

The Double Edged Drug: Is Widespread Alcohol Use Crucial to the Development and Functioning of Modern, Democratic, and Peaceful Courting Societies?

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Abstract

Despite legal alcohol being consumed by the great majority in most nations, there is surprisingly little research regarding the grand impact of its use on societies, and even less on its nonuse by persons and cultures. Correlations find significant relationships between levels of alcohol consumption, gender equality, and sociopolitical conditions, with the latter two being the best when alcohol intake is moderately high. Experimentation and observation have shown that alcohol is an effective social lubricant, especially in situations regarding courting and initial sexual encounters. It is proposed that widespread use of legal alcohol is an important prerequisite for the courting cultures that has to be present for women to enjoy the socio sexual freedom that is necessary for the development of the advanced democratic politics that in turn generate the highest levels of socioeconomic prosperity and security. Societies that ban alcohol are correspondingly apparently unable to achieve gender equality, full democracy, and prosperity, and the common Islamic religious prohibition may be a critical factor in the difficulty of Muslim nations in achieving sociopolitical modernity. Nonuse can also adversely impact individuals by hindering their ability to socialize, including sexually, although nonuse also has it positives. Excessive use of alcohol is also detrimental on a national scale, although not as much as is nonuse.

Keywords: alcohol, ethanol, legal, prohibition, gender equality, sexual activity, socioeconomics, democracy, Islam.

1. Introduction

The great majority of human beings ingest ethanol alcohol to the extent that it alters their brain function to a greater or lesser degree on at least a fairly regular basis (Barker and Church, 2000; Plant and Cameron, 2000; Houghton and Roche, 2001; Babor et al. 2010; Hames, 2012; Boyle et al., 2013; Chrzan, 2013). Commonly practiced for millennia (Hames 2012; Hayden et al. 2012), alcohol use is part of the human norm. It is remarkable that humans long ago discovered how to generally successfully use a potent mind altering drug without scientific testing of efficacy or safety.

On the other hand, some societies have enacted bans on the use of alcohol, the population currently living under legal or religious prohibitions being over a quarter of the adult global population. 1 Yet, despite the massive use of an intoxicating psychoactive drug, and perhaps because its use has been grand fathered into most of today's societies, there has been, when one considers it, strikingly and rather scandalously little scientific consideration of the impact of the normal use of alcohol on the grand course of human civilization; a notable exception being growing evidence that alcohol was instrumental to the development of early agriculture based civilization (Hayden et al. 2012). The general assumption appears to be that if alcohol did not exist then we would be living in societies little different from what we are dwelling within, in which case alcohol has not been critical to the development of societal modernity. The great bulk of research concerning human ingestion of alcohol investigates the serious problems associated with one extreme of alcohol use, overuse.

This is understandable to the degree that alcohol abuse appears to be the third leading cause of premature death in 1st world nations such as the USA, after tobacco use and excessive food consumption, leading to the early deaths of up to 100,000 Americans each year where the recent rise of death rates in certain portions of the population may be partly attributable to increasing ethanol intake, and contributes to other societal ills including nonlethal physical illness and injuries, mental degradation with age, lower worker productivity, and criminal acts including sexual assault (Temple and Leigh, 1993; Temple et al., 1993; Halpernfeldsher et al. 1996; Barker and Church, 2000; Jones et al., 2003; Brown and Vanable, 2007; Fillmore et al., 2007; O'Keefe et al., 2007; Boyle et al. 2013; Chrzan, 2013; Sabia et al. 2014; NIH, 2015; Connor 2016; Kindy and Keating, 2016). It needs to be noted, however, that severe effects of long-term overuse afflicts only a few percent of drinkers (Leigh, 1990; Temple and Leigh, 1993; Temple et al., 1993; Cooper and Orcutt, 1997; Thun et al. 1997; Barker and Church, 2000; Plant and Cameroon, 2000; Houghton and Roche, 2001; Jones et al. 2003; Engels et al. 2005; Babor et al., 2010; Brown and Vanable, 2007; Boyle et al., 2013; Esser et al., 2014).² Research into the positive effects of responsible alcohol utilization are much more limited, but indicate that alcohol has significant positive benefits for drinkers in normal social and sexual settings (Houghton and Roche, 2001; Sayette et al., 2012; Ritson and Thorley, 2000). Also potentially beneficial are possible improved levels of physical and mental health generated by a moderate level of alcohol consumption, ~5 liters per year per person without binge drinking, which may save 20,000 Americans from premature death per year, although these connections have not been firmly established via clinical trials (Peele and Brodsky 2000; Ganguli et al. 2005; Fillmore et al., 2007; O'Keefe et al., 2007; NIH, 2015; and any alcohol use may be increased risk of cancers according to Connor, 2016: for a useful summary of the pros and cons of alcohol use and the frequent softness of the supporting data see Thomson 2016).

Not being researched to any significant degree are the benefits and especially the dysfunctions that may come with the other extreme of alcohol use, near or total abstinence, among both life teetotalers, and among those recovering from overuse. As a result nondrinkers are being left without coping strategies to better deal with any adverse effects of nonuse. Also not explored and understood are the effects of abstinence on a societal basis. The lack of investigation of nonuse of alcohol on individual and societal bases constitutes a significant scientific scandal.

An issue that will be shown to be potentially related to alcohol use is the level of gender equality in societies. It is well documented that higher levels of gender equality are correlated with the superior overall societal and economic conditions associated with modernity (Fig. 1; Elborgh-Woytek et al., 2013; Paul, 2012).

This review of the available data extends the hypothesis that large scale alcohol consumption was critical to the evolution of civilization, to indicate that civilizations can only become democratic and prosperous when the drug is legal and widely used, and that banning alcohol dooms societies to being obsolete patriarchies susceptible to hyperviolence.

Methods and Results

At one extreme of the possibilities is that, despite being a potent psychoactive drug used by billions over history and currently, alcohol has had a very limited fundamental impact on the course of human development and conditions. At the other extreme is the possibility that alcohol has played a key role in making the modern world. In order to begin to quantitatively assess the impact of alcohol on extant societies a number of factors were correlated on a cross-national basis for the first time. These are societal success and dysfunction as measured by the Inequality Adjusted Human Development Index, per capita income, gender equality and the level of democracy as functions of total (legal plus illegal) annual per capita ethanol alcohol use per in large samples of nations (Fig. 1, Table 1). Note that the boosting of the economies of some Islamic nations by large oil revenues may artificially improve their performance over what it would be otherwise.

Although there is considerable variation at most levels of use, more societal success correlates strongly with greater alcohol use, the correlation value being 0.6 when all nations are included. Only one nation with low alcohol utilization is a socioeconomically highly successful first world country, that being small and atypical Israel – note that the small population of Israel somewhat skews the general correlations away from higher correlations. In countries where yearly alcohol use is under ~ 6 liters, per capita societal success ranges from marginally modest to very poor.

This dysfunctional category includes all Islamic examples, even those with large oil revenues, but their removal does not alter the correlation because it remains virtually unchanged, so the relationship between alcohol and societal function is broad based rather than predominantly religious. 3 All countries where yearly alcohol use is over ~11 liters per capita are at least moderately successful. The highest levels of success, including that seen in the best off first world countries, are seen among countries with consumption levels of 6 to 13 liters, indicating that moderation produces the best results. However, even those nations imbibing over 13 liters per capita in a year, Russia and other former eastern bloc countries of middle level development, never perform as poorly as do many most nations under 6 liters.

These large scale patterns are in broad accord with moderate levels of alcohol consumption at the individual level being superior to either abstinence or to a lesser degree high intake at producing optimal levels of health, lifespan and other functions among individuals (Thun et al. 1997; Barker and Church, 2000; Houghton and Roche, 2001; Plant and Cameron, 2000; Babor et al., 2010; Boyle et al., 2013; Esser et al., 2014). That said, it is interesting that the overall yearly per capita consumption rates in the best off nations tend to be markedly higher than the general recommendation that individuals limit annual consumption to ~5 liters, this may be because the small percentage of over drinkers skew the national averages to misleadingly a higher level. Note that among western nations the US is rather low in consumption rates, with over two thirds using alcohol (Saad 2012), an unusually low level in a prosperous democracy. A large portion of American abstainers are dry for religious purposes, so levels of drinking among nonreligious seculars are probably well over three quarters. Also important is that alcohol consumption tends to be substantially higher in men than in women in most or all countries, and is highest among young adults (Temple and Leigh, 1993; Temple et al., 1993; Barker and Church, 2000; Houghton and Roche, 2001; Brown and Vanable, 2007, Saad 2012).

A potential cause for the correspondence between less alcohol utilization and inferior socioeconomic conditions is that those living in financial distress are less able to afford the alcohol. However, the correlation between these dynamics is a weak ~0.3 when all nations are included, although the value rises to 4.6 when Islamic countries are dropped. Further reducing the significance of the income/alcohol correlation is extreme variation in the former relative to most given levels of consumption, the exception being that the highest levels of the latter always occur in nations with modest or low income. Impoverished alcoholics often achieve high levels of ingestion. Intake was often extremely high, sometimes higher than currently, in some western nations in historical times when general incomes were a fraction of today's levels (Hames 2012). It is concluded that variations in income do not adequately explain the link between more alcohol and better cumulative societal conditions, although the factor apparently plays a larger role outside the Islamic world.

There is a significant, intriguing, and potentially critical correspondence between greater alcohol use and higher levels of gender equality, the value being ~0.6 when all available countries are correlated. The correlation drops to under 0.4 when Muslim nations are excluded, but this may reflect a scarcity of gender related data for non Islamic countries with low consumption levels. The general relationship is reinforced by the modest variation in gender equality at a given level of alcohol use. Notably, the situation for women appears to be most optimal at modest levels of consumption, from 6-12 liters per year. Gender equality is highest when rates of consumption are modest, in parallel to the similar relationship between the best societal conditions and moderate alcohol intake. Countries with very high consumption have modest gender equality, but it is never as low as it is some nations with very low consumption. The connection between alcohol and gender equality has the potential to be critical because the correlation between more gender equality and better societal conditions is almost as strong at ~0.57, a value that drops only slightly when Islamic countries are not included. The lack of strong variation in gender status any given level of development reinforces the relationship. The possibility that greater gender equality results in more alcohol use can be ruled out because the latter has often been high for millennia, while gender equality in societies has only recently reached unprecedented heights. It logically follows that more gender equality significantly correlates with another feature of modernity, higher levels of democracy, which are maximal only in nations in which women enjoy considerable personal freedom and opportunity.

Although the variation at any given level of alcohol consumption is large, a significant correlation of over 0.5 exists between more alcohol consumption and more democracy when all available nations are included. Again moderation produces the best results, only nations with yearly ethanol intake rates of 6.5-13 score above 8.5 on the democracy index; only nations where people take in under 11 liters/year score 2.5 or lower; all nations with intake rates of around 14 liters or higher are mediocre regarding this measure of political modernity.

When Islamic nations are excluded, the correlation does not disappear but is weak, helping illustrate the exceptional link between the sect and alcohol use.

Potential Causal Hypothesis

If there were no significant correlations between levels of alcohol use and societal conditions, then the hypothesis that the broad impact of the drug is minimal would be verified. Instead, the empirical correlations are compatible with, and potentially indicative of, ethanol alcohol being in some manner important to forming the current human situation. Specifically, the pattern that moderately high alcohol use is associated with more gender equality that in turn correlates with the most societal success suggests that a causal linkage is operative. Constructing a hypothesis to potentially explain the observed pattern starts with experimental and observational research demonstrating that alcohol is, as many perceive it to be, a widely used and often effective social lubricant (Leigh, 1990; Temple and Leigh, 1993; Temple et al., 1993; Cooper and Orcutt, 1997; Thun et al., 1997; Jones et al., 2003; Engels et al., 2005; Brown and Vanable, 2007; Esser et al. 2014; Monahan and Lannutti, 2000).

The ways in which consumption achieves desired results are complex and vary among individuals. Both actual psychoactive effects and learned placebo type expectations are operative, and these factors can complement one another. The hoped for and actual effects include both positive enhancements of social and relationship abilities, and coping with negative aspects and anxieties associated with such situations. In terms of positive effects, alcohol both enhances the social performance of moderate users in terms of their presentation to others, and their perception of the same drinkers of the social presentation of others. This involves both the ability to smile in a pleasing manner, and the tendency of seeing others' smiles as pleasing; similar patterns apply to conversational performance and social bonding, and the attractiveness of faces of potential sexual partners is significantly improved [Jones et al., 2003; Sayette, 2012]. In terms of addressing negative factors, social and sexual performance under the influence can include a marked reduction in perceived levels of stress and anxiety produced by insecurities. Even if a given drinker is not imbibing during a given high stress event, their knowledge that they can resort to alcohol if necessary may act as a relaxant.

Repeated self-medication via alcohol is applicable in a wide array of circumstances. These include financially critical business dealings. They are probably most pressing in sexual situations where the subjects are trying to recruit potential partners in the context of a culture in which persons, women most importantly, have a legal and social right to accept or reject mates to the degree that any form of forced sex is a serious crime. Use of alcohol is known to increase rates of sexual activity (Leigh, 1990; Temple and Leigh, 1993; Temple et al., 1993; Beckman and Ackerman, 1995; Halpernfelsher et al. 1996; Cooper and Orcutt, 1997; Jones et al., 2003; Engels et al., 2005; Brown and Vanable, 2007; Sayette et al., 2012). Males may particularly feel advantaged because it is they who are most often under pressure to make the initial courting approaches in societies that have not achieved 100% gender equality, which may be all societies. Also alleviated mostly among males are self-perceived performance issues regarding initial acts of sexual activity, especially intercourse. Persons, females especially, may also utilize alcohol as a means to overcome traditional stigmas that still attach to unmarried sexual activity, and the experience of sex appears to be enhanced for women on alcohol (Beckman and Ackerman, 1995).

These accords with rates of alcohol use being twice as high during the initial sexual experience with a new or nonsteady partner than with a regular partner (Temple and Leigh, 1993; Temple et al. 1993; Brown and Vanable, 2007). Heterosexual males may be particularly prone to turn to alcohol; in societies in which women must be courted the sexual activity of males is likely to be constrained by female choice because women are much more likely to reject the sexual approach of a male than the reverse, (Symons, 1979; Antfolk et al., 2015), and the complex male sexual apparatus is not as functionally reliable as that of females. Men are also more involved in business dealings that can be facilitated by alcohol use. This is in line with the tendency of men to consume more alcohol than women in a given society. Also in accord with the pressure to self-medicate in novel sexual situations is the high usage rate among youth (Temple and Leigh, 1993; Temple et al. 1993; Brown and Vanable, 2007; Chrzan, 2013; although usage rates among millennials are decreasing in at least some western nations according to White, 2016, although the opposite may be true among American females according to Kindy and Keating, 2016).

The percentage of the total population that uses alcohol as a sociosexual lubricant is not well documented due to inadequate surveying of populations. Half of drinkers are over using alcohol at levels above the average one drink per day that appears to result in maximal health and lifespans (Esser et al. 2014).

There is a good possibility that drinking at levels that produce such suboptimal results is driven in a large number of, if not almost or virtually all over drinkers, by a desire to self-medicate sociosexual anxieties. The sheer mental pleasure many enjoy by achieving alcohol highs is another major contributing factor to excessive use, but this does not necessarily contradict the involvement of stress reduction in most or all the same persons. It is also possible that some who do not over drink, but are not very light users either, are using ethanol as an anxiety alleviator on occasions. If correct, then it is plausible that a third or significantly more of the total population are using alcohol for self- medicating in the U.S. In nations where nine in ten are drinkers perhaps around half the population is doing so.

Anxiety reduction via alcohol is so easy and sufficiently effective that it is probable that a large minority if not majority of wet populations are mildly addicted to alcohol in a manner similar to caffeine and nicotine. This possibility is reinforced by half of drinkers being chronic over consumers. It is further possible, but not yet scientifically tested, that many or most light-moderate drinkers do not realize the degree to which they would experience higher anxiety if they abstained.

Basically, those who drink tend to have a more pleasant and less fearful experiences in many social situations, especially when searching for and achieving the sexual relationships that rank so high in human biology. In the process they should enjoy a marked overall competitive advantage over nondrinkers concerning these important socio reproductive activities, with the caveat that there are of course exceptions to the general pattern. The evidence that appropriate alcohol use is a societal and personal positive is so strong that Ritson and Thorley state that light to moderate “drinking is without doubt one of the most important factors in maintaining social cohesion and wider social stability. At a personal level, appropriate drinking brings marvelous opportunity for fun, recreation, good company, and good conversation” (Ritson and Thorley, 2000).

What has gone nearly ignored is that with normal alcohol use being so functional, it follows that chronic nonuse can be dysfunctional in many nondrinkers who lack such marvelous opportunities for fun, recreation, good company and conversation. Many abstainers risk of finding business, social and sexual situations more stressful and less pleasant than do most drinkers, to the degree that such activities can be disagreeable, causing them to avoid either them, or when they engage in the activities to tend to suffer lower levels of success. Adding to the difficulties and social isolation of those who are abstemious in wet cultures can be chronic discrimination in which such persons are widely seen as so outside of societal norms that they are vulnerable to being further sidelined in business, social and sexual relationships. The resulting high and persistent stresses may contribute to the impaired health and reduced lifespan observed in nondrinkers (Thun et al., 1997; Esser et al., 2014). Advantages of abstinence include a low probability of drug abuse and related problems, of causing injury when operating automobiles and other machinery, of conducting other high-risk operations that require full, unhindered attention, of engaging in a number of high risk behaviors that can be facilitated by intoxication, and among males superior sexual performance compared to a strongly inebriated male if initial anxieties of sexual performance are overcome (Halpernfelsher et al. 1996).

While being dry has advantages that can overall balance the negatives for individuals, the same is not likely to be true for dry societies that should be hard pressed to maintain the social cohesion and stability of wet cultures. The human brain is markedly better able to metabolize ethanol than are those of other primates (Carrigan et al. 2014), perhaps as a protohuman adaptation to consuming rotting fruits that had fallen to the ground, but the adaptation is far from complete so serious intoxication still results. At the same time the brains of humans did not evolve to operate within the context of the complex sedentary cultures that suddenly appeared after *H. sapiens* had been living for hundreds of thousands of years in the small, wandering hunter-gatherer bands the brain did develop to operate within. Hayden et al. (2012) present archaeological evidence that the brewing of alcohol was a prerequisite for the appearance of more complicated sedentary agricultural societies not only because fermentation of grains pushed the mass domestication of the cereals needed to sustain big populations, but also because larger cultural groups may not have been able to have evolved without the social lubricating of early beers in the feasting events that helped bond large numbers of people. If so then humans enjoy the evolutionary accident of there being a generally nontoxic substance that can be produced in quantity that because the human brain is partly but not fully adapted to process, happens to alleviate the stresses of living in large populations that humans were not biologically prepared to mentally handle.

The most complex societies are modern democratic cultures in which the availability of potential social and sexual partners and rejecters is practically endless, and the evidence that the socio sexual lubricant of alcohol has played and is playing a substantial and perhaps crucial role in facilitating gender equality is substantial.

Specifically, the second part of the hypothesis follows the observation by Elborgh-Woytek et al. those women's "participation on the labor market is... part of the growth and stability equation... There is ample evidence that when women are able to develop their full labor market potential, there can be significant macroeconomic gains" (Elborgh-Woytek et al. 2013). Nor is it possible to have a full, stable democracy without women having full citizen's rights, and that necessarily includes sexual freedom. Over much of civilization, alcohol was probably not critical in this particular regard because societies have tended to be warrior patriarchies in which women are male owned property, starting with their fathers who in effect sold them off to husbands. Some cultures, especially in the Americas, were less internally patriarchal, but even they tended to involve a high levels of intertribal strife in which woman are captured from other tribes. In almost all societies, many women were outright slaves at chronic risk of forced sex. The latter could be captured in raids or wars that increased the pool of available women who could be sexually exploited regardless of their opinions. Ready male access to female slaves further limited the ability of nonslave women to have a say in their partners. Men are often also allowed to have multiple wives, further limiting female choice. The most important shift away from these Forced Sex Cultures in which men have the upper hand began to appear in Europe in the late middle Ages and the Renaissance/Enlightenment in which women, initially in the elites, began to gain more control over their sociosexual activities (Symons, 1979; Hendrick and Hendrick, 1992; Antfolk et al., 2015).

The development of the more sophisticated western Courting Culture began in societies that allowed the wide use of alcohol. The hypothesis herein is that the use of alcohol gave many men the "fortification" that they felt they needed to be willing to engage in the emotional effort involved in trying to persuade the opposite sex to engage in initial and then long term bonding and sexual activities with a high risk of very unpleasant rejection, rather than forcing themselves on the physically weaker sex. The increasing personal freedom of females encouraged the development of greater political freedoms. It may not be a coincidence that the development of democracy in the American colonies occurred in a population operating under the heavy influence of alcohol at such high rates that many if not most colonists were alcoholics, at the level of both the elites and the masses (Hayden, 2012). Able to effectively alleviate the anxieties that otherwise degrade the efforts of many or most when courting sexual partners, conducting business, etc., the advanced western nations have become the most sexually egalitarian and securely democratic in history. These exceptionally domesticated cultures have in turn has produced the greatest level of mass prosperity yet achieved, as well as low levels of lethal violence in most examples (Paul, 2012).

A real world test of the critical role that is played by alcohol occurred when the US rendered commercial alcohol illegal (Hames, 2012). This was done in great part because of concerns of many women that male alcohol use was seriously degrading the lives of women and families. If alcohol was not a vital social lubricant then the great majority of the population should have accommodated to the ban without undue difficulty, continued illegal usage being limited to the small minority of severe addicts that should have declined over time due to lack of exposure to the psychoactive drug. Although total national intake did decline modestly, a very large portion of the population from the elites on down refused to comply, instead continuing to enthusiastically partaking of alcohol by violating constitutional law, often in illicit social environments involving a high degree of sexuality. The experiment was so disastrous and unsustainable that it was quickly abandoned, and has never been repeated in an advanced democracy. Only societies that are neither democratic nor prosperous either continue or are imposing alcohol bans.

Another empirical test of the important role played by alcohol occurs in those large scale societies that ban the substance over long periods of time. These are all religious cultures, mainly conservative Muslim, Protestant and Hindu, and Latter Day Saints. No predominantly Islamic, Hindu or conservative Protestant country or society is a highly prosperous stable democracy where women enjoy full rights. All are more simplistic, power domination patriarchies in which men, not able without at least societal approbation if not severe legal consequences, to readily reduce the anxieties of courting women via brain function alternation, apparently avoid or reduce the stresses associated with negotiating and performing while sober by minimizing or eliminating those difficulties via limiting or eliminating the negotiations. So women are to a lesser or greater degree subordinate to men, and enjoy less sexual freedom than in proalcohol, more gender equal cultures.

Among Islamic nations in those that are the most socially and gender liberal and democratic, such as Tunisia, Turkey, Indonesia, and Malaysia, alcohol is legal, albeit often socio religiously frowned upon. In general, today's Islamic cultures remain particularly prone to operating archaic, tribal, misogynist Forced Sex Warrior Cultures in which women are chattel in the hands of fathers and husbands. The inability to use alcohol to help reduce tensions between groups could be increasing tribal strife between Muslims. The most extreme expression of alcohol free societies is militant Islam, which bolsters the utter sexual domination of men over women with the fantasy of infinite sex in a male centric paradise. Treating women as sex slaves, it is perversely logical that these extreme male dominated societies are dreary and hyper violent, and that the militant men are skewed towards the young adult cohort that is most sex obsessed. 4 It is conversely logical that these primitive, super dysfunctional cultures impose the ban on alcohol that facilitates their operation. Both Sunni and Shite led governments enforce alcohol bans.

An illustrative test of differing attitudes concerning alcohol compares the United Kingdom, India, and Pakistan. In the first legal alcohol has long been consumed at high rates above 10 liters per person a year, and the nation has been a leader in developing women rights, democracy, and material prosperity. Being at the forefront of sophisticated economics and industrialization, the UK was able to establish a global empire that incorporated India including the future Pakistan. In most of contemporary India – a few regions excepted -- alcohol is legal, and nationally is consumed at a modest annual rate of over 4 liters per capita, sufficient to help sustain a democracy that was imported from the UK, as well as significant economic success and gender equality. In Pakistan, alcohol is illegal and rare, democracy is at best weak and intermittent, the society is primitively and often brutally patriarchal, and the economy is gravely dysfunctional.

Conclusions

Assume that ethanol alcohol never existed, and there were no comparable substitutes. The development of even primitive civilizations may have been seriously hindered, and it can be difficult to conceive a scenario in which modern sexual equality and universal suffrage could evolve and be sustained. This is all the more plausible in view of gender equality and democracy in mass societies not being the human norm, and might never have evolved. But while the basic alcohol>civilization>gender equality>democracy hypothesis has a good probability of being correct, further verification is hindered by an absence of basic research into a number of fundamental factors. The portion of the population in general and within age cohorts among societies in which alcohol is legal that regularly utilizes alcohol to ease the process of romantic courting and other high stress social activities has not been properly documented. There has been a conspicuous and disturbing lack of investigation and knowledge of the psychological stresses and practical difficulties that are often faced by millions of nondrinkers in socio sexual situations vis-à-vis drinkers, as well as stemming from discrimination. Also unexamined are the degrees to which the health and life spans of nondrinkers are being impaired. Not only does this leave a yawning data gap, the means of identifying, diagnosing issues, and offering treatments for problems associated with abstinence are absent.

Nor are the even larger scale problems associated with prohibitionist societies, especially Islamic, the subject of necessary research. The reasons for the difficulties being experienced by Muslim societies in adopting modernity, including gender equality and democracy, are widely debated, and often focus on various aspects of Islamic doctrine including the exceptionally close link between the religion and politics (as per Hamid, 2016), and archaic views regarding women and violence. But the latter factors are not uniquely ill conceived in the scriptural Islam that derives much of it's no modern aspects from prior Judaic-Christian scriptures, but is unusual in the degree of its rejection of legal alcohol's It follows that is it is quite possible if not probable that Islamic national societies will not be able to achieve modernity and prosperity unless alcohol is rendered legal and socially acceptable in all majority Muslim countries. The possibility is not outlandish considering that a substantial majority of Islamic nations do not ban ethanol, but socio religious strictures may prove very difficult to overcome.

The minimal conclusions from the empirical data are that in all full, stable, organically evolved democracies 6,7 with high levels of gender equality the large majority are responsible partakers of legal alcohol, that citizens of the most successful nations in history are consuming alcohol at moderately high per capita rates, and that even those countries where alcohol intake is very high are fairly successful, with the proviso that very high alcohol use is always associated with suboptimal societal conditions.

There is no evidence that extensive moderate alcohol use is a severe societal detriment, overall the opposite appears to be true. Indeed, while alcohol fueled societies have proven able to organically evolve modernity on a repeat basis, so far no nonalcoholic state society has done so, leaving the concept of a sustainable democratic country that highly respects women's rights without self-medication via alcohol highly speculative at best, and unsubstantiated by working examples. The observed pattern is well explained by the hypothesis that the absence of legal alcohol is a sufficient hindrance to democratic social and sexual relationships that the consistent result is some degree of autocracy in which women do not fully control their sexual lives, while legal alcohol at least allows the emergence of courting cultures that promote the sexual equality that in turn allows the development of prosperous democracies. If so, then legal alcohol by no means ensures democracy et al., but its existence is a no optional prerequisite for its appearance, and may be an essential facilitator. In that case, when the other factors necessary for women's' rights and democracy are present (Diamond, 2005; Pinker, 2011; Paul, 2012) alcohol must also be legal for the process to ensue and to progress. In this case, Islamic countries cannot properly modernize without adopting legal alcohol. Conversely, nations like Russia will never be fully modern and successful with their excessive consumption.

As remarkable as it is, the widely successful and safe mass-use of a folk self- medication via a grand fathered drug to cope with chronic stress and anxiety and to build civilization and modernity has been seriously under investigated. This is a major failing of science when it is possible that societies that refuse to partake cannot achieve modernity, and when global peace may not be viable without wider responsible use of ethanol alcohol.

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Footnotes

1. Approaching 1.5 billion of drinking age, including the ~1.1 billion Muslims in the age cohort and a few hundred million conservative Protestants. A substantial minority of these groups consume alcohol illicitly, so the actual number of persistent nondrinkers may be 1.0 billion or less, about a fifth of the pertinent global age cohort.
2. Esser et al. (2014) finds that half of users drink excessively to a lesser or greater degree, although only a small percentage are outright addicted. Also www.cdc.gov/media/releases/2014/p1120-excessive-drinking.html.
3. No significant correlation between levels of alcohol consumption and levels of religiosity in which the latter has been measured by the World Values Survey 2011 was observed, but this may be due to the limited sample of nations available, $R = 178$, $D = 0.031$, $N = 38$.
4. While older males are often able to obtain inappropriate sexual access to very young females.
5. Both the Bible and Quran threaten unbelievers with serious punishment including death, endorse slavery, and severely limit the sexual and other rights of women. The Bible includes extensive descriptions of God ordained genocide, ethnic cleansing and enslavement via unprovoked wars of conquest of nonbelievers. Both the Judeo-Christian texts and the Quran warn against the overuse of alcohol, the Islamic scriptures go much further to indicate that all usage is ungodly.
6. In some regards a prosperous democracy with moderate gender equality and limited alcohol consumption, Israel is a recent colony that inherited western democracy and the Palestinians are under second-class status.
7. Some low consumption Islamic countries are democracies to a certain extent, but their political stability, gender equality and prosperity are tenuous.

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Table 1: Pearson correlations, coefficient of determination, and sample sizes for yearly pure ethanol alcohol consumption in liters per person WHO 2014, the Income Adjusted Human Development Index 2013, the Global Gender Gap Report 2011, CIA World Fact Book per capita income 2013, and Democracy Index 2015.

In nations	Ethanol consumption	Gender Gap Index
Human Development Index all minus Islamic	R = 0.602 D = 0.363 N = 144 R = 0.603 D = 0.364 N = 118	R = 0.570 D = 0.325 N = 115 R = 0.549 D = 0.301 N = 97
Gender Gap Index all minus Islamic	R = 0.598 D = 0.358 N = 131 R = 0.383 D = 0.383 N = 103	
Income/capita all minus Islamic	R = 0.323 D = 0.104 N = 186 R = 0.464 D = 0.216 N = 145	
Democracy Index all minus Islamic	R = 0.518 D = 0.268 N = 159 R = 0.362 D = 0.131 N = 121	R = 0.693 D = 0.480 N = 120 R = 0.563 D = 0.317 N = 94

Figure 1: Correlative plots comparing levels of ethanol alcohol consumption, gender equality, income and democracy in the majority of nations (squares Islamic, diamond United States, circles all others); alcohol consumption is measured as intake of ethanol less other liquids in ingested alcoholic drinks.

