



Innovative alcohol use: Assessing the prevalence of alcohol without liquid and other non-oral routes of alcohol administration

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ABSTRACT

Background: Though case studies, media reports, and anecdotal evidence point to creative forms of alcohol use such as “eyeballing,” inhalation through vaporizers and other “alcohol without liquid” (AWOL) devices, and “slimming” as a growing trend, no empirical study has assessed the veracity of these claims. The present study attempts to debunk, confirm, or alter the popular perception that young adults are administering alcohol in novel ways.

Methods: A self-report paper survey was administered to 2349 young adults selected for inclusion using a stratified random sampling technique. Respondents were asked to indicate all of the ways in which they had administered alcohol and presented options ranging from traditional oral consumption from a cup, can, or bottle to innovative techniques referenced by medical reports and news outlets. The prevalence of each form of innovative use was reported and explored.

Results: Innovative alcohol use was very rare in the sample. Only 25 of 2349 participants (1.1%) had engaged in one or more of the creative methods of alcohol consumption. Among these individuals, most reported either using an AWOL device and/or administering alcohol anally. Vaginal administration and “eyeballing” were only reported by three and one respondents, respectively.

Conclusions: It appears that innovative alcohol use is more than an urban legend but that innovative use, even among a population with high rates of alcohol and drug use, is rare. Regardless, physicians and emergency medical personnel need to be aware of and prepared for dealing with innovative alcohol use.

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1. Introduction

Media reports (e.g., Hickman, 2012), published case studies (e.g., Mahdi and McBride, 1999), and anecdotal evidence accumulated by investigative journalists (e.g., Sifferlin, 2013) suggest that individuals are utilizing innovative methods to consume alcohol. These sources often suggest that novel forms of alcohol administration are becoming increasingly common among young adults. Recently described, but not necessarily verified, innovative methods for alcohol consumption include “smoking” aerosolized alcohol (Sifferlin, 2013) and ocular (Davies, 2010), trans-vaginal (Wakeman, 2013),

and rectal administration (Brill, 2011). Anecdotal reports suggest innovative use originated as a result of desires to achieve inebriation more quickly, experience a more intense intoxication, avoid consuming calories and carbohydrates (Miller, 2013; Sifferlin, 2013), and/or avoid alcohol detection on the breath (Wakeman, 2013). However, the majority of accounts reporting innovative alcohol consumption are short media stories and brief investigative journalist reports. These accounts primarily discuss the perceived widespread use of these techniques and the method-specific dangers. Research has yet to assess whether these innovative forms of alcohol use are merely urban legends, utilized by only a small group of heavy drinkers and drug users, or if they hold a substantial place within the alcohol-consuming culture.

One major form of innovative alcohol use is often inaccurately referred to as “smoking” or “vaporizing” alcohol (Sifferlin, 2013). This form of administration, more appropriately labeled alcohol without liquid (AWOL), often involves a nebulizer. These devices,

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first marketed as “alcohol vaporizers” around 2004, mix alcohol with oxygen to create a mist (Lovell, 2004). Users may directly inhale the mist or do so using a straw or other funneling apparatus. In the United States, half of jurisdictions banned nebulizer-type AWOL devices following initial news stories about the threat of inhaled alcohol (e.g., Lovell, 2004). AWOL devices quickly fell out of the media spotlight after this initial attention and legislative action (Sifferlin, 2013), but it is unknown whether AWOL use continued either illegally in the states with restrictions or legally in states without bans. In lieu of an AWOL device, some individuals pour(ed) alcohol over dry ice to vaporize it for inhalation (called “smoking” or “freebasing” alcohol; Miller, 2013). Years later, new devices, such as the Vaportini, became available and successfully sidestepped regulation. Instead of dry ice, these AWOL devices use heat to vaporize the alcohol and are currently available throughout the United States online, at tobacco or “head” shops, and at novelty stores (Dees, 2013; Nye, 2013). Online shoppers may legally purchase these devices through outlets such as Amazon.com (for approximately \$50) or through manufacturers which promise delivery through the United States Postal Service. While these newer devices may be accurately referred to as vaporizers, the AWOL term encompasses all forms of alcohol inhalation including the nebulizer-type devices still legal in some states.

Absorptions through various membranes and orifices are other reported innovative consumption methods. Rectal administration may involve devices similar to beer bong, basting tools, or syringes (sans needles) that funnel or force alcohol into the anus. This practice has been referred to by the media as “butt chugging” or a “beer enema” (Associated Press, 2012; Erwin, 2011). “Slimming” is another form of rectal administration reported by the media and involves inserting an alcohol-soaked tampon into the anus (Lovett and McNiff, 2012). This mechanism may also be used for vaginal administration, which has been referred to as a “vodka tampon” or, again, “slimming.” “Eyeballing” consists of dousing the eyeball with alcohol, using an eye-dropper to place a small quantity of liquid on the eye or covering the eye with the opening of alcohol container and then inverting the container over the eye (Huffington Post, 2011).

While socially accepted, traditional alcohol consumption contributes to more than 80,000 deaths and \$223.5 billion in damages in the United States annually (Centers for Disease Control and Prevention, 2013) with young adults and college students being at particularly high risk for alcohol-related traumatic injuries (Hingson et al., 2002). Innovative methods of alcohol consumption may yield even greater dangers and risks not associated with oral consumption. In traditional consumption, the first-pass metabolism reduces the portion of the consumed alcohol that reaches the blood stream and brain (Julkunen et al., 1985; Lieber et al., 1994); innovative methods bypass this mechanism, resulting in larger portions of alcohol reaching the bloodstream. Non-traditional consumption methods may also allow alcohol to be absorbed more quickly as they avoid physical delays to reaching the bloodstream (De Boer et al., 1982; Enna and Schanker, 1972). Additionally, because these innovative methods do not direct alcohol to the stomach, the body is no longer able to rely on its autonomic safety mechanism, vomiting, to expel toxins in an effort to avoid alcohol overdose. The combination of the aforementioned factors can more easily result in alcohol overdose at which point the lack of experience and training among emergency medical practitioners in dealing with less standard forms of alcohol consumption further complicates the issue. Additionally, as alcohol can be caustic, non-traditional use may cause acute or even chronic tissue damage on or around the administration site (e.g., lung, eye, anal, and vaginal tissue; Bosmia et al., 2013). Accordingly, the American Academy of Ophthalmology (2010) has condemned the practice of “eyeballing” alcohol due to its potential to destroy the cornea,

deteriorate eyesight, and/or cause constant watering, pain, and/or blindness.

Given the severity and scope of innovative alcohol use's potential harms and general curiosity that surrounds it, the topic has received considerable media and political attention. As previously mentioned, a decade ago, sensationalized concerns (e.g., Lovell, 2004) prompted lawmakers in 25 states to take action against the manufacture and sales of existing AWOL devices. Recently, an investigative journalist (Sifferlin, 2013) suggested that AWOL is becoming increasingly common among calorie-conscious Americans; however, no peer-reviewed study has quantified its prevalence. An English news outlet reported “eyeballing” and identified painful consequences of repeatedly “eyeballing” shots of vodka (Davies, 2010). A plethora of stories from major reputable print and television news agencies in the United States and Britain have noted the practices of anal and vaginal administration, referring to these behaviors as “alarming,” having “continuing popularity” (Falzone, 2013), and as the “latest trend in fast highs” (Dees, 2013). A major television network affiliate even reported “vodka soaked tampons are everywhere” (Erwin, 2011), while another report claimed that they were “gaining popularity” among both men and women as a means to discreetly become intoxicated (Brill, 2011).

One of the reasons that reputable media outlets such as The New York Times, TIME, ABC News, Fox News, Forbes, and USA Today have followed and reported on dangers of what the media labels as the “latest drinking craze” (Wakeman, 2013) is the public interest these stories receive. Sensationalistic headlines introducing the next “scary drug of the year” are typically well read and received by the general public even if no significant threat exists (see Akers, 1992, p. 42). These reports need not even be accurate to accumulate the readers, viewers, and online “hits” that fuel advertising revenue. For example, Dahl's (2012) speculation that Rudy Eugene may have been under the influence of “bath salts” during his cannibalistic attack on Ronald Poppo in Miami continues to be read online despite the medical examiner's report denying any traces of the substance in his system (Hiaasen and Green, 2012). Reports suggesting that an emerging drug has gained widespread use may be problematic in that they can lead young people to believe its use is somewhat normative. A recent study indicated that a majority of young people overestimated the prevalence of synthetic cannabinoid, “bath salt,” and *Salvia divinorum* use among their peers (Sanders et al., 2013). Similarly, Miller et al. (2013, p. 65) noted that perceptual inaccuracies “may be amplified [for newer forms of drug use] because there is little opportunity for a respondent to notice that a peer is using the substance.” Though these studies stopped short of demonstrating that these overestimations actually increased the likelihood of use, it is reasonable to be concerned that similar misperceptions may exist for innovative alcohol use and may affect use decisions.

Despite the aforementioned media coverage devoted to alcohol innovation, it is currently unclear whether these reports are motivated by a genuine threat to public health and safety because no empirical studies have been conducted to support purported claims of increasing and problematic usage. Instead, many news agencies (e.g., Huffington Post, 2011; Somaiya, 2010) cite second hand accounts and YouTube and Facebook videos and entries as evidence of a growing trend of innovative alcohol use. The true prevalence of innovative consumption methods, described by the media as rampant, is still unknown. The present study is the first to attempt to ascertain whether innovative methods are being used within a group reporting high rates of substance use. Using a retrospective self-report survey addressing alcohol use and alcohol-related behavior, this study attempts to debunk, confirm, or alter the popular perception that young adults are administering alcohol in non-traditional ways.

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