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EXPLORING MEDICAL AND SPIRITUAL SIDE OF ADDICTION AND RECOVERY

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Abstract

Addiction is a very complex and challenging issue, being one of the most difficult to manage disease. This illness results as an interplay between genetic background, psychological profile of the individual and environmental risk factors, and can virtually affect anyone. The neurobiological consequences are dramatic, impairing major brain processes, such as reward circuitry, learning and memory, motivation and decision making. To date, there is no medical treatment for curing this complex disorder, medicine only addressing withdrawal symptoms, medical complications and comorbidities. The path of spirituality was often overlooked by medicine professionals but several stories brought it into light. In the early 20[th] century, *The Oxford Group*, founded by Franck Buchman, was the forerunner of *Alcoholics Anonymous*, the most successful fellowship based on the twelve-step program. These steps were originally designed to treat alcoholism but today represent the foundation for all modern recovery programs based on spiritual guiding principles.

Keywords: addiction, neurobiology, risk factors, twelve steps, recovery

1. Introduction - defining addiction

In the early twentieth century, chronic alcoholism and drug use were seen predominantly in terms of morality, as sins or moral weakness and were associated with ostracism, shame, condemnation, the sufferers being treated as social pariah. This type of approach, from religious moralism perspective, led to prohibition of alcoholic beverages in several countries.

From a theological point of view, Saint Paul's words, sometimes regarded as defining the human ‚inner conflict' could perfectly describe this dramatic situation: "I do not do the good I want, but the evil I do not want is what I do. Now if I do what I do not want, it is no longer I that do it, but sin which dwells with me" (Romans 7.19-20) [1]. From the same perspective, the tendency toward sin of the human personality is seen as very similar to addiction [2].

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With time, there was a transition from moralistic religious concepts to a rather ‚amoral' approach of these dependencies. This change in outlook was the result of several factors [3]:

- new scientific discoveries in Medicine and Physiology;
- the development of psychological and psychoanalytic theories of motivation;
- the emergence of a variety of religious and unconventional healing movements.

Addiction has predominantly a severe negative connotation. However, William Glasser, an unconventional psychiatrist and the developer of *reality therapy* and *choice theory*, substantiated the concept of ‚positive addiction', splitting addiction in ‚positive' and ‚negative' and using it in the counselling process focussed on helping patients to become stronger and to better handle the stresses in life [4].

An older pursuit of defining addiction was made by Bruce K. Alexander and Anton Schweighofer. They take into account two different viewpoints: a traditional one, wide-meaning, as the important and sometimes harmful capacity of people to become 'given over' or devoted to something, and a more restrictive connotation, imposed by the sobriety and anti-opium movements of the 19th century, linking addiction to vice and to withdrawal symptoms [5].

In 2011, after a four-year process, the American Society of Addiction Medicine (ASAM) has released the new definition of addiction. It was a major change of paradigm – addiction was no longer seen only as a behaviour problem but as chronic brain disorder. According to ASAM, the short definition is: "a primary, chronic disease of brain reward, motivation, memory and related circuitry. Dysfunction in these circuits leads to characteristic biological, psychological, social and spiritual manifestations" [American Society of Addiction Medicine (ASAM), online at http://www.asam.org/research-treatment/definition-of-addiction].

This neurological problem is reflected in social, moral or even legal problems related to behavioural impairment involving chemicals like drugs, alcohol, nicotine, or behaviours, such as gambling, sex, food or computer addiction. The new definition of addiction highlighted the *primary* and the *chronic* nature of the disease: addictive behaviours are manifestations of the disease, rather than causes, and addictive persons need lifelong monitoring and treatment.

In a systematic literature review about the concept of addiction, Steve and Alan Sussman tried to delineate its definitional elements in an attempt to make a step forward consensus and operationalization of this construct. From the literature search they concluded that there are five such components [6]: engagement in the behaviour in order to achieve appetitive effects; preoccupation with the behaviour; temporary satiation; loss of control; suffering negative consequences.

There is no clearly established 'addict profile', this dramatic status coming in all ages or socioeconomic status, being an 'equal opportunity illness', but favoured by certain genetic or environmental risk factors. Nowadays, addiction is seen as a disease of itself, defined by three primary characteristics:

- *compulsion*, which means an irresistible urge to behave in a certain way [*Oxford Dictionaries*, online at http://www.oxforddictionaries.com];
- *loss of control*, a main trait of addiction, the affected individuals always returning to the same out-of-control behaviour [7];
- *continued use*, in spite of negative consequences (medical, familial, legal, financial), underlying the chronic nature of this disorder [7].

2. Addiction as a multidimensional disease – individual, environmental and spiritual factors

To fully characterize addiction as a disease, epidemiology is necessary, being the medical field that studies various health issues, in terms of population distribution and characteristics as well as the environmental conditions or circumstances that are associated with the studied health problem. However, the epidemiology of addiction is a difficult matter, an important challenge being defining and measuring this medical and psychological phenomenon which relies more on behavioural criteria than on measurable biological or physiological criteria.

In recent years, medical and brain-imaging progresses partially overcame these difficulties showing association between neural changes and several drugs like tobacco, alcohol, cocaine, marijuana, methylenedioxymethamphetamine (MDMA) and methamphetamines. Additionally, studies have shown that craving, a key-component of addiction, results from the stimulation of certain parts of the brain when triggers appear, even in drug abusers who have cessed to use substances for a long period of time. Future researches are needed in order to develop some precise diagnostic tools that will link behavioural measurements of changing brain functioning with the degree of drug use [8].

The medical history and individual characteristics influencing addiction, like drug-using patterns, range from personality traits to genetic and biological vulnerabilities. In the past years, researchers identified numerous genes related to risk for dependence of drugs and alcohol [9], such as genes responsible for alcohol metabolism (alcohol dehydrogenase and aldehyde dehydrogenase enzymes) and those involved in the neuronal signalling and modulation of neural cell activity. Genes encoding components of several neurotransmitter systems, including gamma-aminobutyric acid (GABA), acetylcholine, dopamine as well as endogenous opioid and cannabinoid systems have a major contribution to the risk of alcohol or other drugs dependence [9]. Also, psychiatric comorbidities are risk factors for different types of addiction while alcohol abuse favours other drug abuse [10].

Environmental risk factors are related to community, school or family, being represented by community disorganization, drug availability, delinquent entourage, poor scholar performance, early physical or sexual abuse, witnessing violence, peers who use drugs [10].

In addition to risk factors some protective factors exist. These are characteristics known to decrease the likelihood of engaging in addictive behaviour and are represented by beliefs in moral order, religiosity, social skills, family attachment, school and community opportunities and rewards for pro-social involvement [10]. Citing Daniel Goleman's comprehensive definition of emotional intelligence as "the abilities to motivate oneself, persist in the face of frustrations, regulate ones moods, emotions and behaviours, empathize with other people" and being "able to maintain an above average level of social skills" [11], Coelho sees emotional intelligence as another untapped resource for alcohol and other drugs dependencies prevention, being linked to emotional competence, social learning, and "life promoting behaviours" [11].

An imaging study of the brain in primates, using positron emission tomography (PET), showed that social factors influence the level of dopamine receptors and the tendency to self-administer cocaine. The monkeys emerging at the top of their group and thus having more access to rewards and experiencing less stress took less cocaine and expressed more dopamine receptors in their brain than their social inferior counterparts [12].

Substance use or abuse, mental health and health beliefs are closely related to individuals' well-being, as well as religiosity. A recent study tried to develop typologies of religiousness/spirituality and to relate these typologies to health and well-being, using a nationally representative sample of American adults. The researchers identified four classes, based on "religious service attendance, prayer, positive religious coping and daily spiritual experience": "highly religious, moderately religious, somewhat religious and minimally religious or non-religious" [13]. Using appropriate statistical methods and controlling for gender, age, race, socio-economic status and education variables, Park et al. concluded that the highly religious group scored highest on all measures of well-being [13].

3. Neurobiology of addiction – medical and behavioural consequences

The new definition of addiction [http://www.asam.org/research-treatment/definition-of-addiction] emphasizes the importance of brain processes related to reward, motivation, memory and related circuitry, and understanding addiction means understanding the underlying neurological and psychological mechanisms.

The *reward* circuitry of the brain seems to be the landmark of neurobiology of addiction. This circuitry involves the mesocorticolimbic system, which connects the automatic bodily functions of the brain stem with the peripheral nervous system and the emotional areas with the prefrontal cortex, considered as the thinking or reflecting and decision-making part of the central

nervous system [14]. Dopamine and beta-endorphins are neurotransmitters that facilitate the functioning of these pathways. In addictive persons, the reward circuitry shifts its sensitivity to these neurotransmitters, to a substance or a behaviour and in time, the receptors become desensitized, creating the need for more artificial stimulation. Thus is creating a vicious cycle that is the hallmark of addictive disease [14].

Even a single exposure to a powerful drug, like morphine, lead to changes in the brain and to pathological learning but when a person repeatedly use an addictive substance, disturbances in the brain stress systems appear, leading to compulsive repetitive patterns, in order to gain the initial reinforcement or to block withdrawal [15].

Neurochemical systems are involved in all stages of developing addiction: dopamine, opioid peptides, serotonin and gamma-aminobutyric acid (GABA) mediate the acute reinforcing effects of drugs while neuroadaptative changes in the brain reward system during the development of dependence lead to recruitment of stress systems, including norepinephrine, corticotrophin-releasing factor and deregulation of anti-stress systems (neuropeptide Y), thus providing the negative motivational status associated with abstinence [16].

Regarding other fundamental cortical processes, like *learning and memory*, Hyman highlighted the importance of dopaminergic system and the increased synaptic dopamine in key areas of the brain. He described addiction as ”a pathological usurpation of the neural mechanisms of learning and memory that under normal circumstances serve to shape survival behaviours related to the pursuit of rewards and the cues that predict them” [17].

Motivation and its impairment is also a key-component of developing addictive behaviours. Integrating neuroimaging studies of addicts with cellular studies in animal models of drug seeking, Kalivas and Volkow showed that addiction is a deregulation in the motive circuit, having biological components and being associated with overwhelming motivational strength and decreased ability to control the drug seeking [18]. They also described the three stages of addiction:

- *Stage 1 – Acute drug effects*, involving increased dopamine release throughout the motive circuit and leading to changes in cell signalling. As a result, there are widely distributed molecular consequences that initiate cellular events related to addiction development.
- *Stage 2 – Transition to addiction*, along with repeated administration of the substance, associated with changes in neuronal function, involving, but not limited to, the dopamine transmission.
- *Stage 3 – End-stage addiction*, resulting from enduring cellular changing in protein content and function, and being characterized by vulnerability to relapse, which become a permanent feature of addiction.

As a consequence of multiple disorders, addicted persons have a sort of ‘myopia’ for future, being a poor *decision-making*. This type of behaviour is due to an imbalance between two interacting systems signalling pain or pleasure: a reactive one (automatic), for immediate prospects, mainly represented by the

amygdale and a reflexive one (control), for future prospects, with prefrontal cortex having the leading role [19]. Normally, the reflexive system take control over reactive system through socialization and individual development, but in addicts, neurotoxicity of drugs could lead to hyperactivity within the reactive system and disruption in self-regulation, expressed as clinical impulsivity, trait recognized as involved in the vulnerability to drugs, the development of addiction, and in relapse [19].

Addiction is expressed as repetitive behaviours, despite the negative consequences, and the addictive person develops a phenomenon of *denial*, reinforced by the reward as well as by the multiple deficits in learning, memory, motivation and decision making. Thereby denial is a defensive mechanism by which the sick person is convinced that she or he does not really have a problem and is essential to all therapeutic programs to confront and break through it [14].

Addictive behaviours seldom occur in isolation, having as result a complex systemic problem, called by Patrick J. Carnes "addiction interaction disorder". Carnes, a modern addiction therapist and the contemporary proponent of a rather controversial concept, that of 'sexual addiction' [20], identified eleven dimensions related each other in addiction interaction disorder [21]:

- *cross tolerance* can occur as a simultaneous increase in two or many addictive behaviours, or as a sudden shift of addictive practice or as a transition from one addiction to another, by mixing them.
- *withdrawal mediation* is relieving physical signs of withdrawal by another addiction than the primary one.
- *replacement* comes when one addiction replaces another, with a free interval of 6 months to 1 year, between the cessation of the old one and the beginning of the new addiction.
- *alternating addiction cycles*, progressive in nature, possibly explained by interaction between deprivation and compulsive addictive behaviours.
- *masking* appears when patients have multiple concomitant addictions and try to use the less shameful one to cover up for another, which could be more destructive, being part of their denial system.
- *ritualizing* is a well-known part of the addictive disorder, rituals being part of a sequence leading to the characteristic altered mood of addicts.
- *intensification numbing* means that one addiction is used to alleviate the shame or pain caused by other one.
- *disinhibiting* is an interaction between addictions, in the same individual, which lead to lower inhibitions for one of these pathologic behaviours.
- *combining* is about 'riding the wave phenomenon', when the addict is trying to get right to the edge and uses various activities trying to preserve and to prolong it.
- *inhibiting*, when addictive persons use one addiction to substitute another, considered more dangerous or socially unacceptable.

4. Spirituality - a key concept in the recovery programs of addiction

Addiction is a chronic, progressive disease, frequently subject to relapse and sometimes fatal. Unfortunately, chemicals or processes addictions are widespread and destructive phenomenon in modern society, with huge negative impact on individuals and families. Despite all this, it can be brought into remission because whilst the genetic background cannot be changed there is always the option of choosing recovery over destructive behaviours [7].

To date there is no medical treatment for curing this complex disorder, medicine only addressing withdrawal symptoms, medical complications and comorbidities. As a result, beyond medicine, there is need for something else.

The path of spirituality, being a strictly personal matter, was often overlooked by medicine professionals but several successful stories brought it into light.

The history of integrating spiritual and religious dimension in the battle with the devastating effects of addictions begins in the early 20th century, with *The Oxford Group*, founded by an American Christian missionary, Dr. Frank Buchman [22].

In 1908, this protestant Christian evangelist attended the Keswick Convention in England and, in a little chapel, he experienced an intense religious revelation, realising his own sins and Christ's forgiveness, as himself wrote later ”I asked God to change me and He told me to put things right with them. It produced in me a vibrant feeling, as though a strong current of life had suddenly been poured into me and afterwards a dazed sense of a great spiritual shaking-up.” [22, p. 31]

This foundation experience led him to design *A First Century Christian Fellowship* in 1921, Buchman himself declaring it ”a voice of protest against the organised, committeesed and lifeless Christian work” and a returning ”to the beliefs and methods of the Apostles”; by 1931, the individuals who participated in this group were labelled by newspapers as *The Oxford Group* [22, p. 138].

Extremely controversial at the time and often regarded as a new religious sect, the activity of this group based on a translation into everyday life of Bachman's religious beliefs crystallized in order to be spiritually reborn: the sovereignty and power of God, the reality of sin and Christ’s transforming power, the sustenance of prayer and the duty to witness to others [22, p. 75]. The practical approach of these principles consisted of meetings where participants shared their sins and temptations with others, using sharing as witness to help others and also to find forgiveness from all those whom they have wronged, directly or indirectly. Those reunions were an attempt to reach the so-called *Four Absolutes – Absolute Honesty*, *Absolute Purity*, *Absolute Unselfishness*, and *Absolute Love* [*What is the Oxford Group*? 46-68, online at http://stepstudy.files.wordpress.com/_2008/05/what_is.pdf]. Buchman himself summarized the way of helping people, through a rough formula, called *the Five C's*, comprising *Confidence, Confession, Conviction, Conversion*, and *Continuance*, as shown in Table 1 [22].

Table 1. The model of the *Five c's,* derived from *the Oxford Group* [22].

Confidence: nothing could be done until the other person had confidence in you
Confession: honesty about the real state of a person's life
Conviction: about the seriousness of the sin and the desire to be freed from its control
Conversion: the free-will decision of a person to surrender to God
Continuance: responsibility for helping the newly orientated person to become the person God meant him or her to be

In post-prohibition era, in America, William Griffith Wilson (a New York businessman, eventually known as Bill W.) and Robert Hollbrook Smith (a surgeon from Akron, Ohio, also known as Dr. Bob), both suffering from alcoholism and trying, separately, to battle it, met each other on May 13, 1935, at Akron Oxford Group. The two men became close friends and Wilson taught Dr. Bob how to recover through spiritual help from devastating effects of alcohol addiction [23].

Bill W. and Dr. Bob wanted to develop a simple program meant to help and to empathize with alcoholics, even with the worst ones, believing that alcoholism is rather a state of insanity than a sin, and thus differentiating from The Oxford Group; later, they completely separated from the old organization. In 1939, Bill W. wrote and published the basic book for the new movement, named *Alcoholics Anonymous* and also known as *The Big Book*, a guide for alcohol dependents, in their struggle with addiction, featuring several personal stories of individuals who succeeded to battle alcoholism. From this book, nowadays reaching its 4th edition, derived the well-known name of the fellowship, which became a worldwide non-profit group [23, online at http://www.aa.org/bigbookonline/en_preface.cfm].

In *Chapter Five* of the *Big Book*, named *How it works*, Bill W. detailed the twelve steps of his program, based on his personal history but also on some of the Oxford Group principles. These were the basic principles for treating alcohol addiction and represented the foundation for all modern recovery programs based on spiritual guiding principles. The original 12-step program comprises the following items [23, p. 58]:

1. "We admitted we were powerless over alcohol — that our lives had become unmanageable."
2. "Came to believe that a Power greater than ourselves could restore us to sanity."
3. "Made a decision to turn our will and our lives over to the care of God *as we understood Him*."
4. "Made a searching and fearless moral inventory of ourselves."
5. "Admitted to God, to ourselves, and to another human being the exact nature of our wrongs."
6. "Were entirely ready to have God remove all these defects of character."
7. "Humbly asked Him to remove our shortcomings."
8. "Made a list of all persons we had harmed, and became willing to make amends to them all."

9. ”Made direct amends to such people wherever possible, except when to do so would injure them or others.”
10. ”Continued to take personal inventory, and when we were wrong, promptly admitted it.”
11. ”Sought through prayer and meditation to improve our conscious contact with God *as we understood Him*, praying only for knowledge of His will for us and the power to carry that out.”
12. ”Having had a spiritual awakening as the result of these steps, we tried to carry this message to alcoholics and to practice these principles in all our affairs”.

These steps could be interpreted from various perspectives but spirituality is the key concept in this type of recovery program. There is a clear separation between spiritual and religious dimension in this program, so that it works for people from different religions, without affecting or offending their traditional beliefs. Inside every addictive person there is a terrible fight and the decision to join such a program is often the result of a powerful motivation, such is the fear of death or the ultimate consciousness of reaching the bottom line.

The major principles are that nobody is capable to be saved through himself, needing help and support, everybody depends on a power greater than ourselves – God, ”as we understood Him” - and that is mandatory to make a ”moral inventory of ourselves”, to cope with the past mistakes and repair them as possible, then living in the present and taking life as it is, day by day [2, p. 29].

Although developed by people living mainly in protestant tradition, these twelve steps were also translated in terms of Orthodoxy by Father Meletios Webber, who consider that each and every step includes elements of thought from the Holy Scripture and prayer life of the Orthodox Church, so that the suffering persons can incorporate these steps in their own life, to deepen the spiritual experience. According to Father Meletios, the contemporary sense of power and security guide us to a false sense of authority and self-determination that dwells in the core of addiction. Therefore, the twelve steps program showed to addicts a vision of their own condition, a way for repentance and a guide for transformation [2].

The Orthodox priest analyzes every step both for an Orthodox Christian and an addictive person, mixing spiritual and religious meanings with every day life facts. Thus, *the first step* is about admission of weakness or defeat, and the readiness to try a completely new approach, leaving behind the old way of living and accepting the reality as it is. This step is also meant to counteract the denial process related to all addictions and leading to the dangerous role of ‘playing God’ by ourselves. In *the second step*, the individual moves toward God, seeking help, recognizing that only a power greater than his ego is capable to help him. Then, from this meeting with God, the person comes out irrevocably changed, surrenders to God, and, as in the *Our Father* prayer – ”*Your will be done*” (*third step*). *The forth and fifth steps* are regarded by Father Meletios Webber as identification of resentments toward people or happenings, and mistakes, in

order to disarm them because these are destructive emotions, that could perpetuate and motivate addiction. These steps are somewhat like a confession, inviting addicts to speak about their mistakes firstly to God, then themselves and to another human being. In *the sixth and seventh steps*, the individual is waiting for God to act and deals with his disease whilst *the eight and nine steps* teaches about the importance of sincerity and honesty and how to manage it in order not to do harm to other people. When addictive person reach *the tenth step*, he or she is prepared to start a new life, making a strict daily inventory. Once the abstinence occurs, the individual is asked to search what is able to do, day by day, through the act of prayer and meditation as sources of his/her empowerment, and this is *the eleventh step*. The last step, *the twelfth*, involves that alcoholic has made peace with himself, has a spiritual awakening and is ready to send this message to other suffering people [2].

Originally, these twelve steps were designed by an alcoholic to help other alcohol addicts but they were gradually adapted to control other addictions besides alcoholism, such as narcotics, gambling, sex addiction or compulsive eating. This kind of 'spiritual treatment' is far from a traditional medical model but proved itself very efficient in the contemporary addiction treatment, even when the psychiatric therapy is not very successful.

In the 1950's a psychiatrist and a psychologist developed a pioneering comprehensive and multidisciplinary therapeutic program for alcoholism as a disease, around the principles of *Alcoholics Anonymous*, named the *Minnesota model*. This program aimed at personal dignity and spiritual growth allowed for the application of scientific and clinical knowledge, including in time psychological and pharmacological strategies [14, 24].

This novel approach to addiction treatment and recovery involved professional and trained nonprofessional staff and comprised an individualized treatment plan, education about the disease of addiction, and active family involvement, 24/24 hours, seven days/week, preceded by a 28-day inpatient setting [25, 26]. This is the model which inspires many of the modern addiction treatment centres.

A recent psychological and spiritual approach to that issue is made by Patrick J. Carnes. He regarded the addict's belief system as the primary source of his illness and, as a counsellor, he stated that all addictions need to be aggressively treated, especially when there are multiple dependences at the same person [20]. In order to do this, regarding the "addiction interaction disorder", Carnes proposed three clinical strategies [21]:

- *The time line*
- *The neuropathic interview*
- *The self-assessment.*

The time line is the graphical representation of the main events in the patients life, and then stratified by creating a line for each addiction and marking the key moments, such as the onset, the worst moment etc. thus allowing both the patient and the therapist to explore the underlying issues that drive the addiction, the trigger events and the long-term treatment goals.

The neuropathic interview comprise the education of the patient about brain mechanisms and circuitry of addiction, about the deprivation, helping him/her, in a group setting, to overcome the shame regarding the addictive behaviour, eventually identifying the pattern, the phases and the triggers of addictions.

The self-assessment is a workshop designed to help patients understand their behaviour patterns, by assessing a standardized list of criteria of all addiction. Thus, addicts learn how their addictions interact and make them so vulnerable to relapse, underlying also the necessity to recovery from all addictions.

5. Conclusions

Addiction is a very complex and challenging issue, being one of the most difficult to manage disease. This illness results as interplay between genetic background, psychological profile of the individual and environmental risk factors, and can virtually affect anyone. The neurobiological consequences are dramatic, impairing major brain processes, such as reward circuitry, learning and memory, motivation and decision making. These changes result in the destruction of the psychic, family and social life, eventually destroying the human being from inside out.

Face to face with the destructive force of addiction, conventional medical models have failed. Therefore, unconventional therapeutic programs with a strong spirituality component develop during the 20^{th} century.

The most famous and accepted spiritual recovery programs are those based on the 12-step program, originally designed for alcoholics and then developed for a variety of addictive behaviours. Today, treatment providers for addictive persons are multidisciplinary, being psychiatrists, psychologists, social workers, addiction specialists, and priests or spiritual counsellor. All of them have to work as a team, proving empathy, an open mind, self-efficacy, and breaking down stereotypes, thus providing efficient contemporary treatment and long-term recovery of addiction.

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