



Drugs; Mood, Memory and Mayhem

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Introduction:

The tabloid-like title has been chosen to indicate my wish to explore aspects of the links between drugs and mental health, drugs and memory and drugs and violence.

Drugs and Mood:

Since the particular drugs we are concerned about are all psychoactive/psychotropic/mind-altering chemicals it is inevitable that they change mood. As a result it is possible that they might cause harmful mood swings not just in otherwise healthy individuals but more particularly in those with preexisting mental conditions. Indeed many patients/clients with a substance misuse disorder also suffer from mental illness – so – called “Dual diagnosis” or “co-morbidity.” This has been defined by the WHO as the “co-occurrence in the same individual of a psychoactive substance use disorder and another psychiatric disorder”. While this phenomenon has been extensively researched in the US, until quite recently little attention has been paid to its impact on patient outcomes and the implications for service delivery in Ireland and the rest of Europe. In June 2000, one month prior to the establishment of the NACD, the Irish Catholic Bishops Conference held a treatment seminar entitled “Beyond maintenance’ in which the keynote address by Dr. Jane Wilson of the Scottish Drugs Training Project looked at the question of dual diagnosis and its impact on services. In a formal response to that paper I highlighted the importance of the issue and the need for the yet to be established NACD to tackle this issue. I also highlighted the need for European initiatives. It is with some satisfaction that I can report that the NACD launched its report entitled “Mental Health and Addiction Services and the Management of Dual Diagnosis in Ireland” on November 1st 2004. At European level the E.U.’s Drugs Agency – the EMCDDA includes a special chapter on Co-Morbidity as a selected issue in the 2004 Annual Report on the State of the Drug Problem in the European Union.

Both reports highlight the challenges we face in this area by emphasising the difficulties in definition, in diagnosis, in prevalence and in the delivery of services. In the prevalence area the international experience is that between 15 – 60% of substance misusing clients have a dual diagnosis. The limited Irish data ranges from 26% reported by the National Inpatient Psychiatric Reporting System to 43% in a community sample. Arising from the MacGabhann, Scheele et al report the NACD has made a number of recommendations to government. These include (a) the establishment of a multidisciplinary committee to establish Irish guidelines for managing dual diagnosis in Ireland; (b) that any patient in receipt of methadone prior to admission to a psychiatric facility, should be continued on that prescription while under psychiatric care; (c) that education and training should be provided across all disciplines in both sectors and (d) the introduction of a clinical nurse speciality in addiction, for psychiatric nurses. The NACD recognises that the report will have to be reviewed in the overall context of health service reform and that the infrastructure which should arise from the implementation of the recommendations will facilitate research on the prevalence of dual diagnosis in Ireland.

The EMCDDA report notes that existing research about the causal relations between psychiatric and substance disorders is inconclusive. The symptoms of mental disorder and addiction problems interact and mutually influence one another through in some cases causal and, triggering mechanisms, in others through aggravation or through self-medication attempts. Acute drug-induced psychoses may arise through the use of psycho-stimulants and LSD-type hallucinogens. Other drugs which have been linked with mental health problems include the Cannabis and Ecstasy group of drugs.

Cannabis and Mental Health:

The link between the use of Cannabis drugs (marijuana/grass, hash, hash oil) and mental health has long been controversial and the notoriety of the cringe-inducing anti-marijuana film “Reefer Madness” makes a modern interpretation of the evidence base extremely difficult. Up to relatively recently there seemed to be a reasonable level of consensus that Cannabis drugs could trigger existing mental health problems particularly schizophrenia. However the multitude of new work which has appeared in the last few years seems to also point to a possible causal role for Cannabis in some cases. The report by Van Os and colleagues that up to 50% of cases of psychosis in the Netherlands could have been prevented if individuals had not used Cannabis is particularly significant given the huge increase in the potency (as measured by THC content) of Dutch Cannabis (Nederwied or skunk). Wayne Hall, one of the worlds leading experts on Cannabis has suggested that 3 groups are particularly vulnerable to the psychotogenic potential of these drugs namely those with a history of mental illness; those who are daily or near daily users and those who have had a bad experience with Cannabis. Equally the link between Cannabis use, depression and suicidal ideation is worth noting, especially since a number of longitudinal studies show a significant effect of Cannabis use on the risk of suicide attempts in young people. A history of substance misuse is recognised as one of a number of risk factors for suicide and there seems little doubt that alcohol is the major drug involved. However, the NACD has recommended, on the foot of its “Overview of Scientific Information on Cannabis” that work on the relationship between Cannabis use and suicide in Ireland is urgently needed.

Another drug which is reputed to result in depression is Ecstasy. Genuine Ecstasy is MDMA (Methylenedioxymethamphetamine). Studies in clubbers have shown that many meet the criteria for clinical depression within 5 days of using even moderate doses of the drug. This effect is the most commonly reported side effect with 83% of 469 users in one UK survey stating that they had experienced a midweek ‘low mood’. MDMA has long been reported to be selectively neurotoxic to serotonin producing neurones which could explain the low mood and depressive symptoms reported by ecstasy users. Direct evidence of this effect on serotonergic neurones in humans has come from US, Dutch and German groups using PET scanning. The Dutch study indicated that women might be more susceptible than men but the reason for this has not been clarified. The crucial and as yet unresolved question is how reversible is the neurotoxicity when someone ceases using the drug. Animal evidence suggests that it is long lasting but that partial recovery is possible. The human evidence is inconclusive and the subject of much debate in the literature. A significant amount of controversy has arisen because of suggestions

that this neurotoxicity is linked to self-reported cognitive deficits in ecstasy users. Those opposed to this idea point to the fact that virtually all Ecstasy users use drugs such as Alcohol, Cocaine, Amphetamine and particularly Cannabis all of which could interfere with intellectual functioning.

Drugs and Memory:

In this controversy the key confounding drug is Cannabis. This is hardly surprising given that work on Cannabis and the endocannabinoids (chemicals such as anandamide found normally in the body, and which bind to Cannabis receptors) has shown that brain regions rich in those receptors include those responsible for memory and learning.

Cannabis and Learning:

One of the most documented effects of cannabis is on learning and memory. Early work showed that short term cannabis use disrupted tests of learning and memory. Even something as simple as arithmetic skills could be disrupted for 24 hours after a 'high' (Heishman 1990). The more complex the task, the more it is disrupted by cannabis. Solowij has reviewed this area and conducted most of the research. In her 1998 book she reported that "long term use of cannabis leads to a subtle and selective impairment of cognitive functioning involving the organisation and integration of complex information. These impairments are associated either with the frequency of cannabis use or with the duration of such use" (Solowij 1998).

The consequences of these effects may be apparent in high levels of distractibility when driving, operating complex machinery, learning in the classroom and may interfere with memory function.

Solowij further suggests that the use of cannabis three times per week or more frequently, results in a state of chronic intoxication, probably due to the accumulation of cannabinoids. "This results in a general slowing of information processing with sluggish mental performance in a variety of tasks".

She goes on to speculate that if the use of cannabis is prolonged for more than 3 years for example, the user may incur gradual long term changes in brain function. Some users may become aware of this primarily in the form of memory problems, difficulties with concentration or distractibility. If users cut down or stop using altogether then mental proficiency will improve but not completely. Solowij notes that users with lower IQ levels may be more vulnerable but that younger users may be more likely to show improvements when they come abstinent. Finally, she states that use more often than twice per week of large quantities of high potency cannabis for even a short period ie. binge-type use, or use for 5 years or more at a rate of even once per month, may lead to a compromised ability to function to an individuals full mental capacity. More recent research (Solowij 2002) confirms that long term heavy cannabis users show impairments in memory and attention which worsen with increasing years of regular cannabis use. How this might happen was shown in the September 2004 issue of Neuron which

contained a report on the effects of plant and endo-cannabinoids on the part of the brain responsible for learning and memory – the hippocampus. The body's endocannabinoids play a complex and important role in the storage of memories. When someone smokes a cannabis drug the THC absorbed is believed to conflict with the endocannabinoids creating confusion in the brain cells and interfering with normal brain function.

Ecstasy and Memory Loss:

The other major so-called 'recreational' drug used by large numbers of young Irish people is Ecstasy. The neurotoxic effect has been linked to significant impairment of attention/memory tasks up to 3 days after weekend use of the drug (Curran and Travill 1997). More recently Zakzanis and Young (2001) have reported that in a study of 15 MDMA users, continued use was associated with progressive decline in memory in terms of immediate and delayed recall. This memory impairment has been linked to the duration and extent of MDMA use (McGuire 2000). Since many studies show that MDMA users are also more frequent users of other drugs such as alcohol and cannabis, the possible cumulative effect of combinations are an obvious subject of speculation. Some researchers (Simon and Mattick 2002) believe that cannabis, which is also used by the majority of ecstasy users, may be the cause of the memory impairment reported by ecstasy users themselves. This question has been examined more recently by Rodgers et al who used the internet to obtain self-reports of memory functioning in 763 recreational drug users. Drug users perceive their memory ability to be impaired compared to non-users. Frequent users of Cannabis made more errors in completing the form on the internet, than non-users. If they used the drug 5 – 20 times per month they reported 10% more problems and 19% more problems if they used 20 times or more. The effect of Cannabis was on everyday memory whereas the effect of ecstasy was on long term memory. A typical user of ecstasy will have 14% more memory problems than other drug users and 25% more compromised memory compared to non-users. The authors concluded that combined use may result in a myriad of memory problems and that there is a relationship between drug use and declining performance.

How relevant the international research data might be for Irish drug users is difficult to judge especially given the extensive debate in the literature about the influence of confounding variables such as premorbid cognitive deficits, and impulsivity and the fact that in the study groups daily drug use is the norm. In this context, data from the US where "ecstasy" tablets may contain neurotoxins other than MDMA such as dextromethorphan, ketamine and methamphetamine has to be interpreted with caution. Equally given the reported preponderance of herbal cannabis use in Australia and the US compared to the Irish and European preference for resinous hashish, with resulting differences in dosage and potency, can valid comparisons be drawn on the risks of cognitive deficits? It would be preferable to have our own research data to benchmark alongside the international data.

The most recent available information concerns the effects of the veterinary anaesthetic (it is no longer permitted for use in humans) Ketamine which can be sold as Ecstasy or promoted in its own right ('K' 'Special K', 'Vitamin K', 'Kit-Kat' etc) as a dance drug.

One of the key reasons for its discontinuation as a medicine is the risk of ‘near-death’ or ‘out of body’ experience, termed the ‘K-hole’ by drug users. Users also experience, analgesia and sedation and brief reversible schizophrenia-like symptoms. A series of detailed studies of Ketamine users in the UK, has shown that they show persisting memory deficits 3 days after use. However while some of this impairment is reversible after becoming abstinent, other aspects of memory (episodic) and attentional functioning appear long lasting as do schizotypal symptoms and perceptual distortions.

A persisting concern is that some of these effects may precipitate violent criminal acts.

Drugs and Violent Crime:

The 2003 Annual Report of the International Narcotics Control Board included a chapter on “Drugs, Crime and Violence: the Microlevel Impact”. In this report the INCB stated that “There is a wealth of evidence to support the assertion that alcohol consumption, under certain conditions, stimulates violence. In comparison, the ingestion of opiates, under certain conditions, has been found to inhibit aggression but withdrawal from long-term abuse of these and related substances has been found to result in irritability and hostility. Frequency of cocaine abuse and amphetamine abuse has been associated with an increased likelihood of involvement as a perpetrator in violent crime”.

The INCB notes the argument that drugs and violence are related in three separate and distinct ways. “(a) psychopharmacological, suggesting that violence is the result of the acute effect of a psychoactive drug on the abuser;

(b) economic-compulsive, suggesting that violence is committed instrumentally to generate money to purchase drugs and (c) systemic, suggesting that violence is associated with marketing of illicit drugs.

The INCB reiterates the view that psychopharmacological violence including homicide is frequently linked to alcohol abuse. This compares to economic-compulsive violence, which it says is rare whereas economic-compulsive crime to obtain drugs is frequent. It notes that systemic violence is closely related to “turf” wars over illicit drug markets.

One large US epidemiological study found that individuals with a substance misuse diagnosis were 10 times more likely to report a history of violence than members of the general population without any psychiatric diagnosis. A 2004 Swedish study found that 16% of all violent crimes between 1988-2000 were committed by people with a diagnosis of alcohol misuse and more than 1 in 10 violent crimes were committed by patients who had misused drugs.

A UK study reported that homicides by strangers is more often associated with alcohol and drug misuse than with severe mental illness. The World Health Organisation indicates that 24 – 47% of injuries from assaults are alcohol related.

The limited Irish data on drugs and crime mirrors the international experience. Furey and Browne in their recent study, based on Garda data, of the links between opiate use and crime reported that 28% of detected crime was attributable to opiate users. This was

down from the 1997 figure of 66% in the Dublin Metropolitan Area. The 2004 figures included 49% of robberies but tellingly only 4% of assaults were committed by opiate users. It is believed that the vast majority of assaults were linked to alcohol though detailed Irish evidence of this is not yet available. The National Crime Council in its 2003 Report on public order offences in Ireland noted the substantial 161% increase in public order offences between 1996 & 2001 and that alcohol was a primary factor in such offences. In 2002 the number of offences relating to intoxication in a public place was 22,701 for adults and 1898 for juveniles.

A 1997 Garda Study found that 48% of offences against the person involved alcohol or drugs. An editorial by Dr. Anne O'Farrell in the June 2004 issue of the Irish Medical Journal notes, inter alia, the link between sexual violence and rape and alcohol consumption. Dr. O'Farrell points out that in Ireland the vast majority of suspected cases of what is now called "drug-facilitated sexual assault" involves large quantities of alcohol rather than another "date-rape drug" such as GHB or flunitrazepam.

It is only in recent years that public discourse in Ireland has focussed on the links between alcohol and violent crime. It is surprising that it has taken so long to emerge as a topic of concern when internationally the link has been recognised for years. For example Murdoch et al concluded that in 50% of cases of homicides and assaults the assailant was under the influence of alcohol. Abroad researchers have focussed on the links between overall consumption and violence eg. the findings that drinking more than eight units of alcohol eg. 4 pints of beer significantly increased the risk of violence between 3 – 5 times (McLeod et al 1999). The type of beverage may influence where the assault takes place with Swedish experience (Norstrom 1998) suggesting that assaults are related to beer and spirit consumption in public (bars/restaurants) while homicides are linked to the private consumption of spirits. The literature also suggests (Graham et al 1998) that "intoxicated aggression is the result of the interplay of various influences including societal; personal, situational and drug effect variables".

The reasons why alcohol and violence are so closely entwined has, not surprisingly, been the subject of much research in other countries and the evidence seems to point to a loss of inhibitory control through an effect on the prefrontal cortex.

Cocaine has been associated with increased violent and aggressive behaviour which seems to be a feature of psychostimulant use in general since synthetic amphetamines and that feature in cases of "amphetamine psychosis". The extent of psychostimulant related violence is largely unknown internationally but is likely to be much lower than aggression and violence associated with alcohol.

Conclusion:

The focus of this presentation on just 3 aspects of problem drug taking has been heavily influenced by a quotation from Griffith Edwards (one of the giants of the addiction field) dating back to 1983".

“Too exclusive a focus on drug dependence per se will be limiting if it deflects from sensitive analysis of the ways in which harm actually comes about and the ways in which harm may not infrequently be socially constructed.”

Griffith Edwards 1983

In particular, I wanted to highlight the fact that for many drug users it is their changed behaviour which is the most damaging aspect of their drug use eg. Alcohol and violence. Equally I wanted to highlight the risks to an individuals ability to achieve self-fulfillment in a technology based, information-led society through their use of so-called ‘recreational’ drugs (Cannabis, Ecstasy, Alcohol) which can impair intellectual functioning. The question must be asked – is recreational drug use compatible with the knowledge-economy?

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