

Disease Model

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HISTORY AND OVERVIEW

The disease model views addiction as a physiological disease with specified symptoms and course. The disease model is a biomedical model that understands addiction as a physiological pathology that requires medical or pharmacological interventions. Because the disease model defines addiction as a sickness, proponents of the model use medical terminology to describe important addiction processes and treatment. The term treatment (rather than therapy, as an example) is used for the provision of health care services meant to intervene on addiction. Treatment modalities are defined medically (such as inpatient, outpatient, and day treatment). People who seek treatment are usually referred to as patients (rather than clients). Diagnostic definitions also reflect a disease model understanding of the nature of the problem (e.g. full and partial remission from the *Diagnostic and Statistical Manual* published by the American Psychiatric Association).

In the model, addiction is defined as a chronic disease for which there is currently no medical cure. The model also views addiction as a disease with symptom progression; not only is the condition chronic and incurable, but also the symptoms progressively worsen over time. Severity of the disease is often determined by the progression of various physiological symptoms, such as tolerance and withdrawal. Symptom progression is

viewed by some proponents of the disease model as continuing in a latent fashion even when a patient is abstaining, so if the patient were to return to active addiction, it is likely that a progression of symptoms (when compared to when they had abstained) would be observed almost instantaneously upon return to the addictive behaviors even if the person had abstained for a significant amount of time.

In addition to these worsening symptoms over time, two physiological processes perpetuate the course of the disease: cravings and loss of control. Cravings as defined by the disease model are physiological responses often triggered by withdrawal processes that create a strong desire in the patient to seek out and use the substance. Loss of control is a disease process that contributes to an inability of patients to predict or control how much or how long they will engage in the addictive behavior (e.g. how much or how long they will use during a drinking or drug using event). Loss of control has also been referred to colloquially as powerlessness over a substance (first by members of Alcoholics Anonymous (AA)), and that powerlessness tends to cause unmanageability in everyday life (from the First Step of AA).

The disease model represents the first serious attempt to define addiction processes within the spirit of scientific inquiry. In the United States, Dr Benjamin Rush was the first to recognize the public health risks

associated with excessive alcohol consumption and to discuss alcohol abuse as a medical condition. He referred to the possibility of progression of alcohol symptoms in his model (1785), but his model suggested moral solutions rather than medical treatment when considering how temperance would be attained. In 1849, Magnus Huss, a Swedish physician, is credited with first referring to alcoholism as a disease that could result from heavy drinking of alcohol.

The disease model as it is generally understood and practice today was largely due to the work of American E. Morton Jellinek in the mid-twentieth century. Jellinek investigated the symptoms of alcoholism among a limited sample of chronic inebriates in an effort to determine common symptoms and course of the disease that could be used to plot progression and determine prognosis. From this investigation, Jellinek created a chart now referred to as the Jellinek curve that mapped out the progressive course of the disease of alcoholism symptom by symptom as determined from the interviews discussed above. The Jellinek curve (so named because of the U or V shaped curve of progression of symptoms on the chart) was also classified into progressive stages of severity in the disease based upon the progressively worsening symptoms, with the first stage referred to as prealcoholic, the second as prodromal, the third as crucial, and the fourth and last stage referred to as chronic alcoholism. The bottom of the curve (often colloquially referred to as rock bottom) leaves alcoholics with few options: imprisonment, insanity, death, or recovery (which then leads to the ascending side of the U or V shape as patients incur more recovery time and show symptom improvement).

Interestingly, Jellinek later revised his understanding of the disease of alcoholism in the 1960s, indicating that his research had suggested multiple presentations of alcoholism, rather than only one trajectory as first suggested in his curve. He subsequently described different typologies of alcoholism: alpha (psychological but not physical dependence), beta (chronic abuse that leads to health problems but may not include physical dependence), gamma (similar to the symptoms and course described in the curve), delta (similar to gamma but without loss of control), and epsilon (binge patterns). Jellinek considered gamma and delta alcoholism to operate under disease principles, but was less certain about whether the other typological categories did.

American Medical Association Defines Alcoholism as Disease

In 1954, the American Medical Association (AMA) publicly declared that alcoholism was a disease. This was a watershed event in the treatment of addictions and at the time was a radical, compassionate act that

paved the way for third party reimbursement for the treatment of addictive disorders. Before this declaration, addiction was mostly viewed as a moral problem by the general public and government policies treated those with addiction accordingly. The declaration of the AMA not only increased the likelihood of effective treatment services, but also reduced some of the stigma in seeking help for alcohol-related problems. The declaration also put into motion subsequent legislation that allowed for federal funds to be used to support treatment and eventually provided funding streams for researchers investigating addiction. Although some critics have suggested that the AMA declaration was made more out of professional self-interests than compassion, the declaration created the necessary conditions for addressing addiction as a health problem rather than a moral problem in the United States.

The declaration also contributed to the rise of the treatment industry in the United States. With the onset of third party reimbursement for treatment, many hospitals and agencies saw the possibility of treatment as a profitable business as well as providing a community health service. Health care entities with exclusive specialization in addiction treatment delivery were constituted. Today, the treatment industry remains a large force in health care delivery in the United States with literally thousands of treatment centers generating revenues in the billions of dollars.

Most treatment facilities today practice what has been referred to as the Minnesota Model of treatment. The name is derived from the pioneering work of treatment centers in the state of Minnesota, such as Hazelden and Johnson, which as industry leaders developed a unique integration of services incorporating ideas and principles from both the disease model and the Alcoholics Anonymous/Narcotics Anonymous spiritual-based recovery model to determine the nature of therapeutic process of treatment (discussion of disease allied with work on the 12 steps and participation in recovery groups). It is worth noting that this was an unusual merger of conceptual models in what amounted to treating a biomedical disease with a spiritual recovery program. Since the disease model views addiction as incurable, proponents were forced to look outside of medical care for help in treating the problem. The logical source for finding help would be the existing 12-step recovery programs, which at the time of the rise of treatment centers would have been the only high-profile programs with a track record of success for some people. Today the Minnesota Model of treatment continues to be the most widely practiced in the United States, and large high-profile institutions such as Hazelden and Betty Ford tend to mostly operate under disease model principles today.

It is important to keep the timing of the AMA declaration in historical context. National prohibition had been the law of the land only 20 years earlier. Although some

of the impetus for prohibition legislation was centered on health concerns related to drinking alcohol, most of the effort was because of concerns about national morality and the belief that alcoholism was contributing to the moral degradation of the United States. The United States has a rather unique history when it comes to public policies related to addiction, including its somewhat lengthy history of experimenting with national prohibition. This unique history also contributed to the preeminence of the disease model as the theoretical framework for the treatment industry in the United States. The disease model arguably arose as a reaction to the generally uncompassionate and widely professed moral model beliefs that viewed addictive behaviors as a sign of a significant moral flaw (often thought of as sin) in a person and viewed behavior change as a matter of personal choice and willpower. The disease model challenged those beliefs by describing addiction as a disease that contributed to loss of control. Loss of control meant a person had no choice in the matter of addictive processes and was in fact sick rather than fundamentally flawed.

Other nations outside the United States did not necessarily experience the same history, and therefore did not have the need to challenge a moral model belief system. Some have referred to the disease model as uniquely American and its use beyond the United States is not widespread. The disease model continues to be predominantly practiced in most treatment centers in the United States, although other recovery models have made inroads as science has demonstrated the efficacy of their treatment techniques (cognitive behavior therapy in particular).

A Disease of the Brain

In more recent years, the belief that addiction is a disease has evolved somewhat to reflect the growing body of research in genetics and neuroscience. There are many that believe that addiction may be genetically predetermined (running in families) and that genetic research has demonstrated that addiction is a disease with hereditary risk (like heart disease for example). Neuroscientists and neurobiologists have determined physiological mechanisms of addiction and how addiction specifically impacts brain function. The new empirical findings have led many to conclude that addiction is a disease of the brain. The advancement in understanding the biological processes related to addiction over the last decade or two has been nothing short of miraculous, and it is increasingly clear that complex physiological processes are involved in the development and maintenance of addictive behaviors. It also seems clear that people who may be at the highest risk for developing addictions often have family histories for addiction, suggesting genetic and biological predispositions for risk of onset.

However, as many scientists have noted, there seems to be a large gulf between where the science of the field is today and what is being delivered clinically to patients in treatment centers. With regard to the disease model, most treatment centers continue to operate under disease model assumptions that in some cases have evolved little since first formulated 70 years ago. In addition, much of the new information being discovered by neuroscientists and neurobiologists is not being incorporated into treatment protocols. The result is that the evolving brain disease model being discussed among researchers is generally significantly different and more sophisticated than the traditional disease model philosophy being transmitted by treatment centers to their patients.

STRENGTHS OF THE DISEASE MODEL

The many strengths of the disease model have contributed to the evolution of addiction research and treatment. First, the rise of the disease model allowed compassionate health care to be provided to patients with addictive behaviors and improved accessibility to treatment services. Second, the disease model acknowledges the importance of biological processes at work in addiction. Third, related to the second point, the disease model has contributed to an explosion of biomedical research related to understanding and treating addictive behaviors. And fourth, use of the modified disease model by patients in recovery has improved the quality of the lives of many people struggling with addictions. Perhaps, the greatest legacy of the model is that it has provided hope for many people, especially during a period of history when none existed. The disease model was a compassionate alternative when first proposed as compared to the moral model. Many success stories in treatment and recovery have been documented among people who sought treatment services in facilities that operate under the assumption that addiction is a physical disease.

CRITIQUE OF MODEL

One important critique concerning the original conceptualization of the disease model involves the methods by which the model was developed. Critics of the model have pointed out that the small studies Jellinek used to determine the symptoms and course of the disease of alcoholism were populated by people who were essentially outliers with severe addiction symptoms. Studies involving outliers would not necessarily be applicable to all people engaging in addictive behaviors. Another criticism is that the symptoms and trajectory of the disease were qualitative interpolations of

what research participants reported retrospectively rather than deduced by empirical means with use of prospective data and rigorous experimental methods. Another critique of the methods has been that since the symptoms and course were assessed in study participants retrospectively, there may have been errors in what research participants recalled. Especially given the severity of addiction in the study participants, where memory problems would be of concern, participants would likely be poor historians with regard to what symptoms were experienced when. As mentioned, Jellinek moved away from the original model later in his career with his research about different typologies, suggesting that he too had lacked faith in it. However, the Jellinek curve continues to be used by many disease model proponents in clinical settings even though it was developed for use 70 years ago.

Another critique comes from those who point out that not everyone has benefitted from Minnesota Model treatment based on the principles that addiction is a disease that contributes to powerlessness and unmanageability. As an example, there have been estimates that of the millions of patients who have received treatment for addictive behaviors, only a small proportion have membership in the 12-step recovery groups after treatment as recommended by Minnesota Model centers. Some research has demonstrated that certain groups, such as ethnic minorities and women, do not associate with 12-step recovery programs in the numbers that would be expected, and 12-step fellowship groups tend to be more heavily populated by men and European Americans in general. There is also evidence that people who do not view spirituality or religion as important are less likely to seek out the 12-step recovery programs. In addition to these groups that have difficulties with the 12-step recovery culture or philosophy, there are also people who do not view their own addictive processes as chronic or progressive, and may not accept that they are powerless. People with these views often are uncomfortable with the traditional Minnesota Model treatment and unlikely to seek out 12-step recovery. Some of those who have not benefitted from traditional Minnesota Model treatment have found help in therapy that uses other models of recovery (cognitive-behavioral, for example).

Research concerning the success of treatment for those who do seek traditional Minnesota Model services has yielded interesting results. To be certain, treatment works, but not often in the way that would be predicted by those who are proponents of a chronic progressive disease. Researchers have found that abstinence rates for patients after treatment tend to be modest, and for a number of years those findings contributed to some concern that treatment may not be as effective as professionals would like. However, when treatment outcomes were examined by including data about reduction in

addictive behaviors and improvement in quality of lives along with data concerning abstinence, the impact of treatment became clearer. It was discovered that many clients who graduate from traditional treatment programs that insist on abstinent goals were opting for reductions rather than abstinence and simultaneously reporting improvements in the quality of lives without abstinence. Treatment is indeed successful for many, if not most, of clients, but not in the manner predicted by the disease model. Critics of the disease model have concluded from these findings and other parallel research that patient's perspectives about their own addictive behaviors may be more important to consider rather than assuming the disease must be treated in a certain way in order for recovery to occur.

Relevant to these findings is new research on behaviors that have been typically labeled as denial. Research that contributed to development of Motivational Interviewing, an empirically supported intervention for addictive behaviors, revealed that what is often called denial/resistance in treatment was actually a function of interpersonal interactions between client and therapist. Researchers found that resistance and denial changed in a therapy session as a result of the type of strategies used by the therapist; increased confrontation led to increased coding of denial and resistance by behavioral observers, and denial/resistance would decrease when the therapist switched to a less confrontative style. Neuroscientists have investigated similarities between what was referred to as denial with neurocognitive impairment subsequent to addiction (memory problems, anosagnosia). Today, many researchers believe that what has been typically been referred to as denial, a term that has become arguably judgmental, would be better described as lack of trust in the interpersonal dynamic, lack of awareness of problems or the need to change, or perhaps indicative of a cognitive/perceptual problem.

Research on cravings has demonstrated how they can be triggered psychologically as well as physiologically. Scientists and clinicians alike had been baffled for years about why cravings would occur long after physiological withdrawal would be expected to have ended. It became increasingly clear that cravings also can be learned behaviors, classically conditioned and linked to specific cues in the environment that trigger the craving response. In addition, cravings also can be triggered by cognitions (thoughts, beliefs) such as positive outcome expectancies. The disease model has long conceived of cravings as the consequence of physiological processes, but substantial evidence now exists that cravings can occur independently of physiological processes and cravings can be effectively intervened upon by psychological means.

In addition, there is a substantial body of research that has demonstrated that loss of control may not

always occur among people with addictions. For example, scientists have determined that subgroups of people with addictive behaviors are able to mature out of the behaviors (young adults) as they age or are able to experience natural recovery without treatment (older adults). Some people who have met the criteria for substance dependence have been able to return to light or moderate engagement in the addictive behavior without demonstrating loss of control subsequently. Psychological studies, such as the one conducted by G. Alan Marlatt referred to as the balanced placebo drinking study, have demonstrated that people with alcohol dependence do not necessarily lose control of substance use when drinking alcohol, and that for some people loss of control may be more a function of beliefs about drinking circumstances than physiological responses. Different typologies of addiction may help to explain why some do not lose control or can regain control, but the empirical support for maturing out and natural recovery tends to dispute traditional assumptions inherent in the disease model.

Other research has demonstrated the potency of psychological and social/environmental factors on addictive processes in a way that would not necessarily be predicted for a biomedical condition. Psychological principles concerning reinforcement and cognitions have been found to be particularly effective in predicting not only subsequent addictive behaviors but also success in treatment. It is also known that interpersonal and environmental factors are associated with the risk for and predictive of the course of addictive behaviors. Like many other disorders, many researchers believe that addictive behaviors are thought to be best understood within the context of a biopsychosocial model that accounts not only for physiological processes such as genetics and the reward pathways of the brain, but also for psychological and social/environmental processes known to be associated with addiction. Belief in addiction as a brain disease must adequately account for the psychological functions inherent in the human brain as well as physiological processes.

The disease model tends to heavily focus on a biomedical approach to understanding and treating addictive behaviors in spite of the significant evidence that addictions are more appropriately understood as biopsychosocial processes. In defense of the biopsychosocial model, many professionals have noted how patients in disease model treatment have often been derailed in their recovery by psychosocial stressors, and in fact many Minnesota Model treatment centers have incorporated psychosocial interventions (often cognitive-behavioral such as relapse prevention) to accompany biomedical and 12-step interventions. Critics have suggested that the evolution of Minnesota Model treatment over time to

include psychosocial interventions indicates that biomedical and 12-step model provided insufficient means alone for addressing many of the psychosocial factors that impact addiction, and this is an evidence of the importance to view addiction from a biopsychosocial perspective.

One final note is that the disease model represents a Western view of medicine that does not necessarily match well to other world perspectives on medicine and illness. The disease model has not been widely accepted or practiced in areas of the world where other models of medicine and illness exist. The disease model also has not been widely accepted among immigrants to the United States from areas of the world who have different perspectives of medicine and illness than those posited in the disease model. The difference in beliefs regarding medicine and illness has in some instances created a mismatch between client worldviews in treatment and the model of the treatment provider providing care. In other instances, people with different views of medicine and illness will simply avoid the use of traditional treatment services, usually seeking out cultural relevant methods instead.

POSITIVE CONTRIBUTIONS OF THE MODEL

In spite of criticism, the original disease model represented a qualitative improvement over existing models when first described by Jellinek and others. Addiction was often viewed as a moral problem and therefore compassionate care was lacking. People with addiction were often sent to asylums or spent time in prison. Only after the advent of the disease model was there interest and means to treat people for their addictions in a health care setting. Addiction became a diagnosis rather than a moral problem, and research was stimulated to find treatments and cures. The disease model was radical when proposed: It represented a compassionate reconceptualization of addictive processes. Years of subsequent research have revealed that addictive processes are much more complex than initially realized, but without the first conceptualization of addiction as disease, that empirical inquiry likely would not have occurred.

The introduction of the disease model and subsequent declaration by the AMA in 1954 paved the way for third party reimbursement for treatment. The disease model not only made treatment possible, but also increased its accessibility to those in need. Without third party reimbursement for addictive disorders, the number of treatment centers in the United States would likely be greatly reduced in numbers and potentially even more expensive than found today.

SUMMARY AND FUTURE DIRECTIONS

The disease model was the first modern conceptualization of addictive behaviors. Because it was the first empirically derived model, its legacy is immense. Without the development and acceptance of the disease model, both clinical practice and research would look much different today, especially in the United States. As discussed, the model as traditionally conceived has its flaws and limitations. However, the disease model has stimulated many promising areas of inquiry into addictive behaviors, including in medicine, neurobiology, neuroscience, pharmacology, and the social sciences. The future of the disease model is difficult to determine. On the one hand, significant biomedical research gains have been made that support the strength of association between the brain and addictive processes. On the other hand, many supporters of the disease model have focused so intently on the biological processes of addiction that they have lost sight of the importance of psychological and social/environmental processes in understanding and treating addiction. It is difficult to conceive of a model effectively defining and treating addictive behaviors in the future that ignores its psychological, social, and environmental factors. It seems likely that treatment centers will continue to use pragmatic methods to improve care by cobbling together treatment techniques that are derived from many different models for understanding addiction, perhaps suggesting the disease model will evolve with the introduction of these new treatment ideas.

The gulf between how researchers define addiction as disease and how practitioners define addiction as disease is immense and presents the greatest challenge. At all but a very few select treatment centers, the disease that is discussed is derived from information largely out of date. In addition, a substantial amount of what is practiced in many traditional Minnesota Model treatment centers today has not been empirically validated as effective or demonstrated to be best practice. The greatest challenge for disease model proponents in the future will be to bridge the gap between science and practice in a way that greatly accelerates the benefits that patients receive as the result of new scientific discoveries.

SEE ALSO

The Biopsychosocial Model of Addiction, Cognitive Factors in Addictive Processes, Denial and Lack of Awareness in Substance Dependence: Insights from the Neuropsychology of Addiction, Contextual Factors in Addiction, Historical Understandings of Addiction, Maturing Out, Natural Recovery

List of Abbreviations

- AA** Alcoholics Anonymous
AMA American Medical Association
NA Narcotics Anonymous

Glossary

- Alcoholism** colloquial term often used with disease model to describe alcohol dependence.
- Controlled drinking** the ability of some people to return to some use of alcohol use without loss of control after being diagnosed with alcohol dependence.
- Biomedical model** belief that disorders like addictions have their root causes in biological mechanisms and that the best treatment for such disorders is medical.
- Compulsion** an irresistible physiological impulse to engage in the addictive behavior and contributes to loss of control
- Denial** originally a defense mechanism in Freud's model, it has been widely used to describe when patients refuse to acknowledge powerlessness over addiction over take action to change their behavior.
- Disease model** model that posits that substance abuse operates under biomedical principles and is a chronic and progressive disease with prescribed symptoms and predictable course.
- Genetic predisposition** belief that a person will be at increased risk for addiction because of genetic loading.
- Natural recovery** many people are able to spontaneously recover from addictions without treatment or therapy.
- Powerlessness (loss of control)** concept originally derived from the first of 12 steps of Alcoholics Anonymous; the belief that addictions contribute to complete loss of control of the behavior that leads to unmanageable lives.

Relevant Websites

- <http://www.aa.org/> – Alcoholics Anonymous.
<http://www.bettyfordcenter.org/> – Betty Ford Center.
<http://www.hazelden.org/> – Hazelden Treatment Center.
<http://www.tgorski.com/> – Terence Gorski Web Site.

Further Reading

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