

Addiction Medicine

RESEARCH REVIEW™

Making Education Easy Issue 4 – 2019

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Abbreviations used in this issue

- CI** = confidence interval
OR = odds ratio



RESEARCH REVIEW

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Welcome to Issue 4 of Addiction Medicine Research Review.

An analysis of online surveys investigating vaping and smoking revealed an increased prevalence and frequency of vaping among US and Canadian adolescents between 2017 and 2018, along with increases in smoking among Canadian adolescents. These findings suggest that in Canada vaping may not be replacing cigarette smoking, but may be being used in addition. Differences in vaping incidences between countries are likely due to differences in regulatory frameworks, marketing and access to vaping products. Following on, we discover that a 2015 tax increase in China that raised retail cigarette prices was effective at reducing cigarette consumption. Other topics covered in this issue include patterns and correlates of polysubstance use in Australian youth, predictors of early dropout from opioid agonist therapy, cigarette consumption estimates for 71 countries from 1970-2015, a US survey of ICU management of patients with opioid use disorder, and life-course trajectories of cannabis use in NZ.

We hope you find our selection of articles for Addiction Medicine Research Review stimulating reading and we welcome your feedback. Furthermore, if you have discovered or been involved with what you think is significant global research in this area, please let us know and we will consider it for inclusion next time.

Kind regards,

Dr Karl Schmidt

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Prevalence of vaping and smoking among adolescents in Canada, England, and the United States: repeat national cross sectional surveys

Authors: Hammond D et al.

Summary: This analysis of online surveys of 16- to 19-year-olds in 2017 and 2018 in Canada (n = 7891), England (n = 7897) and the US (n = 8140) assessed national differences in vaping and smoking prevalence. Prevalence of vaping in the past 30 days, past week, and on ≥15 days in the past month increased in Canada and the US between 2017 and 2018 (p < 0.001), but not in England. Smoking prevalence increased in Canada (p < 0.001), modestly increased in England, but did not change in the US. Ever-vapers reported more frequent vaping in Canada and the US (p < 0.01 for all), but not in England, while the use of JUUL (a nicotine salt-based electronic cigarette with high nicotine concentration) increased in all countries, particularly the US and Canada. Current vapers in the US increased JUUL use 3-fold between 2017 and 2018.

Comment: Since the development of nicotine vaporising equipment, the myth has spread that using vaporised nicotine is a safe and acceptable practice. It is therefore no surprise that the practice of vaping appears to be increasing and, of note, also amongst people who have never smoked. This is especially true of the JUUL brand with the use of various flavoured nicotine salts. For the same time period (2017-2018) there was no evidence that the smoking of cigarettes had decreased. Thus it would seem that vaping is not replacing cigarette smoking, but being used in addition. The JUUL company has as a mission "to improve the lives of the world's one billion adult smokers". Recent evidence has shown very clearly that vaping has significant side-effects and that its use can be fatal. It should also be noted that nicotine in whatever form is addictive and chronic use leads to habituation.

Reference: *BMJ. 2019;365:l2219*

[Abstract](#)

Independent commentary by Dr Karl Schmidt

Karl Schmidt holds an honours degree in Dutch Literature, an MBChB from the University of Pretoria and an MFamMed degree from the University of the Witwatersrand. His experience includes General Practice and work in Intellectual Disability and Forensic Psychiatry services; he became a Fellow of the Royal New Zealand College of GPs in 2001. For the past 9 years he has worked at the Community Alcohol and Drug Service in Dunedin, including the past four years as Lead Opioid Clinician for the Otago Community Alcohol and Drug Service and the Southland Drug and Alcohol Specialist Service. His special interests include the neurobiology of dependency and medical safety within the context of opioid-assisted treatment, with particular focus on the identification and treatment of HCV infection.



Effects of global and domestic tobacco control policies on cigarette consumption per capita: an evaluation using monthly data in China

Authors: Xu W et al.

Summary: This Chinese study used data from the China National Tobacco Corporation on monthly cigarette consumption per capita (January 2000 to June 2017) to assess the effectiveness of policy interventions to reduce tobacco use. National policy changes have almost 20-fold greater impact than that of the WHO Framework Convention on Tobacco Control (FCTC) treaty, and national policy changes in tobacco control were a determining factor in reversing the Chinese trend for increasing tobacco consumption. A 2015 tax increase that raised retail cigarette prices, produced a total incremental effect 7.8-fold that of a 2009 tax increase, which did not increase cigarette prices for the consumer.

Comment: The tobacco industry in China is controlled by one single corporation: The China National Tobacco Corporation. The Chinese population consumes almost 50% of cigarettes used in the world, and the average use per person is significantly higher than elsewhere in the world. Tobacco sales have been a significant source of revenue in the past, and efforts by the government to curb smoking, including the signing and implementation of the WHO FCTC (2003) were unsuccessful, with a significant increase in daily consumption between 2000 and 2013. The new Chinese administration (2013) took note of the significant impact of smoking on health (more than a million deaths/year and as elsewhere in the world significant morbidity). A retail price increase of 10% and a policy of prohibiting public smoking by state employees/officials led to a significant decrease in smoking consumption. The estimated number of smokers in NZ has decreased by almost 10% over the past 6 years, largely due to regular tax increases and stricter regulations on public smoking. Expect more of the same!

Reference: *BMJ Open* 2019;9(6):e025092

[Abstract](#)

The changing patterns and correlates of population-level polysubstance use in Australian youth: a multi-group latent class analysis of nationally representative samples spanning 12 years

Authors: Chan G et al.

Summary: Data from an Australian series of repeated, cross-sectional, nationally representative household surveys (National Drug Strategy Household Surveys; n = 20,350, 2004-16) were analysed to identify classes of polysubstance use among young Australians, to test if these classes changed, and to identify demographic and health-related correlates of polysubstance use. Three polysubstance use classes were identified: minimal users (~60% of respondents), mainly tobacco, alcohol and cannabis users (~30%) and extended range polysubstance users (~10%). Over the period of the study, smoking decreased in all classes (p < 0.05), while harmful alcohol use decreased in the first 2 classes (p < 0.05). Factors associated with tobacco, alcohol and cannabis use and polysubstance use remained consistent over the study period, including: being male with an English-speaking background, high levels of psychological distress, suboptimal health, and a high personal income. A reduced likelihood of tobacco, alcohol and cannabis use, but an increased likelihood of polysubstance use, was associated with coming from an affluent area.

Comment: Research in trends in polysubstance use over periods longer than a decade are rare given the associated statistical challenges. This study made use of a more recent statistical tool, Latent Class Analysis, and used data from the same data series (the National Drug Strategy Household Survey, conducted 3-yearly from 2004-16), thus ensuring a consistent data gathering method and also access in Australia to a very large population (3-yearly sample sizes varied between 23,356 and 29,455, making the findings as reported in the abstract fairly robust). Smoking decreased in all classes, harmful alcohol use decreased in the minimal user and tobacco, alcohol and cannabis user group. Consistent with previous research, regular substance use was associated amongst others, with male gender, a high level of psychological distress, compromised health and high personal income. Over 12 years, the use of tranquilisers/hypnotics and heroin remained largely unchanged, use of methamphetamine and Ecstasy was reduced and use of cocaine, hallucinogens and ketamine increased. I doubt that many of these shifts would be valid for New Zealand.

Reference: *Addiction* 2019;Jul 29 [Epub ahead of print]

[Abstract](#)

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Stress, craving and mood as predictors of early dropout from opioid agonist therapy

Authors: Panlilio LV et al.

Summary: This 17-week study employing ecological momentary assessment used data from multiple daily electronic diary entries from 238 participants being treated with methadone or buprenorphine-naloxone to assess the effects of stress, mood and craving on the processes that lead people to drop out of treatment. Treatment dropout was found to be more likely in those reporting more hassles (a stress measure), higher cocaine craving, lower positive mood, a recent history of emotional abuse or of frequently being bothered by psychological problems, and receiving treatment with buprenorphine rather than methadone. Study noncompliance was not associated with any of the variables analysed.

Comment: That opioid dependence can be successfully treated with opioid agonists has been well-documented, both for methadone and buprenorphine. In terms of safety, buprenorphine appears to be the safer choice. However, successful outcomes of treatment are dependent on regular use of the medication. This limited study made use of review over 17 weeks of electronic diary entries by participants, and found that major predictors of dropping out of treatment were increased stress ("hassles"); psychological problems; higher levels of cocaine craving (one wonders if underlying opioid craving might not be as important, especially for buprenorphine, a partial agonist); recent fall in mood; recent emotional abuse; recent increase in psychological problems. Regular, effective and sympathetic follow up of clients on opioid agonist treatment is important, and should focus on all issues that might indicate the possibility of lapsing and non-compliance. The increased likelihood of relapse when on buprenorphine should be kept in mind.

Reference: *Drug Alcohol Depend.* 2019;Sep 1 [Epub ahead of print]
[Abstract](#)

Cigarette consumption estimates for 71 countries from 1970 to 2015: systematic collection of comparable data to facilitate quasi-experimental evaluations of national and global tobacco control interventions

Authors: Hoffman SJ et al.

Summary: This study reports on the systematic collection of national cigarette consumption data from 71 countries (95% of global cigarette consumption) from 1970 to 2015. In most countries, cigarette consumption fell over 3 decades, but country specific consumption trends were highly variable. In 2013, China consumed 2.5 million metric tonnes (MMT) of cigarettes, more than the next 35 highest consuming countries combined; Russia (0.36 MMT), US (0.28 MMT), Indonesia (0.28 MMT), Japan (0.20 MMT). Japan and the US experienced reductions of more than 0.1 MMT from a decade earlier, Russian consumption plateaued, while Chinese consumption increased by 0.75 MMT and Indonesian consumption increased by 0.1 MMT.

Comment: It is important to note that for pragmatic statistical reasons the statistics quoted in this study exclude all non-cigarette tobacco use, for example electronic cigarettes, chewing tobacco etc. Amazingly, in this day and age, the researchers found it difficult to access reliable cigarette use statistics, as these were contained within tobacco companies, countries (statistical agencies and ministries) and intergovernmental agencies. The good news is that cigarette consumption fell in most countries, though in China, by far the biggest consumer of cigarettes (more than the combined use of the next 35 highest consuming countries), cigarette use increased up to 2015. But in China cigarette use has also decreased since a cigarette price increase in 2015. It appears that internationally there is an understanding that smoking disables and kills. It would be good in the future to have easier access to tobacco use statistics to monitor progress with tobacco use cessation.

Reference: *BMJ.* 2019;365:I2231
[Abstract](#)

A national survey of approaches to manage the ICU patient with opioid use disorder

Authors: Reichheld AM et al.

Summary: This survey-based analysis examined the availability of protocols and guidelines in 58 Intensive Care Units (ICUs) across the US for management of critically ill patients with an opioid use disorder. The majority of ICUs had guidelines on sedative analgesics titration, but only 7% had a guideline for sedation of patients with opioid use disorder and only one had a guideline for continuation of medication-assisted treatment including methadone. Most ICUs did not have a guideline to manage opioid withdrawal or to prevent naloxone over-reversal. 36% of ICUs had outpatient resources for patients, but fewer reported use of a dedicated addiction care team.

Comment: In NZ, the prescribing and use of morphine has steadily increased since 2011. At the same time the number of people aged 25-64 prescribed "weak" opioids (including codeine and dihydrocodeine) has also significantly increased. In tandem with this, the rate of opioid-related deaths has also significantly increased in recent years. For Americans under the age of 50, drug overdose is the leading cause of unintentional death. Given these facts, it is to be expected that a significant number of critically ill patients admitted to ICU might have opioid use disorder. This American study found a dearth of guidelines to assist ICU clinicians in the management of the critically ill substance dependent patient. I doubt that the situation is much different in NZ. At best there might be an alert on the electronic admission system identifying patients on opioid substitution treatment. Specialist substance use advice is required to guide ICU treatment to avoid over-reversal with naloxone and to ensure effective and safe treatment of substance dependence while allowing effective management of pain.

Reference: *J Crit Care* 2019;54:42-7
[Abstract](#)

Cannabis use as a risk factor for causing motor vehicle crashes: a prospective study

Authors: Brubacher JR et al.

Summary: In a Canadian, prospective, case-control study, a responsibility analysis was used to assess whether injured drivers testing positive for delta-9-tetrahydrocannabinol (THC) or other drugs were more likely to have contributed to the crash than those testing negative. Among 3005 injured drivers, alcohol was found in the blood of 14.4%, THC in 8.3%, other drugs in 8.9% and sedating medications in 19.8%. There was no difference in risk of crash responsibility in drivers with THC levels <2 ng/mL, 2-5 ng/mL or ≥5 ng/mL (adjusted OR 1.74; 95% CI 0.59-6.36; p = 0.35). There was an increased risk of crash responsibility in those with a blood alcohol concentration ≥0.08% (OR 6.00; 95% CI 3.87-9.75; p < 0.01), other recreational drugs (OR 1.82; 95% CI 1.21-2.80; p < 0.01) or sedating medications (OR 1.45; 95% CI 1.11-1.91; p < 0.01).

Comment: Cannabis is the most commonly used illegal drug in NZ. 12% of NZers will have used cannabis in the past 12 months. 10% develop a pattern of heavy use. In substance use services, the percentage of clients with chronic heavy use may exceed 50%. Cannabis use as a risk factor while driving is therefore of significant importance. This Canadian study was done partly within the context of the recent legalisation of cannabis sales for recreational use in Canada. Their finding that there was no increased risk with THC blood-levels up to 5 ng/mL, and statistically non-significant increased risk of crash responsibility at levels above 5 ng/mL are in keeping with other recent similar studies. Blood THC levels of above 8.2 ng/mL will cause impairment similar to a blood alcohol concentration of >0.05%. There is however no unanimity on this, and other studies have found a significant association between THC blood-levels and crash risk. Clarity about these matters are of importance in formulating effective drugged-driving policies. Further research required! It should be remembered that combining cannabis with other sedative substances such as alcohol and benzodiazepines significantly increases the risk of motor vehicle accidents.

Reference: *Addiction* 2019;114(9):1616-26
[Abstract](#)

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Dispensing of medication for alcohol use disorder; an examination of large databases in a New Zealand context

Authors: Beaglehole B et al.

Summary: A NZ analysis of data from the Pharmaceutical Collection merged with diagnostic data from the national mental health and addiction service database (PRIMHD) assessed the use of disulfiram, naltrexone, antidepressants and quetiapine in 5004 patients with alcohol use disorder. Major depressive disorder was also diagnosed in 489 individuals. Among the group with alcohol use disorder, 2.1% received disulfiram and 0.7% naltrexone, whereas antidepressants (12.7%) and quetiapine (5.6%) were more common. In those with comorbid alcohol use disorder and depression, 2% received disulfiram, 0.2% received naltrexone, 27.4% received antidepressants and 11.2% received quetiapine.

Comment: Therapeutic research in this field is important, as alcohol is the substance by far most likely to lead to harm to others, and as well causes significant harm to the user. It is also known that people with underlying anxiety disorder and/or depression often use alcohol excessively, and that excessive drinking can lead to depression. This was a very large study, that identified 5004 individuals with alcohol use disorder and a subgroup of 489 individuals with both alcohol use disorder and depression. The researchers focussed on the prescribing of naltrexone and disulfiram (officially in NZ supported for alcohol use disorder), antidepressant medication, and quetiapine. In agreement with the researchers, I found the results of this study surprising and almost counterintuitive. For individuals with alcohol use disorder, very few were prescribed disulfiram (2.1%) and even less naltrexone (0.6%). 12.7% were prescribed an antidepressant and 5.6% quetiapine, even though there is no evidence that these medications are effective in the treatment of this disorder. The researchers comment that while other medications (topiramate, baclofen, gabapentin) show promise for alcohol use disorder, they are not significantly used in New Zealand. This is important research and should be noted by all practitioners who manage alcohol use disorder.

Reference: *N Z Med J. 2019;132(1495):48-53*

[Abstract](#)

Reducing days of alcohol use improves lifestyle and wellbeing: an analysis of outcomes data from New Zealand adult community alcohol and other drug services

Authors: Lai J et al.

Summary: This NZ study assessed the effect of alcohol use on lifestyle and wellbeing among 598 people accessing community alcohol and other drug services using Alcohol and Drug Outcome Measure (ADOM) data at treatment start and end. At treatment start, the most common lifestyle and wellbeing issues were mental health (39%), physical health (34%) and engagement in work (32%). The greatest improvements in lifestyle and wellbeing were observed for mental health (-23%), social relationships (-19%) and physical health (-16%). A reduction in days of alcohol use strongly contributed to positive changes in lifestyle and wellbeing.

Comment: Given that up to 20% of the NZ population has potentially hazardous drinking patterns, this research article gives practical and effective advice on ways to reduce the harm of drinking, such as addressing physical or mental problems, relationship problems, work problems and problems with alcohol-related offending. In the past, the main goal tended to be complete abstinence but, as this research shows, decreasing the number of drinking days and total volume of alcohol consumed might reduce the harm of chronic alcohol use, and improve personal experience of wellbeing. The article is available by clicking on the link below, and it might be useful to also read through the limitations of the research within that article. As a quick reminder: standard advice is for males not to exceed 15 standard drinks a week, 10 for females, with at least 2 alcohol-free days a week!

Reference: *N Z Med J. 2019;132(1495):54-64*

[Abstract](#)



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Life-course trajectories of cannabis use: a latent class analysis of a New Zealand birth cohort

Authors: Boden JM et al.

Summary: This NZ study using data from a longitudinal birth cohort (Christchurch Health and Development Study; n = 1065) examined trajectories of cannabis use from adolescence to adulthood (ages 15-35 years) and the predictors and adverse outcomes associated with those trajectories. Based on a 6-class solution, individuals with higher levels of cannabis use were more likely to have undergone adverse childhood family and individual circumstances, and membership of higher-use trajectories was associated with increased risk of adverse outcomes at 30-35 years of age. Adjustment for childhood family and individual predictors did not reduce the magnitude of the associations.

Comment: By age 21, 80% of NZders have tried cannabis at least once, 12% have used cannabis over the past year and 10% will develop a pattern of heavy use. Cannabis can be accessed legally in many countries (e.g., Uruguay, Canada, South Africa), and the current climate in NZ favours easier access. Thus, the matter of long-term harm is very much to the point. This rigorously executed study suggests that chronic use of cannabis is associated with increased risk of cannabis, alcohol and nicotine dependency; increased odds of mental health problems; lower socio-economic wellbeing; lower odds of achieving tertiary education; reduced income; lower likelihood of being in a relationship with increased risk of relationship violence or arrests/convictions. This was the case for both early-onset chronic and adult-onset regular users. Males were significantly overrepresented in these two groups. Moderate or intermittent users did not appear to be at increased risk. Factors that predisposed to higher risk included conduct disorder in adolescence; parental drug use; change of parental figures; exposure to childhood sexual abuse.

Reference: *Addiction 2019;Sep 10 [Epub ahead of print]*

[Abstract](#)

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