SECTION 1

Drugs
CHAPTER 1

Epidemiology of Drug Abuse: A Global Overview

Maria-Elena Medina-Mora, PhD, Tania Real, M.S. and Rebeca Robles, PhD
Division of Epidemiology and Psychosocial Research, National Institute of Psychiatry, Ramón de la Fuente Muñiz, México, Mexico

1.1 INTRODUCTION

Public Health is interested in the health condition of the population and in the relation between the health status of groups and the environment. Epidemiology, through the differentiation of healthy individuals from those in poor health, and by the study of biological and social, individual and collective factors related to health and disease, estimates the extension and magnitude of a problem, subgroups of the population affected, trends over time, its determinants and consequences, the proportion of persons exposed to preventive interventions and the treatment demand covered. Its challenge is to describe the problem in a way that provides the evidence required to orientate policy.

Providing a comprehensive view of the drug problem across different cultures poses some difficulties, mainly derived from the availability of accurate information. On the one hand, illicit activities are difficult to evaluate, willingness to report might be affected by social tolerance toward drug use; persons conducting surveys in countries where drug use is defined as a felony and the police are active, might find more difficulties in obtaining an adequate rate of persons accepting to answer a questionnaire and an accurate self-report of use. Also, studies conducted in different countries might reflect differences in methods pursued, populations covered and conceptual definitions of behaviours and consequences, more than variations in rates of use. In spite of these limitations, data available show interesting global trends that can serve as an arena for the discussion of drug policies.

This chapter provides a view of the extension of the problem per type of substance and in different regions of the world; it is introduced by a discussion related to the different approaches epidemiology can follow, it provides evidence on the need to study dimensions of use and problems as separate interacting indicators and of considering the circular nature of the drug problem with epidemic rises, periods when drug use is stable or is reduced,
followed by a new rise, that calls attention to the need to consider replicating studies with a periodicity that allows the description of trends.

Data included in the chapter are drawn from a literature review, from the reports of member countries to the United Nations, from the annual reports of the International Narcotics Control Board, the UNESCO and from statistics and other studies coordinated by the World Health Organization. Regional organizations such as the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), the Inter-American Drug Abuse Control Commission CICAD, were also visited. This information is completed with data coming from epidemiological studies, household and student surveys, and surveillance systems, when available.

1.1.1 The Scope of Epidemiology

Epidemiology seeks to answer questions such as is there a drug problem? If so, what type of problem? What is its impact at the national and local levels? And depending on the type of problem, what are the more appropriate policies? To answer these questions it uses surveys and other methodological strategies to assess the prevalence of use and abuse, problems and trends based on conceptual models that provide specific definitions of the problem, the accepted indicators to measure it and the policy to follow. The following section describes the main sources of information available:

A. Estimates of production and drug seizure. The availability of drugs in local markets can be derived from studies that assess the cultivation and production of drugs and from seizures that provides information about price and purity of individual drugs and about the type of substances that are available in certain locations, provided it is possible to differentiate quantities aimed for exportation and quantities aimed for local markets, especially in transit countries. In analysing this data caution must be taken as changes in price and purity of illegal substances on the streets do not necessarily indicate changes in prevalence; variations in effectiveness of enforcement and in reporting efforts can also shape this information [1].

B. Estimating prevalence. Counting the number of individuals that have used drugs is not enough to determine the scope of the problem in a given society. The impact of the drug problem on public health and thus the type of problem to be faced is modulated by:

I. The patterns of drug use, that include the type of substances used, the routes of administration, the frequency and quantity of intake, the subgroup of the population using them (i.e. pregnant females, adolescents, etc.) or the circumstances of use (i.e. driving under the influence of drugs).

II. The likelihood of dependence and of other drug-related problems influenced by variations in the vulnerability of individuals genetic predispositions (i.e. heritability estimates a range between 40 and 60% [2], factors in the development that increase the likelihood of transiting from experimentation to heavy use and dependence (i.e. childhood adversities including exposure to violence), in variations in the proximal environment (i.e. drug availability, drug use amongst siblings and peers, etc.).

III. Sociocultural factors that include tolerance to use of drugs, demographic such as increase in the proportion of young persons with no equivalence in the availability of school and job opportunities, or social transitions such as migration. These
factors modulate the likelihood of experimenting with drugs and advancing towards dependence as well as its impact in different societies.

IV. Availability of resources to face the problem (i.e. universal or limited access to treatment and other social services) and health and social policies that modulates the availability of resources to cope with the problem. Lower rates of use might result in a greater burden when they occur in contexts of poverty, social inequity or high degree of delinquency, or when there are no resources to identify cases and offer treatment. Formal responses to the problem will affect the availability of drugs on the streets and the number of persons imprisoned for drug use or possession. Special features of the illegal production, diversion from legal sources and traffic of drugs and organized crime will also affect the problem, influencing the rate of violence and drug availability.

C. Mortality and morbidity. Mortality studies focus on the most serious forms of drug abuse, causes being numerous from direct causes such as overdose, to indirect accidents or murder; they can relate to the route of administrating drugs or specific lifestyles such as HIV, hepatitis B or C. Mortality information can be driven from national causes of death statistics, examinations from the medical examiner, police or hospital records, amongst other sources [1]. The accuracy of information varies from country to country. According to Single et al. [3] illicit drugs have been implicated as a sufficient or contributory factor in at least 90 causes of death and disease. For each of these causes it is possible to estimate the excess mortality of persons with an addiction as compared to the general population controlled by age and sex [4], it is also possible to estimate aetiologic fractions or attributable proportions and estimate the numbers of deaths and admissions to hospital that can be causally attributed to illicit drugs.

D. These indicators can be resumed in a concept known as burden of disease, that includes premature mortality attributable to the disease and days lived without health. Substance-attributable burden is usually estimated by combining relative risk data with exposure prevalence data and disease-related mortality and morbidity information, from national databases [5].

The extent of drug use and the social perception of the extent of the problem does not always show the same trend, for instance a stabilization in drug use and even a reduction of new cases after a period of rapid increase can be accompanied by an increase in problems and of the demand for treatment as a result of chronic use by a proportion of those that started experimenting some time back. This trend can be accompanied by more visibility if an increase in murders occurs as a result of modifications in the drug cartels organization and their fight for markets, or if public policies change, or if the mass media focuses more closely on an old problem, modifying the social perception. The challenge of epidemiology is to assess the problem from a scientific perspective and to deliver knowledge in a way that is understood by the population, especially those that are in charge of public policies.

In summary, knowledge about the number of persons that use, abuse or become dependent and the trends over time is an important base for policy, but might not be enough to understand the impact of the problem in a given society. Approaches that evaluate the problem on two axes, substance use on the one hand and problems on the other, and that analyse their interrelation in the sociocultural context can provide a more accurate view of the problem by integrating in the analysis of prevalence, drug supply, individual and contextual variations, social perceptions of the problem and policies [6].
1.1.2 Conceptual Framework

Paradigms underlying epidemiological studies are also central because they define the basic suppositions upon which the problem is constructed, the aetiological explanations that are provided, indicators that are accepted as valid for its study and as such it is closely related to the way policies are conceived and actions are taken to counteract the problem [7].

The paradigm of infectious diseases conceives disease as a result of the interaction of a host with different degrees of susceptibility, exposed to an agent, in defined modes of transmission and environments; this model has been extended to study behavioural disorders such as drug abuse. The paradigm is mechanical biological and determinist in nature and follows a logical linear causal mode. Public health interventions derived from this explanation seeks to block the casual link by eliminating the agent and by protecting the host, reducing the level of exposure to the agent and modifying the environmental conditions that facilitate exposure. The epidemiological tools are surveys to determine the proportion of the population exposed and that using drugs, the notification systems and the follow up of individuals to determine the routes of contact.

In accordance with the disease model, the more salient policy during the last century was the reduction of supply. It was assumed that the expansion of the problem could be prevented by reducing the opportunities of exposure that in turn depended on drug availability.

This notion of the individual as a passive host affected by an agent if exposed gave way to a more complex formulation that conceived an individual actively seeking for the agent. The resulting psychosocial paradigm considers the multifactor nature of the phenomenon; replaces the concept of a unique casual agent for the exposure to a wide variety of risk or protecting factors that affect the likelihood of an individual to experiment with drugs or to develop dependence.

Actions derived from this paradigm place less emphasis on the control of the agent, instead it aims at the reduction of risk factors and the enhancement of factors that make the individual less vulnerable or more resistant to the risks present in his environment; promotes healthy lifestyles and health protection through education. Interventions were then aimed at increasing the resilience of individuals to drugs. This model shares the linear causal model of the infectious diseases model and fails to explain variations derived from more distant contextual factors such as the role of affluence or extreme poverty and unemployment.

The tradition in psychiatric epidemiology, by definition more interested in substance-abuse disorders than in their use, includes symptoms as indicators. The use of this approach has made important contributions in the determination of treatment needs and the proportion covered, but provides information on only one of the elements of the drug phenomenon, this is dependence.

A phenomenological model considers that behaviour is mediated by cognitive processes through which the individuals construct the meaning of the world in which they live. Alternative models consider that public policy in itself plays a causal role in the shaping of the problem and in the social response.

The increase in problems in different regions, globalization and perhaps also the claim of drug-producing developing nations that the demand of drugs in the developed world was eliciting supply, turned to the recognition of the need of a more balanced approach in the efforts and budgets aimed at reducing both supply and demand. This conception has gone even further, by considering that only an integrated approach that combines components of supply and demand could make a difference.
A model based on drug markets [8], has also gained recognition, it considers supply and demand mediated by factors such as the needs of users, their priorities and lifestyles. The market approach considers drug use as a complex behaviour determined by the individual himself, his environment and the drugs available. It considers that markets are affected by the interaction between the demand for drugs and their availability, which in turn are influenced by the sociocultural environment and by political forces.

It acknowledges that supply satisfies and creates demand that supports existing drug supply or creates a new one. This continuum is affected by factors such as the emergence of alternative substances and sources for obtaining them, new markets of users, relapse rates, social ideology and the situation of the economy.

Illicit drug markets might be considered as new (emerging) or well established (mature): they vary by type of substances involved and by the number and type of users. Emerging markets are formed by a large proportion of abusers who consume smaller volumes of illicit drugs, with stimulant-type amphetamines being a paradigmatic example. Mature markets, on the other hand, are formed by small proportions of heavy drug users who consume large volumes of drugs, a typical example being the heroin market. Both markets can coexist side by side [9].

Whatever the paradigm chosen, or the combination of several of them, they will determine the methods and indicators followed to study and the recommendations on strategies to face the problem.

Most epidemiological evaluations of the problems around the world use a combination of indicators coming from the paradigms we have described. Room [10] has characterized epidemiological studies in four traditions: i) medical epidemiology, interested in patterns of drug use as risk factor for health problems; the outcome variable can be chronic disease such as heart disease, or infectious diseases such as HIV of Hepatitis B and C. The role of epidemiology being the elucidation of the circumstances under which the association between use and consequences occur (i.e. injuries derived from driving under the influence of drugs) and the proportion of the disease is attributable to substance use; ii) an alternative tradition interested in the substances by themselves, with little interest in assessing consequences; it has two ramifications aimed on the one hand at assessing variations in exposure and on the other to study different patterns of substance use; iii) a third tradition, psychiatric epidemiology, defines its outcome as harmful use, abuse or dependence defined through diagnostic criteria; iii) a fourth tradition: social epidemiology, is interested in the study of problems derived from abuse; uses the term problematic use more than dependence and is interested in patterns of use as the predictor variable and social problems as outcome. A fifth tradition of psychosocial research not considered by Room in his paper, focuses on the individual and is interested in the study of the relative impact of risk and protective factors in drug initiation, continuous use, development of dependence, remission and relapse.

Following this traditions, some countries started assessing the problem by tracking drug-related deaths and hospital and treatment centre registers of cases; others followed a tradition by conducting surveys having as the main indicator ever use of drugs and use in the last 12 months. Some assessed different patterns of use as a predictor variable of health or social consequences; others pay more attention to the role of psychosocial variables on the individual and in its immediate environment. And still others are interested only in cases diagnosed as having a substance abuse problem in the American Psychiatric Association DSM IV tradition or harmful use in the World Health Organization ICD 10 tradition and dependence disorders, similarly conceptualized in both systems.
Today it is more often recognized that approaches are complimentary and help understand the impact of the problem in the health and social welfare of the population. The tradition of counting the number of persons exposed to drugs, later evolved to accept the multifactor nature of the problem and epidemiology included amongst its objectives and thus as indicators in questionnaires, the search for risk and protective factors for drug experimentation, continuous use, dependence and remission and included risk behaviours (i.e. syringe sharing) health (i.e. infections resulting from injecting procedures) and social consequences (i.e. delinquency), and the assessment of similarities and differences across cultures. A later recognition that dimensions of supply and demand are necessary in the assessment of the problem has led to more global approaches in data recollection and interpretation.

To end this first part of the chapter, we consider it important to analyse the cyclical nature of the problem. Trends in drug abuse frequently follow a cycle whereby individual, drugs or consumption patterns re-emerge at different times and or in different regions. These cycles are influenced by opportunities for illicit cultivation, diversion or trafficking, and of changing public attitudes and patterns of consumption.

According to Musto [11] the cocaine epidemic in the United States at the beginning of the last century predicted the outbreak observed in the 1970s with cycles of tolerance and intolerance responding to cultural and political strains. Aspects initially considered as beneficial such as euphoria and stimulation of the central nervous system, were later seen as seductive risks and the drug considered as a threat to society.

These trends have also been observed in the case of several substances including opium, morphine and cannabis [11]. Mäkelä et al. [12] have described the same phenomenon for alcohol consumption that crosses political systems and cultures of drinking.

Following this conceptualization, low levels of problems coincide with public attitudes of tolerance, this phase gives rise to an increase in rates of use and consequences and to the modification of public attitudes that become less tolerant and to more restrictive policies, which in turn diminish the problems and along with it, public attitudes become more tolerant and policy less restrictive, in an ongoing cycle, that according to Musto [11] lasts a generation.

These historical moments have implications in the effect of programs aimed at reducing use and consequences: in periods of increase the aim should be to maintain and accelerate the diminishment of problems, and to control or reduce this trend, the same prevention program could have very different results depending on the historical moment. These cycles vary from one place to another. Today, market economies are experiencing a reduction of the problem, and the more disadvantaged countries an increase [13].

Epidemiology aimed at informing public policies should take into consideration this phenomenon when interpreting results. This evidence calls attention to the convenience to conduct studies in a continuous form, and to include as variables for study public attitudes toward drug use and policy.

### 1.1.3 The Scope of the Problem

The twentieth century ended with the conviction that drug abuse was a global problem and thus global solutions were required. The apparently neat boundary between producer, transit and consumer countries has clearly broken down. Drugs are illegally produced in
developed and developing regions, and precursors required for the manufacture of drugs from the raw products are usually distributed from more industrialized countries to usually less-developed regions where drugs are produced.

Globalization has diminished geographical barriers making drugs more available throughout the globe, yet the level of development, geography and drug markets play an important role in drug problems. As to production, marijuana grows in most countries of the world and is today the most widely consumed substance; amphetamine-type stimulants can be produced inside countries provided precursors are available: since 1990, 60 countries have reported to the United Nations illegal production of this substance [13]; in contrast, 99% of the cocaine is grown in the Andean region in South America and the large majority of opium is cultivated in Afghanistan (93% of the world production) with Myanmar, Pakistan and Lao People’s Democratic Republic contributing in a lesser proportion; in the Americas, Colombia, Mexico and more recently Guatemala cultivate small quantities of this drug [13], mainly for the United States market estimated in 1.3 million users [14].

Drugs produced in these limited number of countries are trafficked and made available to drug users around the world, it is possible to track changes in traffic routes and in local rates of drug use and problems. As an example, we describe the changes in the routes of cocaine in the Americas to the US market and to Europe, and the modifications of drug-use rates in the same periods.

In the 1970s, the Colombian cartels preferred the Caribbean corridor, interdiction success produced a change in routes. These modifications have affected significantly the rates of drug use in the region. By 1998, UNODC estimated that 59% of the cocaine went via Central America/Mexico and 30% via the Caribbean; by 1999, flows of drugs passing though the Central American/Mexico corridor dropped to 54%, while flows through the Caribbean increased to 43%; in 2000, the proportions shifted to 66% and 33%, respectively; the rates for 2003 were 77%, 22% and in 2006, 90% was said to have transited trough the Central America/Mexico corridor [14].

In Mexico, the cumulative incidence or number of cases that have used the drug and survived to the moment of the survey of cocaine use were as low as 0.33% amongst the urban population 12–65 years of age [15]; by 2002, it had increased to 1.23% [16] and in 2008 it reached 2.37% of the adolescent and adult urban population [17].

A more recent example is the increase in the amount of cocaine shipped to West Africa from South America. It has been estimated that in 2007, 35% of the cocaine shipped from the coasts of Colombia, Venezuela, Brazil and the Guyanas is trafficked through this corridor [14]; in parallel, a resulting increase in the amount of drug use in these regions has been observed [13], for example, in Brazil the annual prevalence rate of cocaine changed from 0.4% in 2001 to 0.7 in 2005 [18].

The increase in drug availability is a contributing factor to the enlargement of the population that uses drugs if other variables in the social context that facilitate drug use, co-occur.

The number of countries that report use of different substances provides useful information on the extension of use of different type of substances. From this indicator we know that cannabis (marijuana and hashish) is the most extended drug in the world, by 2000 it was used in 96% of countries that report to the United Nations, followed by opiates (heroin, morphine and opium: 87% and derivates from the coca leaf (81%). The use of these natural products is followed by amphetamine-type stimulants (73%), benzodiazepines (controlled
There are important variations within the countries in the proportion of the population that has been exposed to the substances. The United Nations estimated that in 2006/2007; around 5% of the population 15–64 years of age had used drugs at least once in the last 12 months and that problem use reached 0.6% of the population. The most widely consumed drug was cannabis with 3.9% of users, followed at a considerably lower extent by amphetamines with 0.6% of the world’s population (with use of ecstasy reaching 0.2%), opiates were reported by 0.39% of which 0.28% was heroin, and 0.38% had used cocaine [20].

Globally, the United Nations has estimated that in 2007 between 172 and 250 million people took drugs at least once in the last 12 months and that there are between 18 and 38 million problem drug users aged 15–64 years. Of the total persons that used drugs in the previous year, between 134 and 190 million correspond to marijuana and other forms of cannabis, between 16 and 51 million to amphetamine group and between 12 and 24 million are ecstasy and ATS users in East and South East Asia, of methamphetamines in North America, of amphetamines in Europe and in the Near and Middle East. As for opiates, between 15 and 21 million reported their intake with higher rates found along the trafficking routes close to Afghanistan, in 2006 it was estimated that some 11 million were taking heroin, with an increase in Asia, and no differences in other parts of the world. In 2007 between 16 and 21 million reported the intake of cocaine [13].

As not all the population exposed become heavy consumers and develop dependence, it is important to consider rates of drug abuse and dependence. From the tradition of psychiatric epidemiology, the World Mental Health Initiative, reports rates of substance abuse without dependence and dependence with abuse (dependence was estimated only for those that reported having experienced problems) for seven developing countries, Nigeria [21], two sites in China (Beijin and Shangai) [22], Colombia [23], South Africa [24], Ukraine [25] Lebanon [26] and Mexico [27] and two countries from the developed world, United States [28] and New Zealand [29].

Results from this initiative show interesting differences in lifetime prevalence. The highest rates were observed in the United States (7.9% abuse and 3% dependence) and in New Zealand (5.3% abuse and 2.2% dependence), and the lowest in Lebanon (0.5% abuse and 0.1% dependence), China (0.5% abuse), Nigeria (1.0% abuse) and in Ukraine (0.9% abuse and 0.5% dependence); from the developing world, South Africa (3.9% abuse and 0.6% dependence), Mexico (2.7% abuse and 0.8% dependence) and Colombia (abuse 1.6%, dependence 0.6%) ranked relatively high.

Treatment demand has been used to describe geographical differences in the type of drug problem that countries are phasing. This indicator [13] shows that in South-America the highest demand is derived from cocaine (52% of all treatment demand) it is also the main drug of abuse amongst people in treatment in North America (33.5%); in contrast, in Europe and Asia, opiates occupy the first place (60% and 65%, respectively), and cocaine represents a small proportion, 8.4% in Europe and only 0.3% in Asia. In Africa, cocaine is gaining importance representing 7.2% of treatment demand, but cannabis remains as the main reason for seeking treatment (63%); this is also true in Oceania (47% in Australia and in New Zealand); cannabis is playing a more important role in Europe (19.5% of treatment demand is due to the use of this drug). In North America (Canada, US and Mexico) after cocaine (33.5%) cannabis (23.3%) occupies second place of importance in treatment
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Demand; opiates on average in the North American region occupy the third place (20.7%), but in México only 7% of patients in treatment have reported heroin use [30], opiates are rarely seen amongst patients in treatment in South America (1.7%) but represent 16.5% of treatment demand in Africa. Amphetamine-type stimulants were more prominent in Asia (18%), Oceania (20%) and in North America (18%) and are responsible for an increasing proportion of treatment demand, in South America (10.9%) [13].

It is well known that not all persons with drug dependence reach treatment, the WHO World Mental Health Survey [31], documents a treatment gap amongst persons with substance-abuse disorders in the year previous to the surveys in developed and developing countries, in the United States, for example, 51.5% of the population 18 years of age and older received any treatment [28], the rate for Mexico was only 17% [32].

Overall, only a small proportion of cases had contact with treatment during the first year of onset of the substance-abuse disorder, including alcohol, ranging from 0.9% in Mexico to 2.8% in Nigeria and China. In the developed world, the proportion was larger but still low, 6% in New Zealand and 11.3% in the United States. By age 50, a larger proportion had been treated in these countries, an average of 22% of cases in the developing countries and 62% in the countries from the developed world [33].

Drug use is related to an important number of health outcomes (morbidity), that include infectious diseases such as HIV Hepatitis B and C, suicide, neuropsychiatric conditions, complications for the offspring of addicted mothers, overdoses, accidents and poisoning and suicide [5]. Injecting drug use, reported in 148 countries and territories [34] has been a behaviour of special concern due to the frequency in which contaminated injection equipment is used and because the lifestyles of this group are often related to high-risk sexual behaviour. Furthermore, poor living conditions and stigmatization are important barriers for accessing services.

HIV infection amongst people who inject drugs has been reported in 120 countries and it has been estimated that there are approximately 16 million injecting drug users worldwide, 3 million of which are infected with HIV. The largest numbers of HIV positive people who inject drugs are in Eastern Europe, East and Southeast Asia and Latin America; it has been estimated that up to 40% of some groups in these regions are HIV positive. China, the United States, the Russian Federation and Brazil have the largest populations of injectors and account for 45% of the total estimated worldwide population of people who inject drugs [35]. Hepatitis C is a related disorder, estimated to affect over 80% of injecting drug users [36]. Other forms of drug use, particularly amphetamine and methamphetamine have also been associated to risk of developing the immunodeficiency syndrome [35].

Overall, it has been estimated that in 2000, 0.4% (0.6% for males and 0.2% for females) of the mortality in the world was attributable to illicit drugs, when days without health are included, using a measure known as Burden of Disease, the estimated proportion increases to 0.8% (1.1% for males and 0.4% for females) [5].

Rehm et al. [5] estimated that the global burden, measured in disability adjusted life years attributable to illicit drugs, was higher in the developed world 1.8% (2.3% for males and 1.2% for females) followed by low mortality in developing regions or emerging economies, 0.8% (1.2% for males and 0.3% for females) and only 0.5% (0.8% for males and 0.2% for females) in high-mortality developing regions. This measure includes death by murder but does not include other indicators of the social impact of drug-related violence that affect societies [37]. For instance, the people of the Latin America region identify economic issues and crime as their two greatest problems [37].
Illegal production and trafficking routes are factors related to availability of substances, and thereby have an impact on the variations in rates of use described above, as well as on different sociocultural factors that validate certain forms of use in well-defined social groups. There are certain individual characteristics that make a person more vulnerable to experimenting and going on to abuse and depend on drugs (for example emotional problems, low self-esteem or low perception of risk associated to the use of different drugs). There are also characteristics of the proximal environment where individuals develop (for example whether or not their close friends use drugs) and those of the more distal context such as social inequality, lack of employment opportunities for youth and access to treatment, that impact on this vulnerability. But availability of substances is a necessary precondition for drug use [33, 38, 39].

The rate of problems is modulated by illicit production increasingly focuses either on the territory of unsuccessful or geographically marginalized states, not necessarily wedded to the production of illegal drugs, but more likely, where drug production has become a symptom of wider structural problems [40]. According to the United Nations, particularly vulnerable to drug-trafficking organizations are states with a weak social and institutional fabric, or in which political events, domestic instability and conflict have contributed to the collapse or weakening of state structures and controls [41]. And those more attractive for the establishment of new markets are those where drugs are produced or trafficked. The rate of problems is also determined by the access to treatment and by availability of treatment options for the dependence to different substances.

In the following sections particularities of the different substances are discussed.

1.1.4 Cannabis

Marijuana is a greenish-grey mixture of the dried, shredded leaves, stems, seeds and flowers of the hemp plant Cannabis sativa. Its main active chemical is THC (delta-9-tetrahydrocannabinol), which causes the mind-altering effects of intoxication. The amount of THC (which is also the psychoactive ingredient in hashish) determines the potency and, therefore, the effects of marijuana. As THC enters the brain, it causes a user to feel euphoric – or ‘high’ – by acting on the brain’s reward system, areas of the brain that respond to stimuli such as food and drink as well as most drugs of abuse. THC activates the reward system in the same way that nearly all drugs of abuse do, by stimulating brain cells to release the chemical dopamine [42].

Cannabis is produced in all regions and in almost all latitudes of the world. In the last decade, 120 countries reported illegal cultivation in their territories. The main region of production is located in the north of Africa and there is evidence that the cultivation in Latin America has diminished, while an increase is observed in Europe, Asia and Africa. Indoor production has enlarged in some areas of Europe and North America and in the east of Europe, increasing the concentration of THC from 3 to 7% registered in the 1990s to 10 to 30% [19].

According to the UNODC [20] the estimated global number of cannabis users ranges from some 142.6 to 190.3 million persons, equivalent to a range from 3.3 to 4.4% of the population aged 15–64 who used cannabis at least once in 2007.

The World Mental Health Initiative [31] included not only substance-use disorders, aetiological factors and the analysis of the treatment gap in different countries, but also the
cumulative incidence or history of drug involvement of those individuals from a defined cohort that have survived to the moment of the study, it is also defined as the proportion of cases that have ever been exposed or prevalence of ever use. It is considered as a good measure to study the risk of becoming a drug user as is not limited to time frames as is the case of other commonly used measures of prevalence such as annual use and current prevalence (use in the 30 days before the surveys).

Results from this initiative show that the market-economy countries have higher rates of cannabis use, the first seven places from higher to lower cumulative incidence are occupied by developed countries, ranging from 42% of the adult population in the United States to 6.6% in Italy; in the developing countries the rates varied from 10.8% in Colombia to 0.3% in China.

The American hemisphere produces more than half the world’s cannabis herb [43], several studies have been conducted but direct comparison are difficult due to the differences in methods outstandingly the urbanicity status of the sites included in the surveys, nonetheless some interesting trends can be derived.

The highest prevalence rates are found in the United States, where almost half (46.1%) the population aged 12 years and older has tried this drug and 14.4% (35.6 million people) reported having used it in 2007 [44]. Chile is next in accumulated incidence with 27% of the urban population of 91 cities with more than 30 000 inhabitants, reporting having experimented [45], while the rate for Argentina in studies of urban areas of more than 80 000 inhabitants is 16.7%, and 12.2% in Uruguay (urban areas of more than 20 000 inhabitants) [46].

Surveys conducted in Peru in urban areas of more than 20 000 inhabitants [47], and in Mexico in a national sample of both rural and urban areas, showed similar rates with 4% of their population reporting ever use of cannabis. Rates for use in the past year range from 7% in Chile and Argentina to 0.7% in Ecuador and Peru.

School surveys conducted in selected countries in Central America show rates ranging from 7% in Panama to 2.2% in Nicaragua [48], lower than that reported for college students in the US, which totalled 10%, 24% and 32% amongst 8th, 10th and 12th grade students, respectively, in 2007 [49].

Except for the United States – where cannabis use was reported as stable after a reduction from 18%, 33% and 35% amongst 8th, 10th and 12th grade students, respectively, observed in 1996 [49], in other countries where surveys are available, use is increasing. In Brazil, ever use increased from 6.9 to 8.8%, and annual use from 1 to 2.6% in the same period. Argentina showed an even stronger increase in the annual prevalence rate of cannabis use, rising from 1.9% of the population ages 16 to 64 in 2004 to 6.9% of the population aged 12 to 64 in 2006 – reversing a previous downward trend. In Uruguay, annual prevalence of cannabis use increased amongst the population ages 15 to 65, from 1.3% in 2001 to 5.3% in 2007. In Mexico, ever use grew from 3.48% in 2002 to 4.19% in 2008, with rates for annual use being 0.6 and 1.03%, respectively [43].

In contrast, in Europe there is a clear downward trend. In England and Wales cannabis use fell from a prevalence rate of 10.9% amongst the population aged 16–59 in 2002/03 to 7.4% in 2007/08. This trend was first observed amongst school population, annual prevalence of cannabis use amongst people aged 16–24 fell from 28.2% in 1998 to 17.9% in 2007/08.

In Spain, considered as the door for Morocco’s cannabis production to Europe, household survey data showed a moderate decline, reversing the previous rising trend, from a peak of 11.3% of the population aged 15–64 in 2003, to 10.1% in 2007.
A similar trend of rising cannabis use in the 1990s followed by some decline in recent years can be also noticed in recent household surveys from a number of other European countries. Cannabis use seems to have remained stable in the Netherlands (5.5% in 2001 and 5.4% in 2005). Following increases in the 1990s, cannabis use levels also remained quite stable in some of the new Central European EU member states, including Poland (2.8% in 2002; 2.7% in 2006), the Czech Republic (10.9% in 2002; 9.3% in 2004) and Slovakia (7.2% in 2000; 6.9% in 2006). Finally, from a total of 21 African countries reporting cannabis use trends for 2007, 7 countries saw use levels rising and 4 countries reported a decline. The rest show a downward trend in a number of countries. [13].

1.1.5 Opium and Heroin

The most abused and the most rapidly acting of the opiates is heroin. It is processed from morphine, a naturally occurring substance extracted from the seed pod of certain varieties of poppy plants. Soon after its injection or inhalation, heroin crosses the blood/brain barrier and is converted to morphine to bind rapidly opioid receptors [42].

Heroin is a matter of special concern due to its abuse and dependence liability. Abuse of this and other substances used intravenously is now a major vector for the transmission of infectious diseases, in particular the immunodeficiency virus (VIH) and the acquired immunodeficiency syndrome (AIDS), hepatitis and tuberculosis. Drug injecting has been identified in more than 136 countries, of which 93 report HIV infection amongst injecting drug users. The joint United Nations Program on HIV/AIDS [35] estimates that the global proportion of HIV infections due to contaminated injection equipment was from 5 to 10% in 1996.

During the 1990s Afghanistan became the world’s largest producer of illicit opium from where heroin is extracted. The United Nations Drug Control Program [40] reports that in 1999, 79% of global illicit opium was produced in this country and that though in 2000, this proportion was reduced, it was still 70%, by 2007, Afghanistan alone accounted for 92% of global production, producing 82000 mt. of opium at an average opium yield of 42.3 kg/ha; 82% of their global area was under opium poppy [50].

Opium has been traditionally a crop in Afghanistan since the eighteenth century, but it began to emerge as a significant producer of illicit opium in the period of protracted war that started in 1979 and unfortunately is likely to persist for some time in the future; from 1986 until 2000 illegal production showed an annual growth rate of 23%.

This growth in production occurred in a background of economical, political and geostategic factors, mainly, a lack of effective government control over the whole country, the degradation of agriculture and most economic infrastructures due to more than twenty years of civil war that made opium poppy cultivation a livelihood strategy for many rural households. At the same time, the abolition of production in neighbouring countries such as Turkey in 1972 and Iran in 1979 made Afghanistan an alternative source of world supply [40].

Afghanistan and Myanmar produced in 2002, 86% of the illegal world opium, in the latter country it was reduced by 23% in 2004, while in the former it grew by 16%. This is a change from the situation observed in 2000 when the Taliban imposed a prohibition in the production of opium. Nonetheless great quantities from illicit existences were placed in the market and thus the supply continued to be considerable [51]. In 2007, the total
area under illicit opium poppy cultivation increased by 17%, fuelled by both Afghanistan and Myanmar; but overall, global cultivation remains below 1998 levels. In Myanmar, for example, although opium cultivation increased by 29% (by 46% to 460 mt.) it is still 65% lower than a decade ago [50].

As a result of the wide availability of opiates in the region, consumption, injecting and HIV in West Asia has increased. In Pakistan, the UNODC's Global Assessment Programme on Drug Abuse, (GAP) published in 2002, indicated high rates of drug abuse, in urban and rural areas. The prevalence rates were estimated at 3.5 million drug users of which 500 000 were heroin users. More recently, an increase in dependence to buprenorphine has been reported [9].

Opiate global consumption remains relatively stable in Europe and in some cases it declined, especially in North America, whereas some countries produce this substance mainly for local markets. By the end of the 1990s, 65% of the heroin seized in the United States came from Colombia [19], and in Mexico, use of heroin seems to concentrate in regions close to the border with the United States, where more than 25% of treatment demand is due to this substance, as compared to a national average of 5% [52].

According to the 2008 World Drug Report, the total number of opiate users is now estimated at around 16.5 million people. Then, global consumption of opiates shows only a marginal increase in annual prevalence: from 0.37% of the population age 15–65 years in 2005, to 0.39% in 2006. However, in certain consumer markets in and bordering Afghanistan and along trafficking routes, expansion of injecting drug use has been noticed and could pose a future challenge to resource-strapped public services [50].

The largest number of opiate users are in Asia (more than half of the world’s opiate-using population), especially along the main drug-trafficking routes out of Afghanistan. In the South-West Asia subregion the average prevalence rate is the highest, at 1% of the population age 15–64 years old. In 2006, Europe remain the second largest consumer market for opiates, with an annual prevalence of 0.7% of the population age 15–64, but stable to declining consumption levels in West and Central Europe. Finally, in the Americas (North, central and South America and the Caribbean) overall use of opiates was found to be fairly stable, affecting only 0.4% of the population age 15–64 (13% of all opiate users in 2006) [50].

1.1.6 Cocaine

Cocaine is extracted from the leaf of the *Erythroxylon* coca bush, which grow primarily in the Andean region. It is a powerfully addictive stimulant because it directly affects the brain regions that are stimulated by all types of reinforcing stimuli such as food, sex, and many drugs of abuse [53].

There is evidence that during the Spanish Conquest in the sixteenth century cultivation and use of *coca leaf* had extended to Central America up to Nicaragua and to the Caribbean to the territories of today’s Dominican Republic and Haiti and along the Atlantic coast to Venezuela and Guyan. Though the major concentration remained in Peru and Bolivia. After the alkaloid was isolated in 1859/1860, as the market of coca expanded so did the cultivation of the leaf to a number of Asian territories colonies of the British, Dutch and Japanese Colonies; between the turn of the century and 1912 Peru and the Dutch colony of Java emerged as the world’s largest producers and exporters of coca leaf. Peru’s export
of coca leaf, which amounted to 8 tons in 1877, rose to 610 tons in 1901. Peru’s total production of coca leaf in 1901 was estimated at around 2100 tons.

Exports peaked at 1490 tons in 1900. Exports from Java grew from 26 tons in 1904 to 1353 tons in 1914 that supplied Europeans and later Japanese manufacturers, while coca exports from Peru was destined for the US and Europe mainly Germany. Musto [19] estimates that there were 250 000 addicts to cocaine and morphine at that time, equivalent to 0.5% of the total population age 15 and above at the beginning of the twentieth century. Nowadays, world coca production takes place in Colombia (55% of coca bush cultivated), Peru (30%) and Bolivia (16%) [50]. In 1999, cultivation dropped in two thirds in Peru and in Bolivia coca cultivation and trafficking were almost completely wiped out from the Chapare region [41]. But by 2004, cultivation in these two countries started to rise again [56]. In 2007, Colombia had 99 000 ha of coca bush, an increase of 27% (21 000 ha) compared to 2006, for example [50].

Cocaine is distributed to the world through the Caribbean Sea and through Mexico by the Pacific Coast. At the beginning of the 1990s Mexico became a supplier of cocaine for the south-western states of the United States [19]. In this decade, the rate of experimentation amongst Mexican adolescents increased 400% [54] and close to 300% amongst the adult population between 18 and 65 years of age [55]. The rates of ever use of powered cocaine (1.5%) were similar to those observed in Colombia (1.6%). This estimate does not include the use of coca paste or ‘basuco’ that is rare in Mexico and is used by an additional 1% of the population of Colombia [40], rates rose in Colombia 2004 [56] and in Mexico [57].

According to World Drug Report 2008 [50], more than 80% of cocaine is seized in the Americas, with 45% for South America, where most cocaine is manufactured, but this region is not the largest cocaine market. Both Central America and the Caribbean have 19% of the total cocaine users (3.1 million people) compared with North America with 24%, (that represents 7.1 million people). The only large market outside Americas is West and Central Europe (24% or 3.9 million people). By contrast, abuse of cocaine in the Asia region or in Eastern Europe is still at relatively low levels.

Trends of world use in the United States, Canada and Colombia are stable, in Peru and Bolivia use is decreasing, while in Mexico, some European countries and in Africa it is increasing [50].

1.1.7 Inhalants

Inhalants are volatile substances that produce chemical vapours that can be inhaled to induce a psychoactive effect, such as volatile solvents, aerosols, gases, and nitrites. Volatile solvents include paint thinners and removers, dry-cleaning fluids, degreasers, gasoline, glues, correction fluids, and felt-tip marker fluids; aerosols are sprays that contain propellants and solvents (i.e. spray paints, deodorant and hair sprays, vegetable oil sprays for cooking, and fabric protector sprays); gases include medical anesthetics (i.e. ether, chloroform, halothane, and nitrous oxide) as well as gases used in household or commercial products (i.e. butane lighters, propane tanks, whipped-cream dispensers, and refrigerants); finally, nitrates that act primarily to dilate blood vessels and relax the muscles and are used as sexual enhancers, include cyclohexyl nitrite, isoamyl (amyl) nitrite, and isobutyl (butyl) nitrite [42].
Inhalants constitutes a special group of drugs as due to their wide industrial and domestic use they have a considerably availability. Their use is a widespread practice mainly amongst children and adolescents in the developed and developing world, predominantly by poorest ones. In Mexico, for example, it is still the drug of choice of children that work in the streets, a phenomenon that results from economical crises when all eligible members within the household, including children go out to work as a survival strategy observed amongst poor families [58, 59]. In a survey conducted at Mexico City, 4.4% of high school students had used inhalants in the last year [60]. In Alberta, Canada, 2.5% reported use of glue and 5.8% solvents [61]. Chile’s annual prevalence amongst students is 3.3% [45], and in Colombia 10th and 11th grade students reported 1.1% prevalence [62]. These rates increase dramatically in the United States with 19.7%, 30.7% and 38% amongst 8th, 10th and 12th graders, respectively [63].

In 2006, inhalants lifetime prevalence’s in the United States and Brazil were high, (with 9.3 and 6.1% of population aged 12 years or more that had used it, respectively), compared with 2.6% in Panama [66], 2% in Canada [67], 1% in Spain and Peru [68, 69].

Amongst secondary students (14 to 17 years of age) Ireland and Brazil reported high prevalence of inhalant use: 18% and 15.3%, respectively [64, 65], which are considerably higher than those in Bulgaria (3%), Colombia (3.5%), Argentina (2.6%) or Ecuador (2.3%) (23). the lowest rates in this group were reported by Peru (1.8%), Uruguay (1.5%) Paraguay (1.5%) and Bolivia (1.2%) [70].

In general terms, trends remained stable. However, the rate of past-year inhalant use amongst females showed an important increment. In United States, for example, increased from 4.1% in 2002 to 4.9% in 2005 [11].

1.1.8 Amphetamine-type stimulants ATS

In contrast to the long history of abuse of plant-based drugs such as heroin and cocaine, over the past decade the synthetic drug phenomenon has re-emerged linked to lifestyles and group identity of young people. The first wave was linked to the production of synthetic hallucinogens, mainly LSD in the second half of the last century, and the second wave, to the production of amphetamine-type stimulants (ATS), a group of substances comprised of synthetic stimulants.

Methamphetamine is a very addictive stimulant that is closely related to amphetamine. It acts by increasing the release of dopamine in the brain, which leads to feelings of euphoria. It can be taken orally or by snorting or injecting, or a rock ‘crystal’ that is heated and smoked. Methamphetamine increases wakefulness and physical activity, produces rapid heart rate, irregular heartbeat, and increased blood pressure and body temperature. Methamphetamine alters the brain in ways that impair decision making, memory, and motor behaviours, and causes structural and functional deficits in brain areas associated with depression and anxiety, long-term use can cause mood disturbances, confusion, insomnia, dental problems and violent behaviour. In addition, methamphetamine use is related with HIV, hepatitis C and other sexually transmitted diseases due to risky sexual behaviour and the use of contaminated injection equipment.

MDMA (ecstasy) is a synthetic psychoactive drug that is similar to the stimulant methamphetamine. It is taken orally as a capsule or tablet. Primary effects include feelings of mental stimulation, emotional warmth, enhanced sensory perception, and increased physical
energy. Adverse health effects of MDMA can include nausea, chills, sweating, teeth clenching, muscle cramping, blurred vision and also can produce confusion, depression, sleep problems, drug craving and severe anxiety [71].

In geographical terms, ATS abuse gradually spread from a few countries to neighbouring countries within the same region and then to other regions of the world. Since the mid-1990s abuse of ATS has been perceived as a global phenomenon, although different substances predominate in different parts of the world. Abuse of ATS has been estimated to affect 6 of each thousand people age 15–64 years in the world [50]. Prevalence rates differ significantly from country to country. About half the users are found in Asia, the Americas and Europe account for one third, and its use has also been reported in South America and in Africa.

In 2001, about 0.1% of the global population (age 15 and above) consumed the methamphetamine form known as ‘ecstasy’. According to the United Nations Drug Control Program [40], 60% of the global consumption was concentrated in Europe, Western Europe and North America, together accounting for almost 85% of global consumption. In Australia and in most countries of Western Europe, ATS are the second most widely consumed group of illegal drugs after cannabis. In Japan about 90% of all seizure cases and of all drug-related arrests in 1998 involved methamphetamines. In Thailand this substance displaced heroin as the most heavily abused drug in the late 1990s [41].

Into the 2006/2007 period, ATS reported an overall stabilization [50]. In Germany and London, for example, from 2003 to 2006, lifetime prevalence of ecstasy use remained close to 2% (2.5 and 2.2%; 1.9 and 1.6%, respectively) [72]. Also, during 2006 and 2007 the United States population age 12 or above reported 5% lifetime and 0.9% last year prevalence’s of ecstasy use [73].

In addition, potential for increases in near and Middle East region (South Arabia) and in some South America countries (Argentina, Peru, Guatemala, El Salvador and Dominican Republic) has been reported [50].

Illicit production of ATS has taken place in the United States and Western Europe since the 1960s after it extended to the East in the 1980s, and in the 1990s to almost all regions. According to the World Drug Report 2008 [50], methamphetamine manufacture is growing in many other regions, particularly in Oceania, Central and Eastern Europe, East and South-East Asia, and in South Africa.

While trafficking in most drugs is interregional, trafficking of amphetamine-type stimulants is largely intraregional, that is, production and consumption are usually within the same region, often within the same country. The exception is ‘ecstasy’ that is still produced in Europe and in the 1990s trafficking from Europe to America and other countries increased significantly [19]. Seizures of this substance increased by four times between 1990 and 1998, while seizures for heroin and cocaine increased by only 50% [19]. In 2006, the amphetamines group constituted 91% of ATS seizures, while ecstasy ones accounted for just 9%, and for the first time, growth in amphetamine seizures outpaced that of methamphetamine [50].

1.1.9 Abuse of Prescription Drugs

Prescription drugs commonly nonmedical used or abused include three main groups of substances: i) Opioids, which are most often prescribed to treat pain because they act on the brain and body by attaching to specific proteins called opioid receptors, which are
found in the brain, spinal cord, and gastrointestinal tract [74]; ii) Central nervous system (CNS) depressants sometimes referred to as sedatives and tranquilizers (i.e. barbiturates, benzodiazepines). Most of them act on the brain by affecting the neurotransmitter gamma-aminobutyric acid (GABA) and are mainly used to treat anxiety and sleep disorders [74]; iii) CNS stimulants (i.e. dextroamphetamine, such as Dexedrine and Adderall, and methylphenidate like Ritalin and Concerta) that have chemical structures similar to a family of key brain neurotransmitters monoamines (including noradrenaline and dopamine) are prescribed to treat the sleep disorder narcolepsy and attention-deficit hyperactivity disorder (ADHD). As its name suggests, stimulants increase alertness, attention, and energy, as well as elevate blood pressure and increase heart rate and respiration [74].

Amphetamines were first introduced as medicines perhaps because stopping their use after prolonged periods did not produce the obvious withdrawal symptoms associated with opiates withdrawal. For several decades it was widely believed that they were not addictive. Immediately after their introduction into medical practice in the 1930s, amphetamine and methamphetamine, considered to be the parent drug of the ATS group began to be used for nonmedical purposes.

When Benzedrine became available in tablet forms it began to be used for nonmedical purposes, reports of abuse in 1947 in a USs prison, the nonmedical use of these substances spread rapidly in the 20 years after the second world war when they were seen as relatively safe and effective medicines or harmless stimulants despite reports indicating dangers associated with their use. Despite warnings they were used in large quantities in the US for both medical and nonmedical use throughout the world throughout the 1970s and 1980s.

Methamphetamine was widely available on prescription as Dampphetamine through the post-war period marketed for narcolepsy and obesity, the first epidemic of intravenous use started in California in the 1960s and was triggered by the inappropriate prescribing of the drug for heroin dependency. Speed began to replace hallucinogenic drugs such as LSD. In the 1980s another form of a new and highly pure form of DMethamphetamine known as ice became available in Hawaii initially imported from the Far East.

In the United States of America, since 2004–2007, around 20% of the population age 12 and above reported lifetime nonmedical use of psychotropic medication [75]. In 2007, last-year prevalence was 6.6%, showing an increment with respect to those reported in 2004 (6.2%). According to the 2005 Drug Policy Alliance: Africa [76], this region is reported to hold the largest market for methaqualone in the world.

In general, drug abuse appears to be more prevalent in males. Between 70 and 80% of users are male, a proportion that is higher than that observed in developed countries and slightly lower than the observed in traditional Asian societies. Women appear to participate primarily in the consumption of psychotropic drugs. The majority of users are between the ages of 18 and 25, with the cocaine and heroin being used primarily by those at the high end of the age bracket [56]. Overconsumption of internationally controlled drugs is more frequent in the elderly population [74]. The reason might be that such medication is more frequently administered and therefore available than in their younger counterparts.

1.2 THE CASE OF VULNERABILITY POPULATIONS

Social vulnerability could play an important role to explain the rapid spread of psychoactive substance use and abuse. People in disadvantage social position might use drugs like a
coping mechanism in dealing with adverse situations they face, and need urgent attention. Poverty, political instability, social unrest and refugee problems are some of variables suggested to explain the increase of the problem in some regions. According to Odejide [77], poor funding, insufficient skilled health personnel, poor laboratory facilities, inadequate treatment facilities, and lack of political will are some of the impediments to controlling substance use/abuse in Africa, for example. In this kind of context, street children (and also adults who live or work on the street) have to be treated as a special group, because they are more likely to use psychoactive substances that are readily available and relatively cheap, such as solvents or cannabis [78].

1.3 DISCUSSION AND CONCLUSIONS

This chapter reviewed in its first section the scope of epidemiology, paradigms indicators and methods available to study the drug phenomenon; in the second section it described the problem as derived from the use of epidemiological approximations. Epidemiology has evolved from focusing mainly on one side of the problem, availability and interest in the substances by themselves, to more complex approaches that combine factors in the individual, both in the immediate and in the more distal environments within specific cultural contexts. The cyclical nature of the problem with periods of increase and decrease in the rate of problems that change along with public attitudes and social policies, has also been recognized and thus the convenience of conducting studies in a periodical form, and to include as variables for study public attitudes toward drug use and policy.

Epidemiology uses a combination of indicators coming from the paradigms described, today it is more often recognized that approaches are complementary and help understand the impact of the problem in the health and social welfare of the population. The tradition of counting the number of persons exposed to drugs, evolved to accept the multifactor nature of the problem and epidemiology included the search for risk and protective factors for drug experimentation, continuous use, dependence and remission, as well as risk behaviours such as syringe sharing, health (i.e. infections resulting from injecting procedures) and social consequences (i.e. delinquency), and access to treatment. A later recognition that dimensions of supply and demand are necessary in the assessment of the problem, has led to more global approaches in data re-collection and interpretation focusing in individuals immersed in drug markets.

Still, an important proportion of the information available outside the developed world is obtainable through the efforts of international organizations. For some countries the information is limited to prevalence estimates and in many cases it relies on the opinion of experts; more research, including surveys and rapid assessment approaches, is needed not only limited to counting people affected but including the analysis of problems faced by users and communities and of the contexts where the problem occurs. Efforts aimed at supporting developing countries to access local research results in international journals must be recognized and supported.

The data shown in this chapter illustrates the diversity and complexity of drug problems around the world; forms of use with a long tradition in some cultures emerge in others, availability of drugs and changes in the sociocultural context playing a major role. Data reviewed also suggest that countries are not equally affected by this problem, an important mediating factor being the availability of resources to cope with the problem.
Marijuana grows in most countries of the world and is today the most widely consumed substance, in contrast, 99% of the cocaine is grown in the Andean region in South America and a large majority of opium is cultivated in Afghanistan (93% of the world production). Amphetamine-type stimulants have been reported by 60 countries since 2000. Drugs are trafficked from producing country to different parts of the world and in this transit they impact the local drug problem; Increases in drug availability contributes to the enlargement of the population that uses drugs if other variables in the social context that facilitate drug use co-occur.

From the number of countries that report use of different substances we know that cannabis (marijuana and hashish) is the most extended drug in the world, by 2000 it was used in 96% of countries that report to the United Nations, followed by opiates (heroin, morphine and opium) (87%), and derivates from the coca leaf (81%) [19].

As for the number of users within countries where use has been reported, the United Nations estimated that around 5% of the population 15–64 years old has used drugs at least once in the last 12 months and that problem use reached 0.6% of the population. A total of 3.9% reports use of cannabis, use of other substances is considerable lower, amphetamines is used by 0.6% of the world’s population (with use of ecstasy reaching 0.2%), opiates were reported by 0.39% of which 0.28% was heroin, and 0.38% had used cocaine [20].

Ecstasy and ATS use is more extended in East and South East Asia, methamphetamine in North America, and amphetamines in Europe and in the Near and Middle East. The highest rates of opiates are found along the trafficking routes close to Afghanistan and in Europe and Asia they occupy the first place of treatment demand; cocaine is more widely used in the Americas, the continent where it is produced. Cannabis remains as the main reason for seeking treatment in Africa and in Oceania [13, 79].

In injecting drug use, because the high risk of blood-borne infections including HIV is of high concern, the largest numbers of HIV positive people among those who inject drugs are in Eastern Europe, East and Southeast Asia and Latin America [35].

Overall, it has been estimated that in 2000, 0.4% (0.6% for males and 0.2% for females) of the mortality in the world was attributable to illicit drugs, when days without health are included, (Burden of Disease), the estimated proportion increases to 0.8% (1.1% for males and 0.4% for females), it is higher in the developed world 1.8% followed by low-mortality developing regions or emerging economies, 0.8% and by high-mortality developing regions, 0.5% [5].

Level of development affects both the likelihood of the problem and the impact made on societies, with higher rates and fewer problems among the highly developed societies. The treatment gap among persons with substance-abuse disorders is high in developed and developing countries with a bigger proportion in the latter [33].

Epidemiological data reviewed suggest some avenues for policy, perhaps the most salient issue is the global nature of the problem, geographical situation of crops, density and malleability of traffic routes, and international impact on changes in drug use or policies within one country, supports the need of international collaboration and the convenience to manage the problem within regional and global organizations. Interchange of information, evidence of best practices, coordination of activities and mutual support are required to phase a problem that does not recognize borders.

A global view of the problem allows some prediction of possible emerging problems within countries, changes in the prevalence rates in one country, modification in the traffic routes, and oversupply of drugs in the illicit market, might result in increases of problems
in neighbouring countries or among those in the new traffic routes, thus supporting efforts to gather accurate information internationally and making it available to policy makers.

From the data, it is also evident that a global approach that includes actions aimed at regulating both supply and demand are required and that cultural adaptations to local contexts and ways in which the problem manifests are also important. In this sense, Odejide [78] further suggests that well-coordinated civil society participation is necessary in the control of drug problems in order to achieve a balance between supply and demand reduction efforts.

Research aimed at collecting more accurate and comparable data, especially among countries that do not gather routinely information should receive more international support. The efforts made to support publication of local studies in international journals is recognizable, such efforts must be continued and strengthened.

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