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นิพนธ์ต้นฉบับ

Community prevalence of alcohol use disorders in a rural area of Nakorn-Sawan Province, Thailand.*

Nuntika Thavichachart**

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A community survey was conducted in Nakorn-Sawan Province, one of the top ten provinces for alcohol consumption per capita in Thailand. The purposes of this study were to determine the prevalence of alcohol use disorders and their epidemiological distributions. A total of 409 subjects were interviewed by trained interviewers. Prepared questionnaires determined demography, drinking behavior, and patterns of drinking. Hasin questionnaires were used to detect alcohol use disorders. The findings showed that the prevalence of alcohol use disorders was 30.8% divided into 16.6% alcohol dependence and 14.2% alcohol abuse. The epidemiological distributions, characteristics of drinking behavior and patterns of drinking for the alcohol use and alcohol use disorders are shown.

Key words : *Prevalence, Alcohol use disorders, Community.*

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นันทิกา ทวีชาติ. ความชุกของความผิดปกติของการดื่มสุราในชุมชนจังหวัดนครสวรรค์ ประเทศไทย. จุฬาลงกรณ์เวชสาร 2538 กันยายน; 39(9): 649-660

การสำรวจภาคสนามในชุมชนจังหวัดนครสวรรค์ ซึ่งเป็นจังหวัดหนึ่งในสิบที่มีการใช้แอลกอฮอล์ต่อประชากรสูงจังหวัดหนึ่งในประเทศไทย โดยมีวัตถุประสงค์ เพื่อหาความชุกของความผิดปกติของการดื่มสุรา และข้อมูลการกระจายทางระบาดวิทยาของผู้ที่ถูกวินิจฉัยว่ามีความผิดปกติของการดื่มสุรา ได้สัมภาษณ์ประชากร 409 คนโดยผู้สัมภาษณ์ที่ได้รับการฝึกอบรมเป็นผู้สัมภาษณ์ โดยใช้แบบสอบถามซึ่งประกอบด้วย ข้อมูลส่วนตัว พฤติกรรมการดื่ม รูปแบบของการดื่มและแบบสอบถามเพื่อค้นหาความผิดปกติของการดื่มสุราของ Hasin จากการศึกษาพบว่า ความชุกของความผิดปกติของการดื่มสุราพบได้ร้อยละ 30.8 โดยแบ่งเป็นการติดสุราร้อยละ 16.6 การใช้สุราผิดปกติร้อยละ 14.2 การกระจายทางระบาดวิทยา ลักษณะพฤติกรรมของการดื่มสุรา รูปแบบของการดื่มสุราในกลุ่มที่ดื่มสุรา และในกลุ่มที่มีความผิดปกติของการดื่มสุราได้แสดงให้เห็นในรายงานการศึกษา

Alarming data from many countries shows that alcohol consumption has steadily increased world wide. Per capita consumption increases have been especially, high in Europe and North America.⁽¹⁾ Alcohol abuse and dependence are producing virtual epidemics of accidents, and many health problems and societal problems such as family disruption, spouse and child abuse, compromised economic productivity, crime and violence.^(2,3) Up to the present time there have not been many epidemiological assessment studies on alcohol use in Thailand. The prevalence of alcohol use disorders in many countries has varied from 8-36% depending on the target population and diagnostic criteria and techniques.^(2,4,5)

In Thailand, all of the prior studies about prevalence of alcohol use disorders had been done on special target groups and in hospital settings. There have been no studies concerning about prevalence and the epidemiological data of alcohol use disorders in the community. The Ministry of Public Health's Department of Medical Services and Office of Drug and Substance Use Control Board have a policy to launch a national program for controlling alcohol use disorders. This study will be the pilot project for baseline data for that program.

The purposes of this study were to determine the prevalence of alcohol use disorders, their epidemiological distributions, drinking behavior,

and patterns of drinking among alcohol consumers in Nakorn-Sawan Province.

Materials and methods

A total of 409 subjects in Nakorn-Sawan Province aged over 15 years, were selected by a 2 stages random sampling technique and subsequently interviewed by trained interviewers using questionnaires. The questionnaires determined demography, drinking behavior, and patterns of drinking. Hasin questionnaires were used to measure and identify alcohol use disorders according to DSM-3-R items.^(6,7) The questions had been tested for validity and reliability in the community before being developed into the complete and final questionnaire. (The reliability for Hasin questionnaires,⁽⁸⁾ K was 0.81) Monitoring of data collection was tested periodically.

Results

The general characteristics of the study samples are shown in table 1. In the total 409 subject population, 45.7% were male and 54.3% were female. The most common age range of the subject population was between 25-44 years, with a mean of 42 years. Most were married, worked as agriculturists, had finished primary school (Pratom 4 about 57%), and the average income per head was lower than 3,000 Baht per month. All of the subjects were Buddhists.

Table 1. Characteristics of the study samples.

| | Number (n = 409) | Percent |
|-----------------------------|---------------------|---------|
| 1. Sex | | |
| Male | 187 | 45.7 |
| Female | 222 | 54.3 |
| 2. Age (year) | | |
| 15-24 | 49 | 12.0 |
| 25-34 | 87 | 21.3 |
| 35-44 | 87 | 21.3 |
| 45-54 | 74 | 18.1 |
| 55-64 | 64 | 15.6 |
| >,=65 | 48 | 11.7 |
| 3. Marital status | | |
| single | 49 | 12.0 |
| married | 360 | 88.0 |
| - separate | 10 | 2.4 |
| - divorced | 2 | 0.5 |
| - widowed | 17 | 4.2 |
| 4. Employment status | | |
| No occupation | 57 | 13.9 |
| Government officers,retired | 34 | 8.3 |
| Business,employee | 100 | 24.5 |
| Agriculturists | 218 | 53.3 |
| 5. Educational acheivement | | |
| Never enter school | 22 | 5.4 |
| 1-4 years in school | 233 | 57.0 |
| 5-9 years in school | 82 | 20.0 |
| 10-12 years in school | 32 | 7.8 |
| Bachelor degree | 20 | 4.9 |
| > Bachelor degree | 4 | 1.0 |
| College students | 16 | 3.9 |
| 6. Income (Baht/month) | | |
| No own income | 57 | 13.9 |
| 1 - 3,000 | 213 | 52.2 |
| 3,001 - 10,000 | 55 | 13.4 |
| 10,001 - 20,000 | 10 | 2.4 |
| Pay by relatives | 74 | 18.1 |

Alcohol drinking is high about 71.9%. abuse 14.2% and alcohol dependence 16.6%. Alcohol use disorders 30.8% divided into alcohol (Table 2)

Table 2. Prevalence of alcohol use disorders in the community of Nakorn-Sawan province.

| Alcohol use subgroups | Number | Percent |
|----------------------------------|------------|--------------|
| 1. No alcohol use | 115 | 28.1 |
| 2. Alcohol use | 294 | 71.9 |
| 2.1 Alcohol use but no disorders | 168 | 41.1 |
| 2.2 Alcohol abuse | 58 | 14.2 |
| 2.3 Alcohol dependence | 68 | 16.6 |
| Total | 409 | 100.0 |

We found that more males than females alcohol use disorders statistically different at used alcohol, and males were diagnosed with significant levels $p < .001$. (Table 3)

Table 3. Prevalence by gender of alcohol use, alcohol abuse and dependence.

| Alcohol use subgroups | Male | | Female | | Total | |
|---------------------------------|------------|--------------|------------|--------------|------------|--------------|
| | n | % | n | % | n | % |
| 1. No alcohol use | 26 | 13.9 | 89 | 40.1 | 115 | 28.1 |
| 2. Alcohol use but no disorders | 75 | 40.1 | 93 | 41.9 | 168 | 41.1 |
| 3. Alcohol abuse | 30 | 16.0 | 28 | 12.6 | 58 | 14.2 |
| 4. Alcohol dependence | 56 | 29.9 | 12 | 5.4 | 68 | 16.6 |
| Total | 187 | 100.0 | 222 | 100.0 | 409 | 100.0 |

$$X^2 = 50.6 \quad p < .001$$

The rate of alcohol abuse was highest in persons than among singles. Most of the alcohol use disorders were among agriculturists, who had the 25-34 age group and alcohol dependence was highest in the older age range between 45-54 years. finished Pratom 4 or primary school and who had Alcohol use disorders was higher among married incomes <3,000 Baht/month. (Table 4)

Table 4. Prevalence by socio-demograph variables of alcohol use and alcohol use disorders.

| Socio-demography | No use | | Alcohol use | | Alcohol use disorders | | | |
|-------------------------------|------------|--------------|-------------|--------------|-----------------------|--------------|-----------|--------------|
| | n | % | n | % | dependence | | abuse | |
| | | | | | n | % | n | % |
| 1. Age (year) | | | | | | | | |
| 15-24 | 30 | 26.2 | 6 | 3.5 | 6 | 8.8 | 7 | 12.1 |
| 25-34 | 19 | 16.5 | 35 | 20.9 | 15 | 22.1 | 18 | 31.0 |
| 35-44 | 22 | 19.1 | 43 | 25.7 | 14 | 20.6 | 8 | 13.8 |
| 45-54 | 17 | 14.8 | 30 | 17.8 | 17 | 25.0 | 10 | 17.2 |
| 55-64 | 16 | 13.9 | 30 | 17.8 | 10 | 14.7 | 8 | 13.8 |
| >,=65 | 11 | 9.5 | 24 | 14.3 | 6 | 8.8 | 7 | 12.1 |
| Total | 115 | 100.0 | 168 | 100.0 | 68 | 100.0 | 58 | 100.0 |
| 2. Marital status | | | | | | | | |
| single | 29 | 25.2 | 10 | 5.9 | 8 | 11.8 | 2 | 3.4 |
| married | 86 | 74.8 | 158 | 94.1 | 60 | 88.2 | 56 | 96.6 |
| Total | 115 | 100.0 | 168 | 100.0 | 68 | 100.0 | 58 | 100.0 |
| 3. Occupation | | | | | | | | |
| no occupation | 29 | 25.2 | 20 | 11.9 | 3 | 4.4 | 5 | 8.6 |
| government office, retired | 7 | 6.1 | 13 | 7.8 | 5 | 7.3 | 7 | 12.1 |
| business, employee | 22 | 19.1 | 31 | 18.4 | 25 | 36.8 | 21 | 36.2 |
| agriculturists | 57 | 49.6 | 104 | 61.0 | 35 | 51.5 | 25 | 43.2 |
| Total | 115 | 100.0 | 168 | 100.0 | 68 | 100.0 | 58 | 100.0 |
| 4. Educational level | | | | | | | | |
| No school entrance | 6 | 5.2 | 11 | 6.5 | 2 | 2.9 | 3 | 5.2 |
| 1-4 year in school | 54 | 46.9 | 105 | 62.5 | 41 | 60.3 | 32 | 55.2 |
| 5-9 year in school | 25 | 21.7 | 35 | 20.8 | 10 | 14.7 | 12 | 20.7 |
| 10-12 year in school | 10 | 8.8 | 6 | 3.6 | 10 | 14.7 | 6 | 10.2 |
| Bachelor degree | 6 | 5.2 | 7 | 4.2 | 4 | 5.9 | 3 | 5.2 |
| > Bachelor degree | - | - | 2 | 1.2 | 1 | 1.5 | 1 | 1.7 |
| now studying | 14 | 12.2 | 2 | 1.2 | - | - | 1 | 1.7 |
| Total | 115 | 100.0 | 168 | 100.0 | 68 | 100.0 | 58 | 100.0 |
| 5. Income | | | | | | | | |
| No income | 29 | 25.2 | 20 | 11.9 | 3 | 4.4 | 5 | 8.6 |
| 1-3,000 | 49 | 42.2 | 100 | 59.5 | 35 | 51.5 | 33 | 57.0 |
| 3,001-10,000 | 14 | 12.2 | 19 | 11.3 | 13 | 19.1 | 5 | 8.6 |
| 10,000-20,000 | 1 | 0.8 | 5 | 2.9 | 2 | 2.9 | 2 | 3.5 |
| paid by relative | 22 | 19.2 | 24 | 14.4 | 15 | 22.1 | 13 | 22.4 |
| Total | 115 | 100.0 | 168 | 100.0 | 68 | 100.0 | 58 | 100.0 |

Most of the alcohol use disorder subjects had statistically significant familial histories of alcohol drinking $p < .05$ (Table 5)

Table 5. Prevalence of alcohol consumption by familial history.

| Alcohol use subgroup | Familial history of drinking | | No familial history | | Total | |
|-----------------------|------------------------------|------|---------------------|------|------------|-----|
| | n | % | n | % | n | % |
| 1. No alcohol use | 74 | 64.4 | 41 | 35.6 | 115 | 100 |
| 2. Alcohol use | 117 | 69.6 | 51 | 30.4 | 168 | 100 |
| 3. Alcohol abuse | 52 | 89.7 | 6 | 10.3 | 58 | 100 |
| 4. Alcohol dependence | 61 | 89.7 | 7 | 10.3 | 68 | 100 |
| Total | 304 | | 105 | | 409 | |

$$X^2 = 56.2 \quad p < .05$$

When we combine alcohol dependence and alcohol abuse into alcohol use disorders and analyse between alcohol use without disorders and alcohol use with disorders and familial history of alcohol consumption we find that the Odd ratio was 3.79, $p < .001$. Familial history

of alcohol consumption was a factor associated with alcohol use disorders.

Regarding drinking behavior and patterns of drinking, we found that the common onset age for consumption was between 15-24 years. (Table 6)

Table 6. Age onset of drinking.

| Age onset (year) | Alcohol use | | Alcohol dependence | | Alcohol abuse | |
|------------------|-------------|--------------|--------------------|--------------|---------------|--------------|
| | n | % | n | % | n | % |
| Before 15 | 2 | 1.2 | 4 | 5.9 | 2 | 3.4 |
| 15-24 | 122 | 72.6 | 48 | 70.6 | 34 | 58.6 |
| 25-34 | 22 | 13.1 | 11 | 16.2 | 20 | 34.6 |
| 35-44 | 10 | 5.9 | 4 | 5.9 | 2 | 3.4 |
| over 45 | 2 | 1.2 | 1 | 1.4 | - | - |
| Total | 168 | 100.0 | 68 | 100.0 | 58 | 100.0 |

The characteristics of consumption among alcohol dependence subjects were continuousness and regularity but for alcohol abuse they were

episodic drinking. Reasons for starting consumption are shown in table 7.

Table 7. Reasons to start drinking.

| Reasons | Alcohol use | | Alcohol dependence | | Alcohol abuse | |
|-----------------------|-------------|--------------|--------------------|--------------|---------------|--------------|
| | n | % | n | % | n | % |
| Mental stress | 5 | 2.8 | 7 | 10.3 | 1 | 1.7 |
| Persuasion by friends | 35 | 20.8 | 19 | 27.9 | 12 | 20.7 |
| Want to try | 21 | 12.5 | 14 | 20.6 | 12 | 20.7 |
| Social activity | 38 | 22.7 | 14 | 20.6 | 21 | 36.2 |
| Mix with heral med. | 58 | 34.6 | 7 | 10.3 | 11 | 19.0 |
| Others | 11 | 6.6 | 7 | 10.3 | 1 | 1.7 |
| Total | 168 | 100.0 | 68 | 100.0 | 58 | 100.0 |

$$X^2 = 466.6 \text{ p} < .001$$

We found that the most common reason among the alcohol consumption (No disorders) group was use with herbal medicines while the major reasons in the alcohol use disorders group were social activities, persuasion from friends and desire to try.

Regarding the frequency of alcohol consumption in the past 30 days, alcohol use disorder subjects continued to drink but the frequency of drinking varied from once per week to daily. The amount of alcohol varied from 1-3 mixed glasses and totaled less than 1 small bottle of whiskey. Alcohol use disorder subjects typically like to drink in the evening, take about 1-2 hours, consume both inside and outside the

home and usually like to drink with friends.

There were several common emotional stages both before and after drinking among alcohol use disorders. The changes before drinking were : could not control awareness, easily irritable, and decreased appetite. The changes after drinking were : intoxication, impulsiveness, itching, headache, dizziness, hot sensations in the stomach, talkative, loud, increased appetite, palpitation, hypomotor retardation and deep sleep.

Alcohol use disorder subjects used alcohol as a tool for relief of mental and emotional stress more often than more casual alcohol drinkers. (Odd ratio = 5.65, $x^2 = 34.2$, $p < .0001$) (Table 8)

Table 8. Comparing on using alcohol as a relief of stress.

| Use as a relief | Alcohol use | | Alcohol use disorders | |
|-----------------|-------------|--------------|-----------------------|--------------|
| | n | % | n | % |
| Never | 151 | 89.9 | 77 | 61.1 |
| Ever | 17 | 10.1 | 49 | 38.9 |
| Total | 168 | 100.0 | 118 | 100.0 |

*Odd ratio = 5.65, $X^2 = 34.2$, $p < .001$

We found that alcohol use disorder subjects have often tried to reduce or stop their drinking. The reasons were self motivation, health problems, family request, matured and drug holidays associated with religious beliefs. Most subjects would stop for a period of 1-3 months and then resume consumption because of friends or social

activities. Most of them believed that drinking cessation was easy, but they did not wish to stop and did not request help from others about quitting.

Regarding other drugs and substances used, most of the alcohol use disorder subjects were poly-drug users. (Table 9)

Table 9. Other drugs and substances used.

| Drug and substances | No alcohol use | | Alcohol use | | Alcohol dependence | | Alcohol abuse | |
|---------------------|----------------|------|-------------|------|--------------------|------|---------------|------|
| | n | % | n | % | n | % | n | % |
| Never | 47 | 40.9 | 35 | 20.8 | 5 | 7.4 | 6 | 10.3 |
| Ever - cigarettes | 4 | 3.5 | 26 | 15.5 | 10 | 14.7 | 4 | 6.9 |
| - tea, coffee | 11 | 9.6 | 8 | 4.8 | 1 | 1.5 | 6 | 10.3 |
| - areca nuts | 7 | 6.1 | 11 | 6.5 | - | - | 1 | 1.7 |
| - analgesics | 16 | 13.9 | 9 | 5.9 | 2 | 2.9 | 7 | 12.2 |
| - C.N.S. stim. | 2 | 1.7 | 4 | 2.4 | 5 | 7.4 | - | - |
| - tranquilizer | - | - | 5 | 2.9 | 4 | 5.9 | 1 | 1.7 |
| - kratom | 2 | 1.7 | 8 | 4.8 | 2 | 2.9 | 2 | 3.4 |
| - heroin | - | - | 6 | 3.6 | 2 | 2.9 | 4 | 6.9 |
| - poly-drugs | 26 | 22.6 | 56 | 33.3 | 37 | 54.4 | 27 | 46.6 |
| Total | 115 | | 168 | | 68 | | 58 | |

We found that in the past 6 months 73.5% had used drugs in the prior 24 hours about 63.8% had used drugs.

Discussion

The results of prevalence of alcohol use disorders and the associated epidemiological data have been shown. We found that alcohol consumption is quite high in Nakorn-Sawan province (79.1%). Among these alcohol consumers, we found alcohol use disorder subjects who were diagnosed from Hasin's questionnaires at a level of 30.8%. The Alcohol dependence 16.6% and for alcohol abuse 14.2%. Rates in other studies but in other setting were 25 and 32%⁽⁹⁻¹¹⁾ The differences among these results were instruments used to measure,⁽¹²⁻²¹⁾ they use MAST that classified only alcohol dependence. MAST is not up to date because DSM-3-R classified alcohol use disorders into alcohol dependence and alcohol abuse. Those studies surveyed in OPD in general hospital so the prevalence should be high.

The results of demographic distribution among alcohol use disorders indicated more prevalence among males than females which did not differ from other studies.^(2,22-24) It was most common in the age range of 25-34, most were married, were agriculturists, had low education low income and had a familial history of alcohol consumption. The same distributions with one study were found except for occupation.⁽²⁵⁾ We believe this was because that study set was in a governmental hospital in Bangkok and among the alcoholics admitted to the hospital were a high distribution of government officers and employees.

The age of onset of drinking was most

commonly between 15-24 years (about 65% of the time), and the reasons for starting alcohol use were social activities and persuasion from friends. The frequency of alcohol consumption was once or more per week. Most alcohol use disorder subjects preferred to drink "arracks" and mix the alcohol with herbal medicine. The amount of alcohol use was about 1-3 glasses per occasion. Most of the alcohol use disorder subjects preferred to drink in the evening, took 1-2 hours for drinking, and did it both inside and outside of the home with friends. Most of them had mood or other emotional changes before and after drinking, such as : could not control awareness, easy irritability, and decreased appetite before drinking. The changes after drinking were intoxication, a hot sensation in stomach, talkative and loud, increased appetite, impulsiveness, itching, headache, dizziness, palpitation, hypomotor retardation and sounder sleep. Most of the alcohol dependence use subjects used alcohol as a tool for mental stress relief more than did the alcohol abuse subjects. Most of the alcohol use disorder subjects thought that alcohol reduction or cessation was not difficult, but they still did not want to stop. Only small numbers requested help. Most of them could stop for only 1-3 months and then they would resume drinking for the same reasons they had when starting. Most of the alcohol use disorder subjects had used other drugs and substances and were still using them. These included cigarettes, analgesics, etc. Most of them were poly drug users.

Suggestion

This study can be used as a pilot study because we have developed an instrument used for conducting a survey. Modified questionnaires

could be used as a frame for conducting a national survey for planning a policy to prevent and control alcohol use disorders.

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References

1. Claxton GH. Alcohol the facts. National Drug Abuse Information Center (NDAIC). Australian Government Publishing Service. Canberra, 1992
2. Arif A, Westermeyer J. Epidemiological factors of drugs and alcohol abuse. In : Manual of Drug and Alcohol Abuse. American Psychiatric Association Inc., Washington DC, 1988
3. World Health Organisation Expert Committee. Problems related to alcohol consumption. WHO Techn Rep Ser 1980; 650:1-72
4. McLellan AT, Luborsky L, Woody GE, O'Brien CP. An improved diagnostic evaluation instrument for substance abuse patients. The Addiction Severity Index. J Nerv Ment Dis 1980 Jan; 168(1): 26-33
5. Allen Jp, Eckard MJ, Wallen J. Screening for alcoholism : techniques and issue. Public Health Rep 1988 Nov-Dec; 103(6): 586-92
6. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, 3rd ed. revised. Washington DC: American Psychiatric Association, 1987
7. Rounsaville BJ, Kosten TR, William JB, Spitzer RL. A field trial of D.S.M. 3-R : Psychoactive substance dependence disorders. Am J Psychiatry 1987 Mar; 144(3):351-5
8. Hasin DS, Grant B, Endicott J. The national history of alcohol abuse : implication for definitions of alcohol use disorders. Am psychiatry 1990 Nov; 147(11):1537-41
9. Otrakul A. Wong-arsa C, Boonshuya C, Issa Abdulkarim A. Identification of alcoholism among B M A bus drivers in Bangkok. J Psychiatr Assoc Thai, 1988 Apr; 33(2):55-60
10. Tanchaiswad W. MAST : the instrument for screening alcoholism. J Psychiatr Assoc Thai 1988 Apr; 32(2):47-53
11. Tanchaiswad W. Alcoholism : prevalence in general hospital outpatient. J Psychiatr Assoc Thai 1990 Jan; 35(1):3-9
12. Selzer ML. The Michigan Alcoholism Screening Test : the quest for a new diagnostic instrument. Am J Psychiatry 1971 Jun; 127(12):1653-8
13. Silger ML, Vinokur A, Van Rooijen L. A self-administered Short Michigan Alcoholism Screening Test (SMAST). J Stud Alcohol 1975 Jan; 36(1):117-26
14. Ewing JA. Detecting alcoholism. The CAGE questionnaires. JAMA, 1984 Oct 12; 252(14): 1905-7
15. Umbricht-Schneiter A, Santora P, Moore RD. Alcohol abuse : comparison of two methods for assessing its prevalence and associated morbidity in hospitalized patients. Am J Med 1991 Aug; 91(2): 110-8

16. Bush B, Rhow S, Cleary P, Delbanco TL, Aronson MD. Screening for alcohol abuse using the cage questionnaires. *Am J Med* 1987 Feb; 82(2):231-5
17. Chick J. Alcohol dependence : methodological issues in its measurement reliability of the criteria. *Br J Addict* 1980 Jun; 75(2):175-86
18. Cottler LB, Keating SK. Operationalisation of alcohol and drug dependence criteria by means of a structured interview. *Recent Dev Alcohol* 1990; 8:69-83
19. Morse RM, Hurt RD. Screening for alcoholism. *JAMA* 1979 Dec 14; 242(24): 2688-90
20. Hughes PH, Barker NW, Crawford GA, Jaffee JH. The natural history of heroin epidemic. *Am J Public Health* 1972 Jul; 62(7):995-1001
21. Woodruff RA Jr, Clayton PT, Cloninger CR. A brief method of screening for alcoholism. *Dis Nerv Syst* 1976 Aug; 37(8): 434-5
22. Goowin DW. Genetic factors in the development of alcoholism. *Substance abuse. Psychiatr Clin North Am* 1986 Sep; 9(3):427-34
23. Meyer RE. Old wine, new bottle : an alcohol dependence syndrome. *Substance abuse. Psychiatr Clin North Am* 1986 Sep; 9(3):435-54
24. Edwards G, Arib A, Hadgson R. Nomenclature and classification of drug-and alcohol-related problems. A WHO Memorandum. *Bull WHO* 1981; 59(2): 225-42
25. Vajarajote P, Otrakul A, Kusolvisikul V, Patumpetch D, Sangsupan A, Kriensakpichit A. A survey of admitted alcoholics admitted to government hospital in Bangkok. *J Psychiatr Assoc Thai* 1985 Jul; 30(3):101-6