

Drug Pollution – The Problem of Abuse*

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SUMMARY

Some of the aetiological factors are given as well as an outline of the extent of drug abuse in many countries, age of addiction and also the role of the medical practitioner.

The main problem facing the profession in South Africa, at this stage, is to educate the public in the dangers of dagga. Five principles are described—considerable variation in potency and effect, evidence of addiction, psychomimetic effects (survey of some 1 500 or more patients presenting with dagga psychosis), disturbance of cerebral function, and dangers to the community.

The writer urges use of a computer to combat the scourge. The whole problem of drug abuse is a challenge to the medical profession who should not relax their efforts until South Africa has the lowest drug addiction rate in the world.

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The modern drug scourge has now reached near epidemic proportions, and His Holiness the Pope has appealed to medical men the world over to take a special interest in this problem. Therefore, 'drug explosion' or 'drug catastrophe' might have been a more apt title for this paper.

The advent of a somewhat irresponsible approach to the use of drugs has coincided with an adolescent society embroiled in a rebellion against 'The Establishment', where the influence of organized religion is deteriorating and where the individual's personal responsibilities for care of the aged and infirm have been removed by welfare states. Powerful advertising media are for ever propounding the technological revolutions of our era where, in this permissive age, contraceptive and fertility drugs abound, and in some overseas countries both abortion and homosexuality are now legalized. The greater availability of drugs, familiarization with the methods of administration, disillusionment at the massive self-medication habits of the older generation with their 'salicylates and sleeping tablets'—these are all factors considered by adolescents as an excuse for their pill-popping, and justification for condoning the smoking of 'pot'.^{1,2}

DRUG USAGE AND ABUSAGE

The incredible amount of 28 tons of aspirin is consumed daily in the United States. In Sweden, 10 billion amphetamine pills are manufactured each year. There are 1 million pep-pill addicts in Japan, and in South Africa some 200 million pills of various types are swallowed each month.³

The abuse of drugs has become part of a world-wide sociological phenomenon, mainly of the younger genera-

tion. In Scandinavian countries, amphetamines are in vogue and in 1966 some 18 000 million drugs were taken.³ In Egypt, the authorities are so concerned that *cannabis* is described as a vicious and dangerous thing of no value to humanity.⁴ In Britain, the Home Office figures for known heroin-addicts are showing a startling increase. In Hong Kong, there are an estimated 60-100 000 opium addicts and 50% of convicted prisoners are in for drug offences.^{5,6}

In Holland, some 9% of all secondary schoolchildren use drugs.⁷ The percentage of children in the USA that have smoked marijuana at least once is truly shocking. The former Director of the Institute for Mental Health reports from careful studies and nation-wide polls that as many as 55% of students in some urban and suburban areas have used marijuana.⁸ In South Africa comes an order from a supermarket pharmacy for half a million amphetamine tablets in strip packaging,⁹ while a South African pharmacist is reported to have paid his electrician's bill of R30.00 with purple hearts.¹⁰

The Role of the Medical Practitioner

Medical men are in a strategic position to meet the challenge of the serious social problems which underlie drug usage.¹¹ However, our renowned British colleague, Sir Derrick Dunlop has pointed out that many British addicts acquired their addiction from the irresponsible prescription of the drugs by a very few members of the medical profession.¹² Dr H. Davies of Manitoba has expressed a plea for doctors to revise loose prescription habits as the first step in reducing drug abuse.¹³

One accepts that the profession itself must bear a modicum of responsibility—a provincial hospital patient in South Africa was found to be taking 33 tablets a day which had been prescribed by doctors.¹⁴ However, one cannot exonerate the public-at-large for much indiscriminate use. A small survey of Californian households showed an average of some 30 medications in their cupboards, 24 of which had been purchased without a prescription.¹⁵ There are an estimated quarter of a million potentially poisonous household products on the market today.¹⁶

Age Incidences

Children in Arizona as young as 8 years old are experimenting with drugs, having been introduced to them by older friends or siblings.¹⁷ Drug addicts, from 11 years onwards, are being treated in London clinics,¹⁸ and the problem exists in most high schools, universities, technical colleges and institutions there.

Among the adult group, a Swedish report places the age incidence of addicts, varying with the type of drug, to be

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around 22 years old.¹⁹ In Switzerland, the largest number of addicts on analgesics, sleeping tablets and tranquillizers average about 40 years of age. Emotional conflicts were mainly responsible, as well as difficulties in family life or at work.²⁰ In Weskoppies Hospital, Pretoria, a significant proportion of female drug addicts with psychiatric complications—especially those in their 30s—were found to have been introduced to amphetamines in good faith by their house doctors, as anorexiant for slimming.²¹

In the case of marijuana, the whole picture is much more tragic because of the very early age of juveniles who are introduced to it, and addiction is well advanced among teenagers. Rose reports two brothers in Durban, aged 7 and 9 years, who are hardened dagga smokers.²²

DAGGA: THE MAIN PROBLEM

At this stage in the drug scene in South Africa, the drug which should occupy our principal attention, as medical practitioners, is dagga. I do not for one moment suggest that the dangers from other drugs should be minimized—on the contrary. However, in the light of overseas trends, and the indisputable fact that the cannabis habit opens doors to other potent drugs, our attention is best directed to what in reality is itself a potent drug, and what in practice unfortunately tends to be looked upon by a section of the population as relatively harmless.

This attitude stems from ignorance of the facts and often a blind acceptance of prejudices brought about by its comparison with alcohol in order to illustrate its supposedly harmless nature. It would be advantageous to the lay Press and the public alike if more of our colleagues were aware of the cumulative evidence of acute psychotic reactions following the use of this drug. There might be a more informed debate on the pros and cons of its usage.²³

The general effects of marijuana intoxication, with mental confusion and disorientation, are well documented. They are clearly recognized and one need not dwell on detail. However, as there are popular misconceptions regarding inherent dangers of this drug, I consider it necessary to enunciate certain principles relative to its toxicity. These have now become evident from the extensive literature and research, particularly of the past decade: (a) there is considerable variation in the potency and effects of this drug; (b) there is evidence of individual addiction to this drug; (c) marijuana can precipitate, or aggravate, latent psychotic or psychoneurotic disorders; (d) marijuana causes disruption of cerebral functions and impairment of cerebral integration; (e) marijuana users create a danger to the community.

Variation in the Potency and Effects

It has been said that marijuana is an unpredictable drug, used by unpredictable people and with unpredictable consequences.²⁴ This unpredictable effect puts it in a rather special category and herein lies its main danger. Not only does the effect vary from individual to individual and even in the same person from time to time, but also the motiva-

tion for taking it may vary.²⁵ As far back as 1936, Professor J. Watt, Head of Department Pharmacology, University of the Witwatersrand, drew attention to this considerable individual variation in response to marijuana.²⁶

There is also a considerable variation in the cannabis resin content and thereby the potency of supplies. Tetrahydrocannabinol (THC) (delta 1-3,4 transomer and delta 6-3,4 transomer) and cannabidiol and cannabidiol are the main constituents of *Cannabis sativa* and the THC's are believed to be the physiologically potent forms.²⁷ Weil *et al.*²⁸ found that different varieties of cannabis probably produce resins with different proportions of constituents. They found great variation in the pharmacological activity of American marijuana, and experiments with the Mexican variety revealed a 0.3% THC content in one batch and 0.9% in another. This latter was related by chronic users as 'good, average marijuana, neither exceptionally strong nor exceptionally weak'. The THC content can be as high as 2.0% or more, an indication of the tremendous variations.²⁹

Grossman³⁰ believes that frequencies of serious adverse reactions to cannabis products, in different areas, may merely represent segments of a dose response curve to THC. Variations in concentration of the drug or inter-relationship of its constituents—according to the locality of growth—apparently account for many of the inconsistencies in world opinions on cannabis. James,³¹ of Cape Town, concurs with the former.

It has further been claimed that samples of marijuana differ in quality of effects as well as potency, some types causing a preponderance of physical symptoms and others tending to cause greater distortions of perception and thought.³² Experimental work on motor and mental performance from the effects of marijuana smoking has been done by Manno *et al.*^{33,34} It has also been found that impairment of intellectual and psychomotor performance was dose-related in some cases.³⁵ This is understandable in the light of so many variables, and it seems to have been insufficiently emphasized that marijuana reactions, like those of most drugs, are dose-related.³³

Vietnamese and South African varieties of dagga ('Laotian green' and 'Durban poison' respectively) are among the most potent. The former was reported by the Army Clinical Laboratories in Japan to be twice that normally obtained in the USA.³⁴ Owing to the relatively free availability of dagga in South Africa, supplies are less likely to be adulterated and hence dangers arising from the high THC content in our country are all the more acute.

Evidence of Individual Addiction

Psychological dependence or psychological addiction is specifically applied to marijuana; research and teaching colleagues describe an addictive state of mind rather than of body. This latter would imply physical dependence and a tendency to increase dosage which is known to occur.

Frazer³⁵ describes cases of psychotic symptoms as a result of withdrawal from marijuana and this would indicate a clear physical addictive process in that individual.

I have personally seen 7 cases of intense abdominal pains and cramp in young adults who were temporarily deprived of supplies of marijuana. These withdrawal symptoms simulated acute abdominal conditions and were promptly relieved when the 'supply lines' were re-opened.

Reinert³⁶ of the Menninger Clinic states that addictive or habitual use of many pharmacologically-unrelated substances is basically the same phenomenon. Furthermore, repeated usage is caused mainly by the need for relieving abstinence discomfort, whether that discomfort is related to physiological or to psychological conditions.

An addictive drug produces a craving for it, and this can be psychological, physical or social, or in fact all three, and after a certain time the craving becomes irresistible.³⁷ There is a rather unique relationship between the drug user and the particular drug, which he needs to enable him to deal with the stress factors in his life.³⁸ This relationship includes the physical and psychological elements. In the case of marijuana users, it is the combination of sociogenic and psychogenic factors that result in the individual's progression and subsequent addiction to hard drugs.³⁹ It is therefore evident that the physical and psychological aspects of addiction are interrelated.

Baker and Lucas³⁹ freely use the word addiction, as applied to cannabis, without qualification; they point out that it is sometimes linked with a way of life which shows a steady social deterioration and progression to more serious drugs of addiction. This view confirms the existence of some form of addiction developed by marijuana users, and also underlines the very thin barrier between simple and more serious addictive substances, as well as that between habituation, dependence and addiction. In reality, there are degrees of addiction and this is where the WHO's terminology is too rigid: Abstinence, non-problematic drug use, drug use, drug abuse, dependence.⁴⁰

The editor of the *New Zealand Medical Journal* has stated that *addiction* has been an obsolete word for some time.⁴¹ Perhaps the WHO's definition which differentiates between addiction and habituation might need modification in the light of recent knowledge. It would be naïve to suggest that marijuana is not addictive simply because it does not fit the WHO's terminology.

The discoverer of LSD, Dr A. Hoffman, says that LSD is not addictive, but few will deny that it is dangerous in other respects.⁴² If more people would consider marijuana in a similar light, there would be less need to seek further clarification of the definition of addiction as applied to marijuana.

As far back as 1936, at the annual meeting of the Medical Association of South Africa, Drs Park Ross and F. P. Bester had independently formed the opinion that dagga was habit-forming in relation to the Zulus, and Cape Coloureds respectively. They agreed that the habit was a very firm one, and 'once a dagga smoker, always a dagga smoker'.⁴³ This refutes opinions that the habit can easily be broken.

Furthermore, as recently as February 1971, an editorial in *Medical Proceedings* categorically states that marijuana is habit-forming and can lead to serious personality and behaviour disturbances.⁴⁴ Whether you believe that marijuana is simply habit-forming or in fact an addictive drug,

it is certainly not in the category of being a harmless cordial or, as the American writer and hashish eater, Fritz Ludlow, says, 'It is not a thing to be played with as a bauble'.^{45,46}

Marijuana Can Precipitate, or Aggravate, Latent Psychotic or Psychoneurotic Disorders

Individuals are affected by cannabis derivatives on the continuum ranging from a benign intoxicating 'high' to a frank psychosis.⁴⁷ Some workers contend that the basic personality of the smoker appears to be a vital factor in the development of psychosis.⁴⁸ The following are some of the psychotic reactions reported by various workers in more than 1 500 patients: acute brain syndromes and panic;⁴⁹ delusional thinking;⁵⁰ toxic psychosis;^{48,51-56} acute and chronic mania and dementia among 600 patients;⁵⁷ acute anxiety symptoms;^{58,59} typical paranoid psychotic reactions;^{60,61} anxiety and psychotic reactions, schizophrenic and schizo-affective;⁶² depersonalization, depression and paranoia;⁶³ hallucinations;⁶⁴ precipitation of seizure in known epileptics;⁶⁵ schizophrenic breakdown;⁶⁶ transient psychotic episodes;⁶⁷ acute psychotic reaction, panic, dissociation and catatonia, after single dose;⁶⁸ visual hallucinations,⁶⁹ and toxic psychosis, 12 cases, with additional paranoid features in 10, after smoking Vietnamese marijuana for the first time.⁷⁰ A self-limiting schizophrenia-like illness was described in Bantu.⁷¹ Reference is made to transient psychotic states,⁷² delusional persecutions,⁷³ schizophrenic psychoses,⁷⁴ and personality disturbances.⁷⁵

Marijuana Causes Disruption of Cerebral Function and Impairment of Cerebral Integration

In addition to clinical evidence of psychopathology above, there has been considerable experimental work on the general cerebral effects of prolonged usage or of high doses of marijuana. Prolonged indulgence may predispose to mania and other nervous disorders, and used to excess, it causes degeneration of the nervous system.^{76,77} Low dosage gives intoxicating effects while higher concentrations have more of a psychotomimetic effect.⁷⁸ A sufficiently strong dose will distort perception, particularly of time and space and impair judgement and memory.⁷⁹ An amotivational syndrome has been increasingly observed.⁸⁰

In experimental work on cannabis, Melges⁸¹ found temporal disintegration and depersonalization. It has an adverse effect on recent memory and complex reaction times and interferes with information retrieval from the brain.⁸² Smokers are unable to think in numbers and there is a disturbance in remembering them.⁸³ The processes involved in selective perception, immediate recall of preceding thoughts and capacity for systematic thinking are all particularly sensitive to even relatively low doses of marijuana.⁸⁴ 'Forgetting what has been said,' and 'fragmentation of thought processes and gaps in the stream of thought' prompted Wikler to compose a ditty:

'The drunkard staggers only when he walks,
While the pot-head forgets only when he talks.'⁸⁵

Marijuana Users Create a Danger to the Community

There are workers who believe that marijuana does not lead to individual addiction, nor give rise to psychopathology in the user.⁸⁶⁻⁸⁹ However, much valuable committee work has been done on the potential public dangers of the drug. The American Council for Mental Health, together with the American Medical Association (Drug Dependency Committee) and the National Research Council (Committee on Problems of Drug Dependency) have jointly reached the conclusion that: Cannabis is a dangerous drug and, as such, a public health concern.⁹⁰

I. W. F. Spencer of the Johannesburg Health Department,⁹¹ in referring to drug abuse among teenagers, and this certainly applies to marijuana, points out that it is now reaching proportions where it menaces and involves not only weaker personalities, but completely stable children from sound homes and good upbringing who inadvertently become ensnared. From the community aspect, marijuana is a group addictive problem. Personality traits—such as escapism, lack of self-confidence and sociability—predispose to this group habit.⁹² Environmental factors where the hippie cult is prevalent, as well as adolescent curiosity in a high-drug neighbourhood, may all lead to experimentation.⁹³

Young adolescents may find it difficult to withstand these environmental pressures. The problem of their being persuaded by acquaintances to join in the pot habit has been dealt with in the Boulder-Denver survey of some 26 000 students from 9 universities. The main reason for taking marijuana was curiosity, while the percentage who took it for 'kicks' or not to offend their friends was very low indeed.⁹⁴ Incidentally, there is not a scrap of evidence to show that any drug can improve intellectual potentialities.⁴¹

TABLE I. REASONS FOR TAKING AND CONTINUING WITH DRUGS⁹⁴

Reasons for taking (%)	Marijuana	LSD	Amphetamines
Curiosity	58.4	35.8	10.2
Worth while	25.7	44.6	3.7
Kicks not to offend	8.0	4.7	5.4
Helps studies	0.0	0.4	60.0

Reasons for continuing (%)	Marijuana	LSD	Amphetamines
Pleasure (fun)	68.2	31.1	7.6
Gives insight	6.8	38.2	1.1
Helps study and peeps up	0.7	1.1	76.4

Other reasons constitute remainder.

Violence. The unpredictable violence that can occur with marijuana users, particularly in association with alcohol is dangerous to the community. Wikler⁹⁵ underlines this danger to personal and public health. Others simply point out that marijuana facilitates violence.⁹⁶ Prolonged use develops a delirious rage which sometimes leads to crimes

such as assault and murder.⁹⁶ The WHO announced in 1965 that under its influence, the danger of committing unpremeditated murder is very great: it can happen in cold blood, without any reason or motive, and often the murderer does not even know the victim and kills simply for pleasure.⁹⁷ The problem of whether a person should be considered legally insane after committing crimes while under the influence of hallucinogenic drugs is bound to arise with increasing frequency.⁹⁸

Traffic violations and accidents. Marijuana users have a higher rate of traffic offences than the general population.⁹⁹ Dissociation of subjective awareness of time and actual time itself occurs when a driver is under the influence of marijuana and this could well be life-destroying. Of a group of regular marijuana users, over 50% considered their driving ability was impaired, while 14% had the good sense never to drive while under the influence of the drug.^{100,101}

DRUG DEPENDENCY

The editor of the *Journal of the American Medical Association*¹⁰² pointed out dangers to the users of weak marijuana preparations which can give a false impression that any drug can be 'handled', and furthermore if most marijuana users do not graduate to heroin, many, if not most, do go on to 'speed', 'goof-balls', LSD and STP, etc.

The British Home Office¹⁰³ give figures stating that 97% of all heroin addicts gave a previous history of taking *cannabis*. I am inclined to agree with Rose¹⁰⁴ in that those who smoke marijuana become more drug prone. However, he goes further, and from experience in interviewing youngsters who had found the 'kicks' and escape they craved for in marijuana, he says that from there they graduated to harder stuff and became drug dependent somewhere along the line.

CONTROL OF DRUG ABUSE

The President of the Witwatersrand Mental Health Society has outlined 3 fundamental headings for measures employed in the control of the problem of drug abuse—medical, medico-social and medico-sociological.¹⁰⁵ Perhaps one might add a further heading: medico-scientific, referring specifically to the use of the computer and other scientific means of combating the problem.

By means of a computer, there is full potential to be made to both individual and community work.¹⁰⁶ The State Department of Health have computerized their statistical section and an effective data storing, processing and retrieval programme is under way for their purposes.¹⁰⁷

An important early step in the control, research and treatment of drug abuse would be the compulsory notification of addicts—even a modified notification for statistical purposes. Requests have already been made to the Minister of Health in this respect.¹⁰⁸

It is perfectly feasible to establish a national computerized register for all HFD and even some selected

PHD substances. Information could be gathered at the port of entry of raw or other materials, commencing with the importer and sequentially traced to manufacturer, distributor, dispenser, practitioner and patient. This information would need to be recorded on a punch-card type proforma with copies being sent, at regular intervals, to the State Department of Health where it could be utilized under rigid supervision. A data base would enable strict control to be maintained of legitimate consumption of drugs, as well as the firm or individual handling them and also the bona-fide patients. The computer could be programmed to indicate any irregularities or possible forms of abuse.

The only remaining source of manufacture and illegal importation of drugs would be clandestine. There are specialized ways of handling such a situation. The computer data would be used in conjunction with ancillary information derived from police and customs records.

CONCLUSION

Moral and mental degradation coupled with personal discomfort from the symptoms of chronic marijuana addiction, the costs of treatment of the individual and loss of man-hours to the community, possible pathological sequelae, e.g. arteritis¹⁰⁰ and cirrhosis,¹¹⁰ unknown long-term carcinogenic and genetic effects¹¹¹—these are all factors in this strange adolescent disease and scourge of this latter third of our 20th century life. Professor Engelbrecht likens marijuana to a 'state within a state and it is impossible to estimate its population.'¹¹² It is a slow boat to disaster which children can purchase for a matter of cents.¹¹³

Drug addicts are pitiful people, much in need of the help they scorn. They are dangerous people, not only to themselves but also to every impressionable young person with whom they come into contact. If they cannot be cured, they must be controlled.¹¹⁴

We should not rest until our drug addiction rate in South Africa is the lowest in the world—a proud goal and a great challenge for the medical profession.

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