticides, fecal matter, watering, and grasping the vegetables in the marijuana group used during work and after work for a good mood.

> "Using amphetamines because of increased strength, quick work, mobility, more work" (FP28, FP31).
>
> "Smoke amphetamines are not sleepy, not hungry, they are good power"(FP22, FP19)
>
> "It is not good to masturbate, just to finish work"(FP6)
>
> "Marijuana makes a good mood. Work alone can be very comfortable "(FP33)
>
> "Amphetamine was results in diligent and work faster"(FP35).
>
> "How do you know that the employer mixed amphetamines in the water to drink, to work on time"(FP4, FP9).

2.2 Rice field growing

The step was hormones, fertilizers, insecticides, fungicides, hired labor, and care for every nourishment, but few people work in many rais, contract farming as a farm and the remaining force to get more work, so it is necessary to rely on drug use. It is used to mix water and smoke, before working to stimulate the body to increase strength, not be drowsy and get more work, after work, no pain, and compensation for 60-80 baht for rai.

> "Feel good to work hard"(FF6)
>
> "Have a lot of emotions, but I'm comfortable"(FF8)
>
> "Awake like as strong one"(FF12)
>
> "Very impulsive, very diligent not tired "(FF7)
>
> "Sure, if use pump more amphetamines and effective work (FF1, FF10)
>
> "Amphetamines 4 tablets mixed with Ice, then work longer hours than the day and night, do not add often"(FF5)

2.3 Gardening

It was found that in the process of insecticide injection, slicing of rubber, acid water, fertilizer after the cut and the grass was on a broker, the contractor is a farmer and labor is a subordinate all steps rely on drugs, recruiters to mix water and use drugs themselves to stimulate the need to tolerate drowsiness. Tires from midnight to morning can be paid 40 percent. Daytime nourishment and weeding, and take care of other garden, cut down on dressing, fertilizing, laboring, gardening, using drugs for most work, hired as a group, all of whom use drugs to boost their work, compensation is paid every 15 days, the fertilizer fee is 240-300 Baht per day, weed control 500-750 Baht per rai, and pruning price is 1,500 Baht per rai.

> "The amphetamine can make body endure, more work, and work with effectively"(FFC10)
>
> "Smoke within a minute, it will freshly, and want to work"(FFC5)
>
> "The labors of pumping amphetamines use to work / but the teenagers will tolerate it."(FFC3)
>
> "The work will be faster, the cold body is used to keep the amphetamine in working order." (FFC14)
>
> "There is work to feel valued, smoke amphetamine for heavy duty night shift"(FFC2, FFC6)

2.4 Crop

Maintenance to rely on drugs to withstand high sunshine, put in fertilizer, weed and keep yield bearing. These steps use the physical endurance of the drug after work, no fatigue, any pain, if added to the drug, the evening can take care of the farm all night to watch the farm while the yield. The process of sugarcane plantation is quite complicated because the production process has many steps. Labor is so dependent on drugs that it is worth the effort of the hard-working and sub-traffickers. During the sugarcane opening season, sugar cane cutting process, from the process of maintenance, sugarcane is hired. Fertilizer, brokers are employed by the owner of the farm. The recruiter will bring the drug mixed with water to the farm laborer to drink for work, to endure and finish work faster.

> "When smoke amphetamine, forget the problems, make happy to work, but it is not true happiness"(FFC14)
>
> "After 2 minutes of amphetamine pumping, concentrate and work faster"(FFC3).
>
> "The amphetamine makes it hard to work, but do not sleep, and have to work for 2 day in the farm, in the third day, it can sleep at normal times."(FFC9)

3. Harvesting

3.1 Vegetables growing

When vegetables are mature enough to be sold, will hire laborers to cut the vegetables, which are paid by the amount of vegetables that are cut or the farmer is charged at 50 satang per kilogram - 2 baht. Increase the body weight to cut more vegetables to get more compensation. Marijuana used before work, in the breaks time and after work to adjust the mood to work happily.

> "Amphetamine stimulates the body, eyes bright, has more work force"(FP3)
>
> "Do not get tired if use amphetamine to work and cut vegetables all night"(FP6)
>
> "Cut vegetables from 03.00 p.m. to 05.00 a.m., many of them transported to the car, especially in the rainy season will smoke for 2 times, at the vegetables farm site to 2-4 tablets "(FP12).

3.2 Rice field growing

Harvesting in this process, the most commonly used harvesters for the harvest car driver will get fee is 450-500 Baht per rai to use for work longer and more resistant to get more jobs each day.

> "Use the amphetamine to drive a good harvest, concentrate on stress relief"(FF3)
>
> "Get multiple conversions, do not tired, need to accelerate harvest. Smoke 2 tablets of amphetamine in the morning and evening time"(FF13)
>
> "Amphetamine morning before work, good work, resist to the sunlight, can drive to the night"(FF4)
>
> "Smoke before driving, get driving all day, need to accelerate"(FF1)
>
> "The first amphetamine smoking to get stimulate was working as a harvest driver."(FF7)

3.3 Gardening

Harvest time to accelerate export time of production to keep up with high prices. The order and ripeness of the fruit itself. Workers use their own drugs, estimates of their power, and the frequency and frequency of drug use. It is used before work and bearings keep yield.

> "The amphetamine helps to fill the vigor and energy of the fruit and the pick up the production to the truck and get 2 fee"(FG5).
>
> "When were exhausted, use the amphetamine to finish work on time to pick up"(FG1, FG2).
>
> "It feels good, it's working, use again before go to rubber cutting"(FG11, FG17)

3.4 Crops

When the crop is fully grown, there will be a broker who receives a quota from the sugar factory to deliver the sugarcane to the factory for the duration and amount of the quota. So, brokers have to cut sugar cane for cutting. Labor group will get to cut the sugar cane, in addition to the factory car transport. To enter the factory to meet the deadline by the agreed time. In this process, there is the problem of drug use, because it is time to work with time. The process starts with cutting the sugar cane into the car. These processes get the quotas to hire workers. The replacement value is based on the amount of truncated bundles. The drug is used both by the employer and by the drug itself to be able to work longer hours in exchange for money. And accelerate with time to affect the quality of sugar cane.

> "Amphetamine is fun to work, relaxed work"(FFC1)
>
> "Continuous work, feel good when using amphetamines, ensure you get the job without wasting time"(FFC10)
>
> "Addictive and relaxed body and mind, cut sugar cane work all night, increase labor 2-3 times the contractor"(FFC17, FFC22)
>
> "Enjoy not tired, happy smile, not stressed, good mood, cannabis inexpensive 100-200 baht per day, can be cooked 6 pounder 18-20"(FFC12)
>
> "Used amphetamine in the morning before cutting sugar cane for 6 hours, the break time to use again to force up to 09.00 p.m., in the night working used again, when go to bed, will smoke marijuana to reduce the amphetamine"(FFC2, FFC16)

4. Deliver the market

4.1 Vegetables growing

This process will employ labor by paying a compensation of 600 baht per car using amphetamine before work for awake, fast working, and hardly working, in the cannabis group before work and work breaks do not seem to be hasty, but timely. Finally, transport vegetables from the garden to the central market. The driver will work in the evening until 06.00 a.m. in the morning, so, has to rely on drugs before work and hard to use before the power to stimulate the body and mind while driving, calm down. Another feature to drive vegetables to market centers. This vegetable transportation driver will have to travel to the middle market during the day to order vegetable to travel from the source to the main market will have to arrive before 01.00 a.m. to catch the middleman to pick up and sell. In this process, the driver sends the vegetables to use the substance to keep the car driving longer. Not sleepy and timely, if the season is over, the vegetables will be around to run the vegetables all day and night.

> "Concentrate on driving confidently, drive well in time, send the big market before midnight, carry a bag sink back legs"(FP3)
>
> "Drive vegetables on the way, he used amphetamine in the forest, patience, calm, calm to drive vegetables all night, especially in winter and rainy season , keep up the middleman for high vegetable prices"(FP4, FG7)

4.2 Crops

Transportation from farm to factory in this process, if the cane trucks are to be reared, the cane must be drained overnight to have a chance to use the drug to withstand drowsiness. In general, the owner's litter truck is not found in the use of narcotics because the daily transport to the factory is based on the cycle. Not hastily with time, the next step is to process the sugar cane factory, to

meet with drug users, such as the side of the hook, sugar stew, boiler control system and workers carrying sugar cane. The process of production is mainly used by the mechanics. There is no drug use, employees work around is not drug.

> "Use amphetamine to withstand sleepiness at night, day and night running"(FFC3, FFC9)
>
> "No sleep, good drive car, no fear, and transport of sugar cane delivery to the factory timely"(FFC4) [In Thai]

Interviews with agricultural operators revealed that every aspect of the job was contracted with both regular and temporary workers. The drug use behavior of the agricultural workers was found to be that the workers were using their own drugs for their own work by smoking or using the amphetamines in the central water tank. Employers know the behavior of drug use is prohibitive, but what the entrepreneur is interested in the job is done on time and create a solution if the mistake. The accident at work or the owner of the establishment will not represent any guarantee or provide any assistance.

The past, found that labor of marijuana cultivation in the field of corn, and planting the cottage by the rubber plantation, less laborers buy less drugs to use each day. Do not keep too much will increase the risk if the news out. Drug addicts such as not eyes contact, and specific smell, diligent to work only, one dose of 4 tablets, 4 parts alone, this is equal to 1 part of women pumped 2 times a day, use Ice to mix. There are two things to consider: safety from smoking and perception of the drug. The dosage is in the range of 2-20 tablets per day divided into 2-5 hours.

Discussion

This study was conducted to investigate drug use behaviors for working in the agricultural sector in Thailand by in-depth interview with 124 people. This study shows that the current situation of drug use among agricultural workers has spread to regular and contracted workers, indicating that access to narcotics is increasing, easy and accessible, the use of drugs for work is normal and can be done in any cases, places and times.

According to Kristy Moroney's Drug Problems on-Farm study in 2017, the drug is easy to use. The use of drugs is part of their daily routine. Workers feel that drugs make them more relaxed, methamphetamine, feeling happy and free. The brain thinks and decides to plan effectively between 8-12 hours. At end of drug, the user feels tired, cannot think or control emotions. Workers say, "Take methamphetamine, it is easy to grow quickly or grow a lot ", "I earn money to buy drugs and need medicine to earn money. ","I cannot start the day until I take methamphetamine". Sticking is an important factor in the cultivation of agriculture.

Working hours are related to the use of narcotic drugs, beliefs and behaviors and culture in the workplace such as using drugs to withstand heavy work, to stimulate, behavior related to narcotic use among marginal workers (13.7%), followed by amphetamines (9%), people who use work-related occupations tend to use drugs and alcohol more than those who do not, and they will see the impact when drug users go long-term, such as free of charge about rehabilitation of the body and mental deterioration; impact on families, communities and others loses capacity. All most agricultural workers found that the first ingredient used was marijuana, followed by cocaine (88.9% or 113 out of 127) and second (79.2% or 88% 111), respectively which consistent with the Drug Use Pattern among Health Care workers 2016, drug use patterns in the US labor population were highest in marijuana followed by amphetamine.

Conclusion

There are 4 types of agriculture working vegetable growing, rice field growing, gardening, and crops. The most commonly used drugs are amphetamines, marijuana, and amphetamines mixed with Ice.

The use of drugs to increase agricultural productivity is rewarding to spend to care for the family, even if the family knows that drug use, but with responsibility for the contractor, control of follower confidence in physical strength gained in drug addiction makes it more confident to work and get more jobs. Workers give priority to drugs just as a helper in work "If stop working when stop taking amphetamine"and compare the work, the drug with the drug does not differ in 2 times.

Thai workers related to drug addiction which the distribution is based on the work done, in particular by the more than 70% of agricultural workers in Thailand. The most likely drug use, the timing is determined and the quality of the produce itself.

Acknowledgments

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