



Addiction in China: Towards a research agenda for the next 5 years

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Declarations of interest:

Robert West has received travel funds and hospitality from, and undertaken research and consultancy for pharmaceutical companies that manufacture or research products aimed at helping smokers to stop. These products include nicotine replacement therapies, Champix (varenicline) and Zyban (bupropion). This has led to payments to him personally and to his institution. He undertakes lectures and training in smoking cessation methods which have led to payments to him personally and to his institution. He has received research grants from medical charities and government departments. He is an unpaid advisor to the UK's National Centre for Smoking Cessation and Training.

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Abstract:

With 18% of the world's population, China represents a major area of need for high quality addiction research. With 19% of global GDP it also has the capacity to be a major actor in the scientific endeavour to understand and mitigate problems of addiction. The journal, Addiction, convened a group of leading Chinese researchers to consider priorities for addiction research in the coming years. Thirty topics were identified; the top three priorities were regular surveys to assess trends in the extent and nature of the problem, high quality evaluations of treatment programmes and moderators of treatment effectiveness, and large scale evaluations of population-level interventions.

Main text:

Addiction is a global problem accounting for an estimated 284 million disability adjusted life years (1). Up to now by far the largest focus of research has been in western countries, particularly the US and other English speaking countries. This is despite the fact that these represent only a small fraction of the world's population. It is essential that journals such as *Addiction* do everything possible to support the development of research in other regions. This editorial represents a small step in that direction.

An analysis of manuscripts submitted to *Addiction* from countries outside the western axis suggests that there are significant opportunities being missed. This is undoubtedly in part due to resource constraints and limitations in the research infrastructure. However, part of the missed opportunity may lie in lack of a clear strategy for optimising the value of research from non-western countries. Thus much of the research uses theoretical and epidemiological models drawn from the west that may not generalise well to different cultures. A truly global science of addiction needs to do more than adapt western models to non-western populations; it needs to fully embrace diversity without preconceived biases.

China contains 18% of the world's population and has 19% of global GDP (<https://data.worldbank.org/country/china>). It is developing rapidly and its government is showing an increased interest in putting it at the forefront of scientific advances. Smoking is highly prevalent among men in China (2), drinking alcohol is widely accepted (3) and online gaming is also common (4). The journal, *Addiction*, has a long-standing aim of serving the global community helping to build research capacity wherever possible. As part of this aim, we engaged with leading researchers in China to try to identify what they see as research priorities for the country.

To do this, we held a meeting in Beijing to which leading researchers in China were invited. This was followed up by an invitation to contribute ideas for research priorities. These were collated and ones that were very similar were amalgamated. The resulting list of priorities was then sent to the panel of researchers with a request to give each an importance rating on a five point Likert scale. The ratings were averaged and the degree of concordance assessed. The topics were then ordered in terms of priority.

The full results of the priority setting exercise are given in the Supplementary File. Thirty topics were identified. These are presented in thematic clusters in Table 1, with their overall priority indicated in the right-hand column (1 – 30 from highest to lowest assigned priority). Some of the topics reflect a pragmatic need for high quality epidemiological data for the purposes of policy development while others reflect an urgent need to extend the boundaries of our understanding of addiction as a human phenomenon. Both of these major areas of work will require high levels of research skills and active collaboration among researchers across different nationalities and cultures.

Three of the four research topics assigned highest priority by this panel of experts focus on defining the extent of the various addiction problems in China, measuring how well existing services and treatment programs are tackling those problems, and measuring people's beliefs about harms and costs of different types of addictive behaviours. Each of these priorities acknowledges the need for regular data collection: national surveys should be annual or biennial; treatment evaluation should be ongoing and constant.

Smoking emerged as the specific type of addictive behaviour most needing attention (third in the overall list of research priorities), followed by problematic internet use (eighth priority) and alcohol use disorder (tenth).

Research into ways to increase take-up of treatment services generally and reasons for relapse received seventh and fifth priorities, respectively, ahead of research into how to influence policy at local and national levels (eleventh priority).

Although most of the highest priority research topics focus on research within China to improve its own evidence base, the sixth item in the list acknowledges the enormous potential of addiction research in China to increase and improve the global evidence base.

A useful next step in the process of developing a research strategy will be for leading researchers in China to convene a meeting to discuss these priorities and consider whether and how they may contribute to the allocation of resources.

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Table 1: Thirty addiction topics identified as priorities for research in China, thematically grouped and with overall priority indicated

Topic	Overall Priority
Measuring Prevalence and Harm	
Annual or biennial large national surveys on alcohol, tobacco, illicit drug use and problem gambling to establish the extent of the behaviours, track changes, identify important socio-demographic correlates and evaluate the effects of policies, commercial supply side activity and changes in the economic and cultural climate. While in some cases substantial amounts of data are being collected, the resources to analyse and report findings are limited.	1
Studies on the prevalence of and extent of harm associated with problematic internet use. <i>It is suspected that this may be a growing issue but little is known about this.</i>	8
Studies in prevalence of, and factors associated with novel psychoactive compounds. ‘Designer drugs’ are becoming increasingly widely used in western countries. <i>It is important to track use and harms associated with these drugs in the Chinese population.</i>	18
Studies tracking prevalence of, and factors associated with, youth uptake of tobacco and progression to regular smoking. <i>A considerable amount is known about factors leading to uptake of tobacco in western countries but these may not generalise to the Chinese context.</i>	21
Studies on the harms associated with illicit drug use, including methamphetamine use, in the Chinese context. <i>The harms associated with use of many illicit drugs are well established in western countries but not in China.</i>	28
Prevalence surveys of illicit drug use among men who have sex with men (MSM). <i>This population has high rates of HIV and drug use may play a role in high risk behaviour.</i>	29
Studies on prevalence of smoking, alcohol consumption and illicit drug use while pregnant. <i>Smoking rates among Chinese women are low but harm caused by this to the fetus and mother is substantial. It is important to gain information on the extent of the problem to inform countermeasures.</i>	30
Assessing Interventions	
Routine collection of high quality data evaluating the effects of tobacco, alcohol, illicit drug and problem gambling services nationally, also assessing variations in outcomes according to different treatment approaches. These data are essential to assess the effectiveness and cost-effectiveness of treatment services and identify and disseminate best practice.	2
High quality, large-scale randomised controlled trials on wide reach, affordable behavioural, pharmacological, mass media, internet-delivered, smartphone-based and community interventions to promote smoking cessation. It is not clear how far	3

<i>interventions found to be effective in western countries translate to the Chinese context.</i>	
Studies on prevalence of, and factors influencing, use of addiction treatment services (ATS). <i>There is a need to encourage more people with addiction problems to seek help but little is known about how to achieve this.</i>	7
Studies to develop and evaluate wide-reach, brief interventions designed to prevent deterioration following detection of early signs of addictive disorders. <i>Brief interventions have been found to be effective to combat excessive alcohol consumption and smoking in western countries but it is not clear whether these translate into the Chinese context.</i>	9
High quality randomised trials of pharmacological treatments for alcohol use disorder, including sustained release naltrexone and SSRIs. <i>There is a need globally for clearer evidence on the effectiveness of pharmacological treatments for alcohol use disorder. China would be a cost-effective location for such studies.</i>	10
Development and rigorous evaluation of culturally appropriate treatment programmes for substance use disorders, including comparative studies of different treatment regimens and benefits of specific programmes for people who have not been helped by commonly used programmes. <i>There remains major uncertainty about the effectiveness and cost-effectiveness of treatment programmes in the Chinese context.</i>	12
High quality randomised controlled trials on interventions, including websites and smartphone applications, to combat problem gambling. <i>There is a lack of evidence globally on effectiveness of interventions to combat problem gambling and research in western samples may not generalise to the Chinese context. Smartphone-based gambling is becoming very prevalent and smartphone applications may be well suited to combating problems associated with this.</i>	15
Evaluations of traditional Chinese medicines as aids to smoking cessation. <i>Traditional Chinese medicines are popular and some have plausible mechanisms of action. They may provide culturally appropriate and cost-effective methods of smoking cessation.</i>	16
Studies evaluating population level alcohol and tobacco policies such as use of excise duty and control of retail outlets. <i>Research of this kind would add substantially to the global evidence base on the effectiveness of these kinds of intervention.</i>	20
Evaluation of effectiveness of treatment programmes for people with special populations with substance use disorder, including men who have sex with men. <i>High risk groups within society may require specially tailored interventions.</i>	24

Studies on the effectiveness, safety and unintended consequences of electronic cigarette use for smoking reduction and cessation. <i>The electronic cigarette phenomenon originated in China and this country could provide an invaluable testing ground to assess the public health benefits and potential drawbacks of this kind of product.</i>	27
Refining Etiology	
Regular national surveys on beliefs about the harms and costs associated with each type of addictive behaviour and motivation to act to reduce those risks, and socio-demographic correlates of these. Very little data of this kind exists so there is no rational basis for prioritising different types of policy interventions such as education in schools versus fiscal measures.	4
Studies examining biological, psychological and social factors associated with relapse following attempts to address substance use disorder, alcohol use disorder, smoking and problem gambling. It cannot be assumed that the same factors operate as have been found in western samples.	5
Studies helping to understand common mechanisms in behavioural and pharmacological addictions. <i>This is an area of global interest.</i>	6
Studies aimed at understanding co-occurrence of multiple addictive behaviours and associations with other harmful behaviour patterns such as poor diet and lack of exercise. <i>It is not clear in the Chinese context whether similar factors operate as in western samples that lead to co-occurrence of addictive behaviours.</i>	14
Development of genuinely global theories of addictive behaviours that take account of data from China. At present theories of addictive behaviours are primarily informed by evidence from non-human species and human studies in western samples. <i>These theories need to be tested and developed in the light of evidence from countries such as China.</i>	19
Studies linking genetic risk factors for addictive behaviours with neurobiological mechanisms. <i>There is still a considerable amount to learn about the neurobiology of addiction and research in China can make a substantial contribution to this highly cost-effectively.</i>	22
Studies to develop an improved understanding of the psychobiological effects of particular classes of drug such as stimulants, to provide a basis for development of treatment. <i>This is a global issue that could benefit from a Chinese perspective.</i>	25
Population studies assessing the extent of the genetic contributions to addictive disorders. <i>Given the importance of gene-environment interactions, such studies will extend and complement research being undertaken in western countries.</i>	26
Understanding Social and Contextual Factors	
Studies on factors influencing policy formation in relation to addictive behaviours. Implementation of interventions to combat addictive behaviours requires active involvement and engagement by policy makers. <i>There are numerous examples globally of failure to enact</i>	11

<i>policies that would benefit public health and economic activity. It is important to understand the processes involved to improve implementation of evidence-based practice.</i>	
<i>Studies on responses to and effectiveness of compulsory treatment in China. Compulsory treatment is controversial and it is important to establish all the parameters of effectiveness and acceptability to inform future policies.</i>	23
Advancing Methodology	
<i>Studies on diagnostic criteria for addiction-related disorders and their applicability to the Chinese population. Behaviour patterns and harms associated with addictions may vary from culture to culture and western-based diagnostic criteria may be less relevant in the Chinese context.</i>	13
<i>Studies to develop and evaluate culturally appropriate and accurate measures of addictive behaviours such as alcohol consumption for use in population surveys and treatment evaluations. There is a lot of work needing to be done globally on widely applicable and valid measures of addictive behaviours. It is not clear how well existing measures translate to the Chinese context.</i>	17

Accepted