ALCOHOLIC BLACKOUTS

Blackouts from the acute ingestion of alcohol are defined as the inability to recall events that occur during the drinking episode. What have we learned since alcohol researcher E.M. Jellinek published the first papers on blackouts in 1946?¹ It is important to note that Jellinek’s research served as the basis for the 1952 Disease Model of Alcoholism, which included as primary diagnostic criteria: binge drinking, loss of control, and alcohol-induced blackouts. Subsequent research by Goodwin and Ryback in the late 60’s and early 70’s added further information about alcoholic blackouts: greater tendency to gulp drinks, loss of control when drinking, binge drinking, ability to drink at least a fifth of liquor daily, additional use of illicit drugs, and history of head trauma.²

One misconception has crept into the field where “blackout” may be confused with “passing out” or losing consciousness while the phenomenon is specifically a memory-forming dysfunction. And blackouts are a dreadfully common phenomenon as well as a red flag for modifiable behavior along with many other attendant risk factors that may heighten or decrease the morbidity of alcohol use.

One of the observed paradoxes is perfectly coordinated physical behaviors during a blackout. Common accompaniments are fighting, casual unprotected sexual experiences, and arrests – all with recall difficulty. These episodes frequently have attendant feelings of dread or apprehension.³

The early studies demonstrated that large quantities of alcohol in and of itself were not sufficient to induce blackouts. However, gulping and drinking on an empty stomach were both highly correlated with the development of a blackout. Thus, the rate of alcohol ingestion and absorption were discovered to be key factors. Also the retention of memory not the registration of an event was identified as the key memory defect. Blackout memory has a threshold characteristic or a tipping point, rather than building up gradually, with the more the drinking, the bigger or worse the blackout. Additionally, there is no connection with sober memory capacity or cognitive difficulty.⁴

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Goodwin, in 1970, identified two types of alcohol-induced blackout: “en bloc” with a defined start and stop period commonly accompanied by a feeling of “lost time” and apprehension, and a total inability to recall. The drinker is able to carry on complex behavior such as driving an automobile, having a conversation, engaging in sex, etc. The more common form is “fragmentary” blackout where the drinker may recall the incident spontaneously or with efforts from others to cue recall. The en bloc form generally occurs with higher blood alcohol levels or concentrations (BAC), while the fragmentary form occurs over a wide range of BAC.

Much of the modern epidemiology studies have been focused on college students, with alarming findings: 70% of students drank alcohol at least once a month and as any as 40% of the drinkers had a blackout in the previous year.\(^5\)

Men and women drank at the same rate and had a similar rate of blackouts; but males drank more frequently and had larger quantities. Fragmentary blackouts occur about three times as often as the en bloc variety.

**Risk Factors:**
Several factors have strong influence on unhealthy drinking habits. The peer group influences the age of starting to drink and any ensuing unhealthy drinking patterns. There is a strong correlation between the number of alcoholic relatives, age of drinking onset, ability to control alcohol consumption and frequency of blackouts. One study in 2002 found a positive correlation between blackout likelihood and having three or more drinks per session at 16 years old or younger.

Some additional risk factors include: malnutrition, fatigue, insomnia, stress, pattern of loss of control, drinking on an empty stomach and head trauma.

Polysubstance abuse correlates more strongly with en bloc blackouts than the fragmentary variety. The most common drugs associated with alcohol memory impairment are benzodiazepines and marijuana, with a synergistic worsening from both drugs together than with either one alone. Frequency of blackouts and problem drinking has been positively correlated with childhood sexual abuse among college-age females.\(^6\)

In general, women are exposed to a much greater risk of blackouts at a lower level of drinking than men. Women with blackouts on average consume about half the number of drinks per occasion than the men. Another factor, a physiological one, is important to keep in mind regarding female drinkers and blackouts. Alcohol is rapidly absorbed from the small intestine and goes to the liver where it is primarily metabolized. This process, called “first-pass metabolism,” is rate-limited; so, when the amount of alcohol consumed exceeds the liver’s capacity, alcohol spills directly into the circulatory system and crosses the blood-brain barrier. Additionally, since alcohol is water-soluble and women have proportionally more body fat and

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less water per equivalent BMI, then women will reach a BAC faster than men at the same drinking level.

Modern research focuses on memory and cognitive dysfunction as mediated by the brain hippocampus, with special focus on neurotransmitters, GABA, NMDA and glutamate.\textsuperscript{7} Clinical studies involve cognitive behavioral therapy that helps to restore mature decision-making especially concerning drugs and alcohol, and aids in the understanding of the role of stress and triggers. Motivational enhancement therapy is based on Stages of Change Theory and helps support the alcoholic on his road to recovery.

**Summary:**
EM Jellinek came to an incorrect conclusion that blackouts were a predictor of future alcoholism. Goodwin, on the other hand with later research, concluded that early blackouts were not an early prodrome of alcoholism and had little prognostic importance. Additionally, memory problems from alcohol are usually found midway or late in the course of alcoholism. One very interesting study of young blackout drinkers, age 19 to 26, found a 68\% remission of pathological drinking four years later. The ones who continued blackout drinking were primarily male, unmarried, younger, and of lower socioeconomic status.\textsuperscript{8}

The manifestation of blackouts appears to be more closely related to the pattern of drinking and age of onset. Early onset of problem drinking, drinking to intoxication, gulping drinks, and drinking alone are associated with a history of multiple blackouts.\textsuperscript{9}

Blackouts are not the inevitable consequence of heavy drinking, however, as a large proportion of alcoholics report never having a blackout.

**References:**


9. Rose ME, Grant JE. Alcohol-Induced Blackout: Phenomenology, Biological Basis, and Gender Differences. *J Addict Med*. 2010; 4 (2) 61-73