

Epidemiology Bulletin

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An Epidemiological Investigation of Drug Abuse in Patients at the Emergency Department of One Teaching Hospital in Taipei

Abstract

In the 1960s and 1970s, deaths caused by overdose of drugs was a major health issue. This issue was brought up our attention again. The present investigation was to study the types of drug abuse, their trends and risk factors by a case-control method.

Cases were selected from emergency patients of the Medicine Department of a teaching hospital in Taipei for treating their drug-induced problems or other drug-related problems. They used drugs were either legally or illegally. The reasons for using drugs were drug dependence, suicidal intention, and emotional problems. The patient next to the case admitted to the Medicine Department was selected at a 1:1 basis as the control. Doctors and social workers interviewed both the cases and the controls with a structured questionnaire. The questionnaire was constructed by revising the US Health Behavior Survey questionnaire. Urine specimens were also collected from cases for qualitative analysis of the drug components. Statistical analysis were conducted using SPSS and Epi-Info software. Findings were presented in descriptive statistics, and studied of their differences in drug use by χ^2 test. Logistic regression was also applied to study risk factors of drug use. Between December 1997 and November 1998, a total of 254 patients had visited the Department for treatment of drug-related problems. They accounted for 6.7% of all emergency patients of the Medicine Department. Major reasons for hospital visits included suicide (47.4%) and acute drug poisoning (45.5%). The drugs being used were primarily sedatives and hypnotics (81.7%) and narcotics (4.7%). They mainly came from pharmacies and drug stores (47.2%), hospitals and clinics (25.2%), or

bought from others (11.1%) and friends (7.1%). Persons who were younger, single, female, alcoholic, and depressive were more likely to use drugs. Making more recreational facilities and channels of psychological counseling available, and control of drugs and pharmacies are some important preventive measures against drug abuse.

Key words: drug abuse, risk factors.

Introduction

Drug abuse has increased sharply since 1990 in the Taiwan area. In addition to social problems, health problems caused by drug abuse are also our major concern⁽¹⁾. Drug abuse is found to be associated with accidents and injuries, cancer, maternal and child health, and mortality^(1,2). The reporting of drug abuse project conducted by the Department of Health in 20 medical care institutions to understand the trend of drug abuse tends to focus on drug abusers seeking for drug cessation⁽³⁾, the drugs used by them are quite different from the drugs now available⁽⁴⁾. The purposes of the present study were to understand: 1) the kinds of abused drugs now available on the market; 2) risk factors of drug abuse; and 3) the health hazards caused by the drug abuse.

Materials and Method

Selection of Study Subjects

Emergency patients at the Medicine Department of a teaching hospital in Taipei City were selected for study. Among them, those seeking for the treatment of drug-caused problems or drug-related problems were defined as cases. The drugs used by them were either legal or illegal. The major reasons for drug use were drug dependence, suicidal intention, and emotional problems. The patient immediately following the case visiting the Department for other problem was selected as the control. Urine specimens were also collected from cases for qualitative analysis of the drug components. The test reagents manufactured by the JANT Pharmacal Corporation were used for urine analysis for amphetamine, barbiturates, benzodiazepin, cocaine, methadone, opiates, cannabinoids, phencyclidine, propoxyphene, and lysergic acid diethylamide (LSD).

Questionnaire Interview

When patients visiting the emergency department were confirmed having drug-induced or drug-related problems, doctors and social workers interviewed them with a structure questionnaire within 48 hours after the visit. The questionnaire referred to the US Health Behavior Survey questionnaire with some modification. It contained items on the social-demographic background of the subject (date of birth, sex, place of birth, educational level), health behaviors, and risk factors of drug use.

A depression scale developed by Kandell et al.⁽⁵⁾ was also used with some modification. The questions asked were: have you ever felt very unhappy? Sad?

Depressed? Scared? Lonely? Frustrated? Difficult to get to sleep? Appetite loss? Frustrated in making friends? Answers were scored: 0 for no, 2 points for yes within a month, and 3 points for often. These scores represents the degree of their depression.

Statistical Analysis

Data were keyed in computer with Epi-info and analyzed with Epi-info and SPSS. Findings were presented in descriptive statistics, and tested for differences in the use of drugs by χ^2 test. Logistic regression was also used to study of association between drug use and the risk factors.

Results

Descriptive Epidemiology

Between December 1997 and November 1998, there had been 3,800 emergency patients of the Medicine Department. Of them, 254 with drug-related problems visited the Mackay Memorial Hospital for treatment. They were aged mean 32.5 ± 0.1 years, 17.3% male and 82.7% female, of senior high school education (40.5%), junior high school education (29.4%), in commerce (41.8%), or unemployed (40.4%), single (35.4%), smoking (52.8%), drinking (55.3%), and betel-nut chewing (10.1%) (Table 1). 25.2% perceived peer drugs use 36.0% worked between 9:00-17:00 hours; 17.3% between 17:00-24:00; 9.3% between 24:00-9:00; and 37.3% without regular working hours. Many of them (38.4%) had a monthly income between NT\$30,000-50,000, and more than NT\$50,000 (34.2%).

Major reasons for clinic visit included suicide (47.2%) and acute drug poisoning (45.7%). The drugs used (Table 2) were sedatives and hypnotics (81.7%), and narcotics (4.7%). Drugs were taken mainly at home (71.7%). Age at first drug use was 23-35 years (35.6%) and 13-22 years (35.0%). Drugs came from pharmacies (47.2%), hospitals and clinics (25.2%), and bought from others (11.0%). Most (98.0%) drugs were taken orally. 23.6% of them were drunk at the same time.

Analytical Epidemiology

Table 3 shows the results of the univariate analysis of risk factors of drug use. By comparing the case with the control groups, it was found that drug users were younger, more female, of higher education, in commerce, single, smoking, drinking, perceived peer drug use, of higher depression index, and with less regular working hours $P < 0.05$ in each. Further analysis done by multiple logistic regression analysis showed that younger in age, female, drinking, single, and higher depression index were independent risk factors of drug use (Table 4).

Discussion

Drug abuse refers to the use of substance that is hazardous to the physical and mental health of an individual and is also detrimental to social harmony. The dosage

taken in drug abuse always exceeds the amount required for medical treatment⁽⁶⁾. Drug dependence is a medical concept and involves both the physical and the mental aspects. Physical dependence refers to the continual need of the body for certain drug, and termination of drug use will produce withdrawal symptoms. Mental dependence refers to the subjective refusal to discontinue the use of certain drug⁽⁷⁾. Drug addiction includes drug abuse and drug dependence. They are hard to distinguish. Some are drug dependent though abuse drugs only occasionally. Some abuse drugs and eventually become drug dependent. In the past, physicians often underestimated the potential risks of the abuse and dependence of sedatives⁽⁸⁾.

Generally speaking, abused drugs come in four groups⁽⁹⁾: 1) opiates such as codeine, morphine and heroin, that inhibit the function of the brain stem on emotion and internal organs; 2) inhibitors of the central nervous system such as alcohol, barbiturate, benzodiazepines and methaquadone that inhibit the function of the brain on thoughts and behaviors; 3) stimulants of the central nervous system such as amphetamine, cocaine, ice that stimulate the brain stem; and 4) hallucinogen such as cannabis, lysergic acid diethylamide (LSD), phencyclidine, and organic solvents that stimulate the brain. As drug abuse is illegal, great difficulties are confronted in dealing with this issue. Different drugs are used at different times. In the US, for instance, marijuana was the major drug in use in the 1960s; heroin in the 1970s; cocaine in the 1980s; and marijuana again in the 1990s^(11,12). According to the Current Status of Drug Abuse published by the Department of Health^(13,14), drug abuse in Taiwan started with pentazocine in the 1970s, glue and sedatives in the 1980s, and heroin and amphetamine in the 1990s.

Sedatives and hypnotics have been used clinically for 35 years as anxiolytics, hypnotizer, muscle relaxant and anti-tic agent. Dependence on sedatives and hypnotics is often induced by the prescribing physician and the patient⁽¹⁵⁾. In the present study, 156 patients visited the department for treatment of drug abuse, 17.3% of them male and 82.7% female. Most of the abused drugs were sedatives and hypnotics, and came from pharmacies and hospitals (clinics).

Adolescence (12-25 years) is an important period in life of personality development^(16,17). If they have not taken up the habit of drug abuse at this time, chances are they will not become drug abusers⁽¹⁸⁾. Previous studies indicated that the risk period of drug abuse was between 20 and 30 years⁽¹⁹⁾. The present study found that the age at first use of drugs was 23-35 years and 13-22 years. This finding corresponded with those of the previous studies⁽²⁰⁾.

Reasons for drug abuse are complex. Peer pressure, curiosity, depression, efficiency improvement, resistance and others may lead to the use of stimulants⁽¹⁰⁾. Suicidal tendency due to depression, depression history in the family, drinking problems, and criminal record are found to be associated with suicide by means of drug use⁽²¹⁾. Findings of the present study were similar. Individuals with higher depression index and drinking habit had higher chances of drug use.

Health problems induced by drug abuse can be either accidental or intentional. Though suicide and death due to accidental overdose of drug can be detected through physiological changes of patients, accidental and intentional uses of drug are hard to differentiate. In Italy, of all deaths due to drug abuse, 35% were results of accidental overdose⁽²²⁾; and 47% in Glaswegian⁽²²⁾. Official report of the United Kingdom in 1992 showed that 31 persons committed suicide with drugs and 284 had died from drug overdose⁽²³⁾. In the year, there were 506 drug addicts. That is, 6% of the drug abusers committed suicide with drugs and 55% of them had died from overdose. The official report was somewhat under-reporting when compared with findings of Frischer et al.⁽²³⁾. One study found that 47.4% of patients visited clinics for treatment of suicide with drugs and 45.5% for acute drug poisoning⁽²⁴⁾. The two though are hard to differentiate, from the point of view of early prevention, both should be our major concern.

Some million patients visit emergency clinics for treatment of alcohol and drug problems each year⁽²⁵⁾, including injuries, sicknesses and complications induced by alcohol and drugs, and people seeking for drug cessation. Previous studies focused more on deaths due to drug abuse, and less on the survivals of drug abuse. Overdose of drug may lead to death depending on drug's purity and also alcohol use⁽²⁶⁾. Though no deaths were found in the present study, 23.8% of the patients were found to be alcohol users as well.

Drug abuse and drug dependence are some health problems of the Taiwan adolescents. Younger in age, female, drinking, single, and depression are some independent risk factors of drug use. More counseling for the adolescents, and more intensified control of drugs are needed for the prevention of drug hazards.

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Prepared by: KT Chen⁽¹⁾, KS Chang⁽²⁾, LH Tang⁽¹⁾, ER Chan^(3,4)

1. FETP, National Institute of Preventive Medicine, DOH
2. Mackay Memorial Hospital Emergency Department
3. Kaohsiung Medical College
4. Department of Health

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Table 1. Basic Information of Cases (N=254)

Variables	No.	%
Reasons for clinic visit		
Acute poisoning	116	45.7
Suicide	120	47.2
Others	18	7.1
No. of drug poisoning in a year		
1	145	57.0
2	77	30.1
≥ 3	32	12.9
Where drug was taken this time		
At home	182	71.7
Theater	15	5.9
Dancing hall	10	3.9
Pub	10	3.9
Game shop	8	3.1
Friend's	5	2.0
Others	24	9.4
No. of drug use		
1	64	25.2
2	13	48.5
≥ 3	67	26.3
Age at first drug use		
13-15	28	11.0
16-18	10	3.9
19-22	51	20.1
23-35	98	38.6
>35	67	26.4
Kind of first-used drug		
Sedatives	198	78.0
Pesticide	7	2.7
Pain killer	7	2.7
Narcotics	21	8.3
Others	21	8.3
Source of drug used at this time		
Hospital/clinic	64	25.2
Pharmacy	120	47.2
Bought from others	28	11.0
Friends	18	7.1
Work place	2	0.8
No answer	22	8.7

Table 1. Basic Information of Cases (N=254) (continue)

Variables	No.	%
Method of administration		
Oral	249	98.0
Injection	2*	0.8
Others	3	1.2
Complications		
Drinking	60	23.6
Injury	12	4.7
Traffic accident	2	0.8
Fall	2	0.8
None	178	70.1

* use of heroin (morphine)

Table 2. The Distribution of Drugs Used in the Department of Medicine, One Teaching Hospital, Dec. 1997 - Nov. 1998.

Drugs	No.	%
Sedatives and Hypnotics	210	81.7
Valium	13	
Benzodiazepine (BZD)	34	
Rohypnol (FM2)	49	
Halcion	8	
Ativan	21	
Tricyclic antidepressant (TCA)	2	
Barbiturate	3	
Auxipan	3	
Capoten	2	
Erimin	2	
Eurodin	7	
Haldol	2	
Hirnamin	2	
Imovane	3	
Lexotun	3	
Morgadon	2	
Nitrozepan	5	
Xanax	2	
Phencyclidine (PCP)	2	
Unknown	43	
Pesticides	6	2.3
Weedicide	2	
Rat killer	4	

Table 2. The Distribution of Drugs Used in the Department of Medicine, One Teaching Hospital, Dec. 1997 - Nov. 1998. (continue)

Drugs	No.	%
Pain-killers	5	2.0
Acetaminophen	5	
Narcotics	12	4.7
Amphetamine	3	
Heroin (Morphine)	3	
Cocaine	2	
Syrup containing codeine	4	
Others	24	9.3
Antihistamine	2	
Inderal	2	
Drying agent	2	
Contact 600	1	
Unknown	16	
Total	257	100.0

Table 3. The Results of Single-Variate Analysis of Risk Factors

Variables	Cases (n=254)	Controls (n=254)	p-value
Age (years)	35 ± 0.1	44.7 ± 0.1	0.000
Gender (%)			0.000
Male	17.3	38.5	
Female	82.7	61.5	0.002
Education (%)			
≤ 6 years	16.1	40.3	
7-9 years	29.4	10.9	
10-12 years	40.5	26.9	
≥ 13 years	14.0	19.9	
Occupation (%)			0.007
Military, government employee	0.7	4.5	
Labor, fisherman, farmer	10.3	15.4	
Commerce (special occupation)	41.8	26.9	
Student	6.8	9.0	
Housewife	40.4	44.2	
Single (%)	35.4	26.5	0.000
Smoking (%)	52.8	28.4	0.000
Drinking (%)	55.3	28.2	0.000
Betel nut chewing (%)	10.1	6.4	0.250
Drug-using friend (%)	25.2	9.0	0.000
Depression index	11.7 ± 0.6	4.1 ± 0.4	0.000

Table 3. The Results of Single-Variate Analysis of Risk Factors (continue)

Variables	Cases (n=254)	Controls (n=254)	p-value
Failed in school (%)	10.7	8.1	0.470
Working hours (%)			0.005
9:00-17:00	36.0	64.3	
17:00-24:00	17.3	5.7	
24:00-9:00	9.3	4.3	
No regular hours	37.3	25.7	
Income (%)			0.58
<15,000	4.1	4.2	
15,000-30,000	23.3	29.6	
30,000-50,000	38.4	42.3	
>50,000	59.5	23.9	

Table 4. The Results of Logistic Regression Analysis of Risk Factors

Variables	Odds Ratio	95% Confidence Interval
Age	0.93	0.90-0.96*
Sex (male/female)	0.29	0.10-0.79*
Drinking (yes/no)	3.00	1.26-7.20*
Single (yes/no)	12.18	2.04-72.67*
Depression index	1.27	1.18-1.36**

Risk factors analyzed: age, sex, occupation, education, single, smoking, drinking, drug-using friend, depression index, income

*p<0.05, **p<0.001