

ADVERSE HEALTH CONSEQUENCES OF COCAINE ABUSE

EDITED BY A. ARIF



WORLD HEALTH ORGANIZATION
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Adverse health consequences of cocaine abuse

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Preface

Cocaine, despite its high cost to the consumer, is becoming the preferred drug of an increasing number of affluent drug-users in North and South America and in Europe. The increased production of cocaine with an associated reduction in market price has meant that cocaine is now within the reach of a large number of new users. In the Andean area of South America, the traditional practice of coca-leaf chewing continues among rural populations. Causing concern is the relatively new phenomenon of coca-paste smoking, which is rapidly spreading among the younger generation, particularly in urban populations, in many countries of South America.

The use of coca paste and cocaine is no longer confined to the American continent, but has spread, not only to Europe but also to many countries in other continents. There is no doubt about the seriousness of the problem; coca-paste and free-base smoking, sniffing, and the intravenous injection of cocaine hydrochloride are known to be particularly hazardous habits. Those countries that have not yet experienced any public health problems associated with the use of cocaine are likely to do so in the near future.

Resolution WHA37.23 of the 37th World Health Assembly (May 1984) recognized the dramatic global increase in the abuse of drugs, in general, and of cocaine in particular and also acknowledged the need to continue to seek improved methods of prevention and treatment of drug dependence, epidemiological surveillance, and dissemination of information. In response to Resolution WHA37.23, the WHO project on the adverse health consequences of cocaine and coca-paste smoking, was implemented; this book is published as part of that project.

The purpose of this book is to update existing knowledge on the problem of cocaine dependence by assessing the global situation and by considering the extent and magnitude of the problem and the associated adverse health consequences. The book also reviews current approaches to treatment and prevention and ongoing and needed research. It is based on material gathered during the course of the WHO project on Adverse Health Consequences of Cocaine and Coca-paste Smoking, and presented at a meeting of the Advisory Group held in Bogotá, Colombia, in September 1984. The project was supported by the United Nations Fund for Drug Abuse Control. Special thanks are due to Professor G. Edwards, Addiction Research Unit, Institute of Psychiatry, London, England, for his invaluable help in producing this publication. The following also deserve special mention for their assistance and contributions: Dr C. N. Cagliotti, Ministry of Social Welfare, Buenos Aires, Argentina; Dr N. Clarke, Ministry of Health, Nassau, Bahamas; Dr S. Cohen, Neuropsychiatric Institute, University of California at Los Angeles, Los Angeles, CA, USA; Dr C. E. Climent, Department of Psychiatry, University del Valle, Cali, Colombia; Dr K. Edmondson, Australian Institute of Health, Canberra, Australia; Dr G. Hernandez, Department of Psychiatry, School of Medicine, Javeriana University,

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Glossary

Coca. This refers to the leaves of *Erythroxylon coca* or *E. novgranatense*, which are chewed by indigenous populations of north-western South America for their anti-fatigue and anti-hunger effects. A tea is made of coca leaves to treat mountain sickness. Coca contains 0.5–1.5% cocaine.

Coca paste (pasta, basuco). Coca paste is the first extraction product during the manufacture of cocaine. It is prepared by adding macerated coca leaves to sulfuric acid, kerosene or gasoline. The dried paste contains 40–90% cocaine sulfate, coca alkaloids, alkalis, and other substances. It is mixed with either tobacco or cannabis and smoked in a cigarette.

Cocaine (coke, snow). When coca paste is treated with hydrochloric acid and the product refined, cocaine hydrochloride of 98% or better purity is obtained; this is called cocaine. It appears on the illicit market at 12–75% purity after having been diluted with sugars, local anaesthetics such as procaine, amphetamine, or caffeine. The term cocaine is sometimes used generically to include all potent cocaine products, such as coca paste and cocaine free base.

Free base (cocaine base, cocaine alkaloid, base). Cocaine hydrochloride is converted to its alkaloid by treatment with an alkali. A variety of methods are used. Some involve extraction with a solvent followed by evaporation, others simply involve the addition of baking soda or other alkali. Free base contains some of the adulterants found in the illicit cocaine. It has a lower vaporizing point than cocaine hydrochloride, and thus less is lost when it is heated and inhaled.

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Cocaine and its misuse: historical background

In South and Central America, chewing of the leaf of the coca plant dates back to very ancient times. News of this plant and its properties was brought back to Europe by the early explorers and references to coca can be found in European medical texts dating from the 17th century. However, it was not until the 19th century that scientific and medical interest in the drug became well developed. In 1860 the German chemist, Dr Albert Neimann, isolated cocaine in the pure alkaloid form from leaves brought to Europe. During the following twenty years or so, cocaine was used extensively by the medical profession as a stimulant, a local anaesthetic, and as a “cure” for morphine dependence.

This era of unrestrained medical enthusiasm was short-lived, however, and by the end of the 19th century it had become very clear that the dangers of dependence developing with this drug had been greatly underestimated. There were many reports from both Europe and North America of physicians and nurses who had become dependent and of cases of cocaine dependence, associated with its use in treatment.

In the early part of the 20th century it also became clear that as a result of the uncontrolled availability of this drug it was being used, in certain circles, as a “recreational” drug. The extent of this recreational use, at that time, is difficult to ascertain, but it was certainly extensive enough to arouse concern and to stimulate calls for legislative control—the fact that cocaine is a drug with potential for misuse had become very firmly established.

The middle decades of the 20th century might be viewed as a rather quiescent period as far as cocaine is concerned—coca leaves continued to be chewed in the geographical areas traditionally associated with their use and there was a continuing low-level problem of cocaine misuse in the developed world. This period, however, saw an almost explosive increase in the misuse of synthetic stimulants (amphetamine and phenmetrazine) in many countries. The experiences of the countries where these “epidemics” of misuse occurred gave ample confirmation of the threat to public health posed by any type of central nervous system stimulant. Today it is the use of cocaine that threatens to erupt into just such an epidemic.

Central nervous system stimulants are very popular as drugs of misuse; new drug misusers are likely to be rapidly recruited, and stimulant use can be a substitute for, or be combined with, narcotic misuse. Furthermore, in the aftermath of a stimulant epidemic, the established demand may be easily transferred to opiates.

The dangers of cocaine were initially underestimated and this mistake should not be repeated. The early experiences with cocaine and the problems of stimulant misuse in the middle of this century provide a warning of the potential public health problems associated with the

misuse of cocaine-type drugs. What is more, the present level of cocaine misuse signals a resurgence of stimulant misuse in epidemic proportions with all the associated dangers.

Preparations and routes of administration

Reference has already been made to the historical and indigenous use of chewed cocaine in South America. The preparation of the pure alkaloid form of cocaine meant that many very different techniques of administration became possible, each with their attendant dangers. During recent years, the use of smoked cocaine base and “free-basing” have emerged. The major modes of administration in current use are described below.

(a) *Chewing*. A wad of coca leaves, to which lime is often added, is placed in the cheek. This technique provides a slow sustained release of the drug with buccal absorption. The blood levels of cocaine attained are likely to be low, dependence risk is similarly small, and there is unlikely to be any psychological or social impairment or threat to health. It is possible that there are some adverse consequences of such endemic use, but of all the routes of administration this seems to be the least dangerous.

(b) *Sniffing*. Powdered cocaine (cocaine hydrochloride) can be sniffed to achieve nasal absorption. This method can cause direct damage to the nasal septum and can give rise to many of the health problems listed in Chapter 5. However, the risk of dependence developing is probably less than with smoking or injection of the drug.

(c) *Injection*. Cocaine hydrochloride may be injected intravenously with all the attendant dangers of such injection practices, and with a high risk of dependence developing. At times, the combined injection of cocaine and heroin has been popular.

(d) *Free-basing*. Cocaine free base is the cocaine alkaloid or benzoylecgonine. It is also known as base, cocaine base, or free base. Cocaine free base differs from cocaine hydrochloride, in that it is not readily soluble in the nasal mucous membranes or in the blood, but it has a low melting point and can be readily volatilized and inhaled during smoking. Cocaine free base is almost always smoked in a water pipe, which is usually made of glass.

(e) *Smoking of coca paste*. Coca paste is a white, semi-solid or solid preparation containing cocaine sulfate, coca alkaloids, ecgonine, benzoic acid, methanol, kerosene, alkaline compounds, sulfuric acid, and many impurities. It is usually smoked mixed with tobacco or cannabis.

Global extent and assessment of the problem

Overall trends

Cocaine misuse has reached epidemic levels in large areas of North and South America. While the countries experiencing the most severe consequences of the epidemic are Bolivia, Colombia, Peru, and the United States of America, evidence exists that cocaine abuse is rapidly increasing in parts of Canada, Europe, and South-East Asia.

There are historical records of past periods of dramatic increase in cocaine abuse that have subsequently declined, often without explanation. The present epidemic differs from previous episodes, firstly, because of the unprecedented availability of cocaine as a result of the massive increase in coca-leaf production and secondly, because of the global health problems associated with new methods of consumption of the drug.

With the possible exception of traditional coca-leaf chewing among rural Andean populations and the limited use of cocaine by affluent populations, cocaine use was not recognized as a major public health concern until the late 1970s. Before that time, cocaine, which was generally consumed via nasal sniffing, was considered to be a drug with a low abuse potential and few health consequences. Today the situation is vastly different. The drug is readily available, at a price that no longer limits its use to the affluent. New methods of consumption have led to new patterns of use and associated adverse health consequences. Far from being the safe drug it was once believed to be, cocaine is now recognized as one of the most reinforcing of all psychoactive drugs; its use leads to uncontrolled compulsive behaviour in an undefinable but probably large and growing percentage of consumers.

Extent of the problem

USA

Data from the national household survey carried out by the National Institute on Drug Abuse (NIDA) in the USA (23) indicate that the prevalence of cocaine use has increased substantially since the 1970s. Between 1974 and 1982, the number of people reported to have tried cocaine at least once increased from 5.4 million to 21.6 million. During the same period the number of current users of cocaine rose from 1.6 million to 4.2 million. Similarly, among high school seniors in the United States, only 9.0% had ever tried cocaine in 1975 and 1.9% were current users, but by 1983 the percentage of students having tried the drug had increased to 16.2% and the number of current users to 4.9% (24).

The effects of the dramatic increases in the late 1970s are becoming

increasingly evident as both the demand for treatment and the incidence of medical crises associated with cocaine use grow. Between 1976 and 1981, the number of emergency admissions for cocaine-related medical crises increased by 300%. Similarly, from 1975 to 1982 the number of cocaine-related deaths increased by approximately 300%. More recent data indicate that these trends are continuing. For example, approximately 2 000 cocaine-related emergency hospital admissions were recorded in the first quarter of 1984, a figure that equals the total number of such crises for 1978. Treatment data reflect similar increases. Hospital admissions for treatment in which cocaine was reported as the primary drug problem increased from 1.2% of admissions for drug abuse in 1976 to 5.8% in 1981 and 9% in 1982 (23).

In the United States, the dramatic increases in treatment, admissions, emergency care, and death associated with cocaine use are believed to reflect not only the growth in the number of users, but also the effect of new ways of taking the drug. There has been a major shift from sniffing or snorting cocaine to smoking of free base and to intravenous injection. The phenomenon of the smoking of cocaine base first appeared in the United States in 1974 and was mostly confined to the state of California. The first hospital admission for a problem related to free-basing was in 1975, the year in which extraction kits and smoking accessories became commercially available. In 1978, distribution of these accessories or paraphernalia spread from California throughout the United States. In 1979, only 1% of cocaine-related hospital admissions involved the use of free base, but by 1982 this figure had increased to 7%.

The most recent surveys of cocaine prevalence in the United States indicate that, among those under the age of 26 years, cocaine use has begun to stabilize (24).

Canada

Canadian data indicate that rates of cocaine use there are lower than those in the United States. However, both countries are experiencing increasing trends in levels of use. For example, in 1977 only 3.8% of students, grades 7–13, had used cocaine in the month prior to the survey, but by 1983 this percentage had increased to 4.1%. Similarly, in 1978 the percentage of Canadians aged 18 years and older who had ever used cocaine was 2.7%, but by 1984 this figure had increased to 3.3% (31).

Latin America

The cultivation of coca plants in Latin American countries has increased more than sixfold since the early 1970s. The majority of coca plants are grown in Bolivia, Colombia, and Peru. Estimates of the worldwide consumption of cocaine were 35–45 tonnes in 1981, 45–54 tonnes in 1982, and between 50 and 61 tonnes by 1983. There is no indication of any decline in this trend in consumption. Along with the increase in coca

production, there has been a related increase in drug use in Latin America. Crude refinement procedures can be used now to produce an inexpensive coca paste that is being widely smoked by Latin American youths. In Colombia, for example, a study of high school students in five different schools confirmed that coca-paste smoking is as widespread as the use of marijuana (8).

Coca-paste use began in Bolivia and Peru in the early 1970s, first in the capital cities and then in other towns and rural areas. In a few years its use had spread to Argentina, Brazil, Colombia, Ecuador, and some Mexican cities near the border with the United States.

Epidemiological studies carried out in schools, universities, psychiatric hospitals, and in house surveys have shown that in Bolivia, Colombia, Ecuador, and Peru, coca-paste smoking has reached epidemic proportions and affects many thousands of individuals. Hospitals in these countries cannot respond to the demands for treatment from coca-paste smokers. The Antioquia Mental Hospital in Colombia is treating as many as 200 coca-paste smokers per month; this represents a threefold increase in the number of such patients between 1981 and 1983.¹ An outpatient clinic in Cali, Colombia, has reported that 4.4% of its patients are coca-paste smokers.²

The great increase in the numbers of patients has imposed a heavy burden on countries that have limited resources and few trained health professionals. In Peru, for example, about 30% of private and state psychiatric facilities are occupied by coca-paste smokers. In 1979 there were approximately 39 000 coca-paste smokers in Lima and 156 000 in the whole country (estimated from the population at risk—12–45 years of age). The numbers now are probably much higher because the habit has spread to an age range of 8–75 years in all areas of the country. Consequently, there are many thousands of coca-paste smokers who do not have access to treatment facilities. In Colombia, among inpatients treated in drug dependence centres, the proportion smoking this preparation rocketed from 1% in 1977 to 89.4% in 1984.

Of 48 304 Colombian university students studied, 5% used coca paste and 4.1% cocaine hydrochloride. In the city of Medellín, 4.1% of the population had smoked coca paste at least once. In Cali, 4.4% of outpatients in a psychiatric facility were coca-paste smokers. In another

¹ VELASQUEZ DE PABÓN, E. *Problemas del comportamiento de dependencia en adolescentes y jóvenes en relación al abuso del alcohol, drogas, cigarrillo y trastornos del peso*. WHO Study Group on Young People and Health for All by the Year 2000, Geneva, 4–8 June 1984.

² CLIMENT, C. & DE ARAGON, L. V. *Clinical aspects of coca-paste smoking (basuco) in Colombia*. Dept. of Psychiatry, Universidad del Valle. Presented at the Advisory Group Meeting on the adverse health consequences of cocaine and coca-paste smoking, Bogotá, Colombia, 10–14 September 1984.

psychiatric hospital, in Bogotá, the prevalence of coca-paste “addiction” among the inpatients increased from 25% in 1981 to 57% in 1983. Similar data on increasing use have been reported by physicians from Bolivia and Ecuador.

Coca-paste smoking has extended to include all social classes in Bolivia, Colombia, Peru, and parts of Ecuador. It is evident, therefore, that present facilities are totally inadequate for the enormous numbers of people who require treatment. Alternative and less costly methods of management need to be developed, such as the use of comprehensive outpatient treatment, day hospitals, substitute homes, adoptive homes, and intermediate or halfway houses.

Bahamas

There has been no evidence to date to suggest that coca-paste use occurs in the Bahamas, and this country does not produce any cocaine. However, the Bahamas serves as a transshipment area for cocaine between South and North America, and those who are involved in the drug trafficking have access to the drugs and in some cases are paid with drugs. Furthermore, it is thought that, in some cases, drugs deposited on any of the numerous small islands and cays may be found by local residents.

A major change in the pattern of cocaine abuse is thought to have taken place around 1979 when the free-base method of use was introduced. At the time, cocaine was still relatively expensive, costing approximately US \$100 per gram, and its purchase was, therefore, beyond the means of many people. However, during the latter part of 1979 and early 1980, it was observed that the number of admissions to psychiatric hospitals for the treatment of cocaine dependence began to increase gradually, and that by the end of 1980 the increase had become much more dramatic.

The number of patients currently seeking help for cocaine dependence has increased to such an extent that the existing facilities are totally inadequate and unable to cope, and a waiting list system has been introduced. At the same time, the age range of persons treated for cocaine dependence has widened such that persons as young as 9 years of age and patients over the age of 40 years are increasingly being admitted for treatment.¹

Linked with these changes in patterns of use has been a decrease in the price of cocaine on the street together with an increase in the quantity of the drug available. Information obtained from drug abusers

¹ CLARKE, N. *Cocaine abuse in the Bahamas*. Ministry of Health, Nassau, Bahamas. Presented at the Advisory Group Meeting on the adverse health consequences of cocaine and coca-paste smoking, Bogotá, Colombia, 10–14 September 1984.

undergoing therapy suggests that the price of cocaine that is available on the streets has dropped considerably, thus, a given quantity that would have cost US \$100 in 1980 could be purchased for US \$50 in 1984.

Europe

While there is considerable variation, available data indicate an increase in cocaine use in many European countries. A survey conducted in Bavaria, Federal Republic of Germany, showed a 4% prevalence of cocaine use in 1973; in 1980 the rate was 7% (6).

Most of the epidemiological studies conducted in European countries have assessed the problem at a particular time, so that data on trends are not available. In the Federal Republic of Germany, 4% of persons aged between 12 and 24 years in 1983 reported that they had used cocaine. In the Netherlands during the same period, 3% of a similar age group reported having used cocaine. Reports from Austria show that 1% of Austrian students are cocaine users, while in Switzerland in 1982 a sample of 420 young people aged from 15 to 24 years showed a cocaine use rate of 1.5% in males and 5.7% in females.¹

The use of cocaine has been reported in most European countries; France, Italy, Portugal, Spain, and the United Kingdom have all reported an increase in the availability of the drug. An indirect measure of availability is the amount of the drug confiscated by the authorities. In 1977, 59 kg of cocaine were reported to have been confiscated in European countries. By 1982 this figure was 398 kg and by 1983 it had risen to 952 kg.¹

In most European countries, the mass media have reported on the increasing problem caused by cocaine use and more health professionals are reporting health consequences related to the use of the drug. Public awareness is shifting from a rather permissive, to a more restrictive attitude, and cocaine tends to be viewed now as a dangerous drug.

South-East Asia and Pacific Region

With the exception of a few reports of cocaine use in Australia and the Philippines, this region remains relatively untouched by the cocaine epidemic. However, the amount of cocaine confiscated by authorities in Australia increased from 556 grams in 1977 to 8.9 kg in 1982; more than 4 kg were seized in the first 4 months of 1984. Similarly, seizures of cocaine have recently been reported in Hong Kong, the Philippines, and

¹ UCHTENHAGEN, A. *Global assessment and epidemiology of cocaine in Europe*. University of Zurich, Switzerland. Presented at the Advisory Group Meeting on the adverse health consequences of cocaine and coca-paste smoking, Bogotá, Colombia, 10-14 September 1984.