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Attacking Alcohol-Related Liver Disease by Taxing Alcohol Sales

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ALCOHOL-RELATED LIVER DISEASE (ALD) IS UNABATED IN THE UNITED STATES

THE PUBLIC HEALTH impact of ALD is large and growing (Liangpunsakul et al., 2016). The incidence of cirrhosis due to ALD is rising, driven in part by recent and historically unparalleled increases among young people (Flemming et al., 2019; Mellinger et al., 2018). In parallel, mortality and liver transplantation rates for persons with ALD have risen substantially (Lee et al., 2019; Mellinger et al., 2018; Tapper and Parikh, 2018). Reducing alcohol consumption is the cornerstone of ALD management to decrease the risk of progression from compensated to decompensated cirrhosis. At the individual level, we have a variety of interventions, behavioral and pharmacological, which are proven to reduce the harms of alcohol use disorder (AUD; Peng et al., 2017). The effectiveness of these interventions is limited by variable efficacy and sustainability as well as inadequate linkage to care (Addolorato et al., 2016). Only 1 in 10 patients undergo psychotherapy; only 8 in 1,000 receive pharmacotherapy for AUD, with even lower rates for women (Mellinger et al., 2019).

SUCCESSFUL INTERVENTIONS FOR AUD MUST BE RELIABLE AND BROAD

ALD is a population-level problem. As such, it requires broad policy-based solutions. Policies that reduce access to alcohol or influence demand through minimum unit pricing may be the most effective tools (Black et al., 2011; Holmes et al., 2014; Naimi et al., 2014; Xuan et al., 2015). Increased alcohol taxes may result in decreased alcohol sales and consumption, particular for those with lower socioeconomic status (Elder et al., 2010). One

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CONFLICT OF INTEREST

None.

DISCLOSURE

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key measure of ALD's population-level burden is the number of patients evaluated and waitlisted for liver transplant. The effect of alcohol taxes on alcohol consumption and its influences on liver transplant listing for patients with ALD are elusive.

A NEW STUDY SHEDS LIGHT ON THE EFFECT OF ALCOHOL TAXES ON TRANSPLANT WAITLISTING FOR ALD

In this issue of ACER, Shen and colleagues address this concern. The authors utilized patient-level data from the United Network for Organ Sharing data of 137,440 registrants on the liver transplant waitlist from 2003 to 2015 linked to state-level per-capita alcohol consumption data from the National Institute on Alcohol Abuse and Alcoholism. These patients were then dichotomized into 2 liver transplant waiting list cohorts, ALD and non-ALD. The information on alcohol taxes consisted of state-specific excise taxes and ad valorem taxes for both on-premise and off-premise consumption. Their study yields 2 major findings. First, the authors identified an inverse relationship between excise taxes and alcohol consumption only for spirits but not wine or beer. For every 1% increase in spirits excise tax, there is a trend of decreasing on-premise spirit consumption by 0.10%. Second, spirits consumption showed the positive correlations with liver transplant listing. The changes in spirits purchasing due to high excise taxes *and* consumption had led to fewer ALD liver transplant listings. Two sensitivity analyses appear to confirm the validity of this association. In one, no association was observed between sprits taxes/consumption and transplant waitlisting for hepatitis B; in another, when excluding the population with Medicaid insurance, wine taxes/consumption were associated with ALD waitlisting. Taken together, this study suggests that changes in taxation policies on spirits excise taxes may be associated with reduced consumption and subsequent listing for liver transplantation.

MAJOR LIMITATIONS

There are 2 central limitations in the study design that impact our interpretation of these data. First, the authors do not evaluate other alcohol policies that limit (or promote) access to alcohol. As an extreme case, all-cause mortality fell when the Soviet government closed distilleries sharply limiting spirit supply from 1984 to 1990 (Nemtsov, 2002). Limitations on the amount of, times when, and places where alcohol can be purchased each have substantial impact on alcohol consumption (Xuan et al., 2015). Without accounting for other policies, it is unclear where the magnitude of taxes has an effect on ALD waitlisting that is independent of alcohol policy or merely a proxy for the strength of local policy.

Second, in order to establish the effect of tax on alcohol consumption, it must be shown that it translates to a higher price for the consumer. This is not evaluated. The price alcohol influences consumption as was observed where minimum unit pricing policies for alcohol were enacted (Brennan et al., 2014; Holmes et al., 2014; Meier et al., 2016). However, because alcohol beverages are elastic goods, increased taxes can be offset on the supply side by marginal changes in production or retail profits or, on the demand side, by substitution of 1 drink for another. This contrasts with cigarette taxes. Cigarettes have fewer alternatives and are therefore more inelastic. Studies have linked increased taxes to both increased prices and decreased consumption and therefore lung cancer rates (Pierce et al., 2010; Yeh et al.,

2017). Third, the temporal association between taxes and the effect on the indication for waitlisting was not examined. The authors examine waitlisting events and alcohol taxes cross-sectionally. However, the association between consumption and waitlisting occurs asynchronously. Most patients who are waitlisted today have been sober for more than a year, may have had their most injurious alcohol consumption many years, if not decades, previously (DiMartini et al., 2006).

FUTURE DIRECTIONS

First, data linking taxes to price are necessary to understand the mechanism by which tax increases may have an effect on alcohol consumption versus minimum unit pricing, which is a more direct form of price control. Second, clarifying the observed association of taxes with spirits consumption is key to optimizing policies informed by this work. Research is needed to determine whether this reflects that the unit price of spirits is simply more expensive than beer or wine to begin with. Similarly, the authors found that wine taxes/consumption were associated with waitlisting in privately insured persons. This association may be due to chance given multiple comparisons or could indicate that consumers of other alcoholic beverages are less likely to be referred for liver transplantation. Prospective studies of increased taxes with contemporaneous controls may be needed to validate these associations and also control for differences in local alcohol policies in alcohol restrictions. Third, transplant waitlist registration represents only a sliver of ALD's impact on society. To quantify the potential impact of alcohol taxes, further data are needed with respect to the incidence of cirrhosis and decompensation as well as disability-adjusted life-years attributed to ALD. Finally, the optimal study design would evaluate the effect of taxes/prices on clinical outcomes over time, assessing changes at multiple time points in the future (e.g., 1, 3, 5 years).

CONCLUSION

AUD is a serious threat to our public health. We are in need of tools that can reduce the burden of ALD and its complications. Shen et al have extended the literature by linking taxes on spirits to transplant waitlisting for ALD. These welcome data represent an important contribution that clearly lights the path forward.

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