

Editorial

Drug Addiction – A Global Problem for the Rich and Poor

In reviewing the history of human drug addictions, one finds previous misconceptions that people addicted to drugs lacked willpower and were morally weak. But we now know that drug addiction is a chronic relapsing brain disease characterized by the compulsive use of addictive substances despite adverse consequences to the individual and society¹. Addiction to drugs and alcohol is increasingly becoming a worldwide trend in lifestyle that is prevalent in rich and poor countries alike. Addiction to alcohol, drugs and cigarette smoking is now regarded as a major public health problem². Other forms of addiction including gambling, sex and food also have severe consequences on the health of the individual and to society. The worldwide epidemic of obesity is a good example that global trends in lifestyle, eating behavior and cultural adaptation contribute to the rapid increase in obesity around the world³. - a global problem for the rich and poor.

The commonly used classes of drugs include alcohol, psychostimulants, opiates, benzodiazepines, hallucinogens and marijuana. They all have profound action in the nervous system, particularly, the brain. Some of these substances such as opium, marijuana, cocaine, nicotine, caffeine, mescaline, and psilocybin are obtained from natural sources while others are synthetic or designer drugs. Furthermore, some of these substances, such as alcohol and nicotine, are legal while some others that are legally available by prescription have addictive potential in

vulnerable individuals. A number of addictive substances are illegal in most countries and this fuels the illegal drug trafficking and business that are often associated with criminal activities. The initiation of the use of these substances induces euphoria, reward and a state of well-being that can lead to physical and psychological dependences. Withdrawal syndrome occurs when the individual attempts to stop the use of addictive substances and this leads to the cycle of dependency. The mechanism(s) associated with the cycle of addiction include neuronal adaptation with tolerance or sensitization involved in the action of addictive substances. A number of factors have also been associated with addiction, including the availability, cost and method of administration, as well as environmental factors such as behaviors acceptable in a community, peer influences, and genetic and epigenetic factors.

Over the years, a number of therapeutic approaches for drug and alcohol addiction have been utilized. However, relapse - the resumption of drug taking following a period of drug abstinence - is considered the main hurdle in treating drug addiction. Unfortunately, pharmacological treatment of drug and alcohol dependency has largely been disappointing and new therapeutic targets and hypotheses are needed¹. For many years, it was assumed that all drugs of abuse release dopamine in the brain's reward system to produce pleasure and euphoria, and consequently, leading to addiction in

vulnerable individuals^{4,5}. But, many agents, such as inhalants, barbiturates and benzodiazepines, do not activate midbrain dopamine-mediated transmission consistently, despite the fact that these drugs have rewarding properties and are heavily abused⁴. Therefore, dopamine is not a simple marker of reward or hedonia and might no longer be tenable to suggest that drugs of abuse are simply activating the brain's 'natural reward system'². Thus, an endocannabinoid hypothesis of drug reward was postulated and tested¹. Much progress in cannabinoid research has revealed an endocannabinoid (eCBs) system in animals and humans. The eCBs consists of genes encoding cannabinoid receptors (CB1-Rs and CB2-Rs), their endogenous ligands called endocannabinoids and proteins that synthesize and degrade these endogenous cannabinoid ligands. Both CB1-Rs and CB2-Rs are distributed in the brain and peripheral tissues and are activated by endocannabinoids, and cannabinoids, the active constituents in marijuana⁶. The results obtained from our studies indicate the involvement of cannabinoid receptors in neural basis of addiction¹. Therefore, cannabinoids and endocannabinoids appear to be involved in adding to the rewarding effects of addictive substances including nicotine, opiates, alcohol, cocaine and BDZs. This suggests that the endocannabinoid system may be an important natural regulatory mechanism for drug reward and a target for the treatment of addictive disorders. With the lack of effective medical treatment of addiction, the concept of spirituality in relation to addiction recovery and general psychiatry has been investigated with beneficial and compromising outcomes⁷.

In conclusion, we now know that addiction is a brain disease and a global issue for the rich and the poor. Thus, there is a lot more research to be done to better understand the neurobiological basis of drug and alcohol addiction and effective therapeutic approaches.

References

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