Substance Use and Abuse

Key Points

- People can become addicted not only to chemicals introduced from outside the body (e.g., tobacco, alcohol), but also due to neurotransmitters secreted in the brain in response to a particular stimulus (e.g., gambling, sex)

- Generally, something may be classified as an "addiction," rather than a habit, if the following three elements are present: 1) Negative consequences, 2) loss of control, and 3) loss of judgment.

- Every addiction has both psychological and physiologic components.

- The cycle of compulsive behavior includes the following steps: 1) Sense of discontent, 2) actions of self-indulgence, and 3) loss of self-worth (which leads to a greater sense of discontent, etc.).

- Marijuana and other cannabis products, while not the most serious illegal drugs out there, tend to be used in combination with other illegal drugs and/or with heavy tobacco and alcohol use. Marijuana has negative effects and can cause damage to the brain, respiratory system, and impaired fetal growth in pregnant women.

- As of the last report, Missouri has a higher percentage of smokers than any other state except Kentucky. Tobacco is highly addictive in all forms, and smoking has been linked to a much higher incidence of cancer, cardiovascular disease, all many other health problems.

- The earlier in life a smoker quits smoking, the better off they are going to be. Nicotine replacement therapy (under physician supervision) may help ease a smoker from the addictive effects of nicotine. Behavior changes are almost always necessary in order to quit smoking, often requiring changing not only patterns of behavior, but social contacts, as well.
Define the following terms:
- drug
- psychoactive drug
- intoxication
- addictive behavior
- substance abuse
- physical dependence
- substance dependence
- tolerance
- withdrawal
- nicotine
- environmental tobacco smoke (ETS)
- mainstream smoke
- sidestream smoke
- ectopic pregnancy

What are the negative effects of marijuana and other cannabis products?
What characteristics are associated with higher-than-average and lower-than-average risk for trying illegal drugs?
What are the effects of environmental tobacco smoke?
What are the aggravated effects of environmental tobacco smoke upon children?
What are the effects of smoking during pregnancy?
How do the health risks of smokeless tobacco compare against cigarettes?
What is "codependency" to someone with a drug problem?

Supplemental Knowledge

When we think of substance abuse, we tend to associate only with the use of illegal drugs, or perhaps to include the "last legal drug," alcohol. In truth, illegal (or legal) drugs can cause severe health consequences. Commonly abused drugs fall into the following categories:

- Opiates
  - opium, heroin, morphine, codeine
- CNS depressants
  - alcohol, barbiturates, quaaludes, valium
- CNS stimulants
  - amphetamines, cocaine, nicotine, caffeine
- Psychedelics & deliriants
  - LSD, PCP, inhalants, mescaline (a.k.a., Peyote cactus, I checked)
- Marijuana (cannabis)

Drug abuse, not counting alcohol and marijuana, while present at Truman State University, is not present in large numbers. On the other hand, many people here...
struggle with severe addictions – as I will describe addiction – and all of us can at least relate to the pathway by which one becomes addicted. What is the difference between an addiction and a bad habit? That is the standard line, you know, when someone is drinking too much, smoking, using marijuana, starving themselves, gambling to excess, etc. People say, "I'm not addicted, I can quit any time I want to." Unfortunately, impaired judgment is one of the hallmarks of addiction, such that the person addicted usually does not realize how far the situation has gotten out of hand. Sometimes it takes a concerned friend or family member to point out the obvious and lead them back to healthy behavior.

In general, for something to be considered an addiction, it shows three elements. First there are negative consequences to the behavior. A person may wear a bow tie or always carry a purse, a little quirk of personality, but such a thing doesn't normally have negative consequences. A person who gambles $20 away on one weekend in Atlantic City isn't facing negative consequences – at least not the way someone who has taken out a second mortgage on their house to buy lottery tickets is.

The negative consequences associated with alcohol abuse, disordered eating, high-risk sports, foolish relationships, or too much time at the office may be obvious, but a single incident doesn't normally qualify someone as addicted. For an addiction to be present there must be a loss of control; the person has difficulty keeping away from the destructive behavior. For this reason a single night of drunkenness – while very foolish – does not make one an alcoholic, even if there are severe negative consequences, such as drunk driving or unprotected sex. On the other hand, if someone is drunk every weekend, even if they lock themselves in their apartment, away from cars and away from people, they have a problem with alcohol.

The final aspect of an addiction is probably the most difficult to deal with, and that is a loss of judgment. An addict cannot tell they are addicted, almost by definition. The alcoholic almost always says, "I don't drink that much." The smoker almost always says, "I can quit any time." The gambling addict almost always says, "I've got a sure thing." The romance/sex addict insists, "But I really love him (or her)."

All addictions seem to have both psychological and physiologic components, although one side of the equation is usually dominant. The smoker has a severe physiological addiction to nicotine; some say the body becomes addicted by the third cigarette. But there is also a psychological addiction, a sense that such behavior is seen as suave or sophisticated, perhaps it is thought to add to a tough or rebellious image, perhaps it is just something to do to keep one's hands occupied. In any case, "kicking the habit" is most likely to be successful when both the psychological and the physiological aspects are considered.

By contrast, other behaviors seem to have a strong psychological component, but the physiologic component is hidden. Someone who regularly takes extreme physical risks has a psychological addiction to this behavior, but they may discount the physiological component since they are not introducing any foreign chemicals into their body. In actual fact, the body releases hormones and neurotransmitters in response to certain situations, and a person can become addicted to their own response. For that reason, those who take extreme physical risks are often called "adrenaline junkies" (adrenaline is the British name for epinephrine, one of the hormones we talked about in the lecture on stress). Epinephrine is also the likely physiologic addiction in the
compulsive gambler or the compulsive shopper, while the endorphins released in hard work may be the physiologic addiction for someone addicted to exercise. As we have discussed, the body has certain neurotransmitters and hormones associated with "being in love" and with sexual expression, forming a physiologic link to romance and sex addictions.

Compulsive behavior also tends to follow a certain cycle. First, the person experiences a sense of discontent, as we all do. They may be frustrated, angry, lonely, tired, depressed, whatever, but this sense of feeling bad causes them to take some action that will make them feel good. As we all know, actions taken to feel better can have both positive and negative consequences – if someone goes for a walk in the garden, that's good; if someone takes a snort of cocaine, that's bad. In any case, the second step in the cycle of compulsive behavior is to engage in an action of self-indulgence. These actions can take many forms, from drinking alcohol, smoking marijuana, or using other illegal drugs to something more complicated, such as finding the nearest person who might pass as a romantic partner, or eating more than one should, or starving oneself, if that behavior gives the individual a sense of satisfaction. It could be a trip to a gambling casino, or viewing pornography, or loading up the credit card on a shopping spree. All of these things are self-indulgent and potentially highly addictive. The final step in the compulsive cycle is a natural consequence of the behavior – we experience a loss of self-worth. It is the "morning after" syndrome, when you have to look in the mirror and find that, not only has the original problem not gone away, you also experience a sense of disgust for having engaged in the self-indulgent behavior. By engaging in the self-indulgent behavior you felt better for a while, but ultimately you feel worse – a heightened sense of discontent – which tends to lead you back towards the same (or another) form of self-indulgence in a desperate (and perpetual) attempt to feel better.

Types of addictions include the following; see if you can identify the psychological and physiologic components present:

Substance abuse
  Drugs, alcohol, tobacco
Disordered eating
  overeating, anorexia, bulimia
Performance addictions
  exercise, "workaholic"
Emotional addictions
  gambling, shopping, romance, danger

A very common addiction in our society is addiction to nicotine contained in tobacco products. According to the last report from the state government, Missouri had the second-highest smoking rate in the nation, second only to Kentucky. Obviously, this is a health concern that must be addressed by the citizens of the state, and it raises some interesting questions. Tobacco smoke contains the following elements:

  Tar – carcinogens (cancer-causing substances) mixed with the moisture in the lungs, resulting in a sticky, black lining on the membranes of the lungs.
Nicotine – a powerful stimulant cardiac stimulant, highly addictive, which causes an increased workload upon the heart. Nicotine also seems to cause a decrease in HDL cholesterol (the good cholesterol) and increase endothelial injury to the inner artery walls, increasing the rate of arteriosclerosis (coronary artery disease).

Carbon monoxide – a poison created by burning carbon-based products; it binds to hemoglobin with an affinity 240 times greater than oxygen, effectively destroying the oxygen carrying capacity of the red blood cell. This decrease in oxygen availability results in a further increase in the workload of the heart.

Tobacco also increases risk during pregnancy (e.g., low birth-weight babies, higher rate of birth defects, etc.)

Most smokers would like to quit smoking, but the drug delivery system (smoking) is highly efficient, and the effects of nicotine withdrawal are unpleasant. Nicotine withdrawal tends to be the worst in the first 72 hours, but it may peak again about 10 days after quitting smoking. Eighty percent of smokers fail to quit on their first attempt, but for those who persist the success rate is encouraging. Normally nicotine replacement therapy is recommended for those smoking a pack a day or more, but this is a matter for physician approval.

Quitting usually requires a change in behavior, as well. Most people who quit smoking experience a small weight gain, usually about 5 pounds, but this temporary weight gain is well worth the long-term benefit. Smokers should plan on "falling off the wagon" and be ready to get right back on (relapse prevention), but a potentially more difficult step is the need to avoid other smokers to prevent yourself from taking up the habit again.