

The Differences in Alcohol Use between Urban and Rural Students of Inner Mongolia Medical University, China

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Abstract

Objective: The purpose of this study was to evaluate the difference in alcohol use between urban and rural students of Inner Mongolia Medical University. **Methods:** A cross-sectional census was conducted on medical students on campus in 2013. We use multivariate logistic regression models to assess the factors associated with alcohol use. We further use chi-square test assess on differences in alcohol use between urban and rural people among significance factors in logistic regression models. **Results:** The prevalence of alcohol use among students in rural area was higher than that in urban area ($p = 0.016$). Alcohol use was associated with Gender, monthly expenses, residence, ethnic and faculty. The odds of alcohol use for Mongolia students were 1.139 times higher than that for Han students. The prevalence of alcohol consumption among students from pharmacy or Traditional Chinese Medicine and Mongolian Medicine faculties in rural area was higher than that among student in urban area ($p = 0.03$; $p = 0.001$). The prevalence of alcohol use among female students in rural area was higher than that among female students in urban area ($p < 0.043$). The proportion of alcohol use among students with <600 in rural area was higher than that among students in urban area ($p < 0.001$). **Conclusion:** Considering the differences in the prevalence of alcohol use between rural area and urban area, university administrators aiming at students from various regions develop various approaches.

Keywords

Alcohol Use, Urban, Rural, Medical Students

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1. Introduction

Alcohol use between adolescent has been widely proclaimed as a significant public health problem [1]. Young adulthood is the stage of life in which the highest levels of alcohol use occur [2] [3]. After entering university, a student's life situation changes, and he or she experiences increased independence, decreased parental guidance, supervision and support, and more social contacts with peers on the university campus [4]. Alcohol use is the result of the interaction between personal, environmental and sociodemographic factors [5]. Although there are a number of other risks and protective factors associated with alcohol consumption in young adults, the scope of our analysis covers a subset of sociodemographic variables such as gender, year of study, socioeconomic status [4], and ethnic [6], which are linked to, and seem to be specifically important for, the university environment. In different regions, alcohol use varies [7]. It was reported that there were differences of alcohol use between urban and rural area and rural adolescents were more likely to use alcohol than their peers in urban area [8] [9]. Studies suggest that youth in rural area are more likely than youth in urban area to begin drinking at an early age and to engage in binge and heavy drinking and driving while intoxicated [10] [11]. The different between rural and urban area was also performed in some other aspects in Inner Mongolian medical university, such as breakfast consumption [12], overweight [13] and distress [14]. Therefore, furthermore to study the difference in alcohol use for urban and rural. These results will help university administrators aiming at students from different regions (urban and rural) to develop different approaches.

2. Methods

A cross-sectional survey was conducted among medical students in the Inner Mongolia Medical University of China in 2013. We recruited students who were living on campus at the time of the survey. In this university, the duration of undergraduate study is 4 or 5 years. Some of these students have internships in the final or last 2 years of their courses, which are conducted off campus. Students who were completing internships and living off campus were not included in the investigation [15].

This study involved a self-administered questionnaire. Field workers from IMMU were trained to administer the survey. Students completed the questionnaires in the classroom. Informed consent was obtained from all participants, who were informed about the aim and design of our study, and assured that participation was voluntary. When students filled out the questionnaire, they returned the questionnaire in a sealed envelope to field workers [12].

Alcohol use was defined as one consumed any kinds of alcoholic beverage at least 12 times last year [16]. Urban area was defined as the cities or suburbs; and rural area was defined as the villages or pastoral areas [14].

Data was recorded with EpiData (Epi-Data Association, Denmark; v3.1). The age of the students was expressed as the mean age and standard deviation (SD). We used multivariate logistic regression models to assess the factors associated with alcohol use. In the binary logistic regression models, alcohol use was introduced as the dependent variables and independent variables included in the model were year of study (years 1 - 5), monthly expenses (<300 CNY, 300 - 600 CNY, 600 - 1000 CNY, >1000 CNY), residence (urban, rural), ethnic (Han, Mongolia and other minority), faculty (Clinical Medicine, Public Administration and Information Management, pharmacy, Traditional Chinese Medicine and Mongolian Medicine, other). Results are provided as odds ratios (OR) with 95% confidence intervals (CI). We further use chi-square test to assess alcohol use differences between urban and rural area among significance factors in logistic regression models. Statistical analysis was carried out by using the Statistical Package for the Social Sciences (SPSS Inc., Chicago, IL, USA, v13.0). A P-value < 0.05 was considered statistically significant.

Ethical approval to conduct the study was obtained from the Ethical Committee of Inner Mongolia.

3. Results

6104 students responded to the question about alcohol use in 6109 participants (response rate = 99.9%). There were 1668 male respondents (27.3%) and 4436 female (72.7%) respondents. The average age was 21 ± 1.5 years old. The overall prevalence of alcohol use was 55.3%. The prevalence of alcohol use in rural area (56.6%) was higher than that in urban area (53.5%). ($p = 0.016$).

Table 1 showed the results of the multivariate logistic regression models. Based on these analyses, we found out that alcohol use was associated with gender, ethnic, monthly expenses, residence and faculty. The odds of

Table 1. Evaluation of factors for alcohol consumption by multivariate logistic regression analysis.

Category	B	S.E.	Wald	OR	OR (95% CI)	P
Gender						<0.001
Female						
Male	0.506	0.061	69.355	1.658	1.472 - 1.868	
Ethnic						0.033
Han						
Mongolia	0.13	0.061	4.585	1.139	1.011 - 1.283	
Other Minority	-0.164	0.133	1.524	0.848	0.654 - 1.101	
Residence						<0.001
Urban						
Rural	0.234	0.057	16.761	1.264	1.13 - 1.413	
Faculty						0.002
Clinical Medicine						
Public Administration and Information Management	-0.098	0.129	0.578	0.906	0.703 - 1.168	
Pharmacy	-0.205	0.087	5.55	0.815	0.687 - 0.966	
Traditional Chinese Medicine and Mongolian Medicine	-0.283	0.071	16.055	0.753	0.656 - 0.865	
Other	-0.187	0.076	6.131	0.829	0.715 - 0.962	
Monthly expenses (CNY)						<0.001
<300						
300 - 600	0.013	0.156	0.007	1.014	0.747 - 1.376	
600 - 1000	0.263	0.152	3.001	1.3	0.966 - 1.75	
>1000	0.465	0.162	8.298	1.593	1.16 - 2.186	
Year of study						0.095
1						
2	-0.005	0.06	0.008	0.995	0.884 - 1.119	
3	0.127	0.08	2.54	1.135	0.971 - 1.327	
4	0.064	0.141	0.205	1.066	0.808 - 1.406	
5	0.93	0.409	5.18	2.535	1.138 - 5.647	

alcohol use were 1.264 times higher for students in rural area than those in urban area and the odds of alcohol use were 1.139 times higher for Mongolia students than those for Han students.

Figure 1 showed the differences of alcohol use between urban and rural area among different faculties. The prevalence of alcohol use among students from pharmacy or Traditional Chinese Medicine and Mongolian Medicine faculties in rural area was about 8% higher than that in urban area ($p = 0.03$; $p = 0.001$). However, there was no significant difference in alcohol use prevalence between urban and rural area in other three faculties ($p > 0.05$).

Figure 2 showed the differences in proportion of alcohol use for students with various monthly expenses between urban and rural area. The proportion of alcohol use among students whose monthly expenses were less than 600 CNY in rural area was higher than that in urban area ($p < 0.001$). The proportion of alcohol use among students whose monthly expenses were more than 1000 CNY in rural area was lower than that in urban area ($p < 0.001$).

Figure 3 showed the prevalence of alcohol use for students with different genders between urban and rural area. The prevalence of alcohol use among female students in rural area was higher than that in urban area ($p < 0.043$). There was no significant difference in breakfast use prevalence between urban males and rural males ($p > 0.05$).

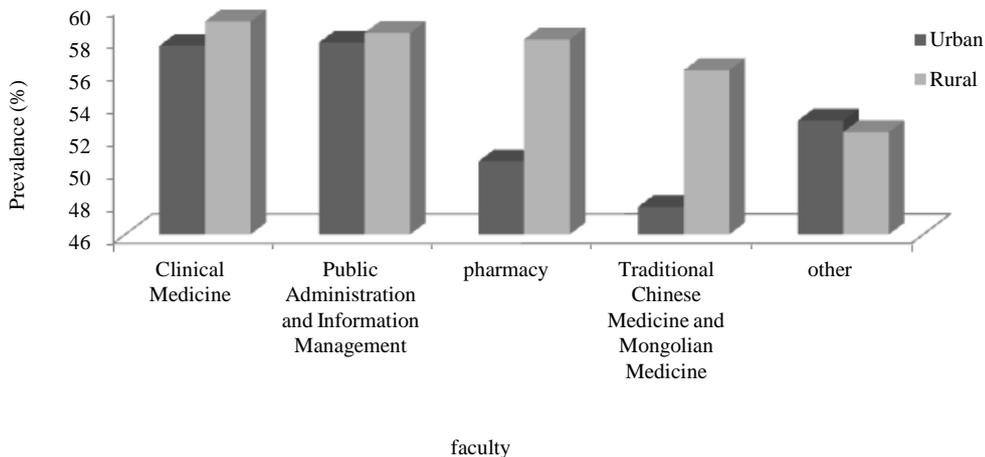


Figure 1. Prevalence of alcohol consumption for various faculties students between urban and rural.

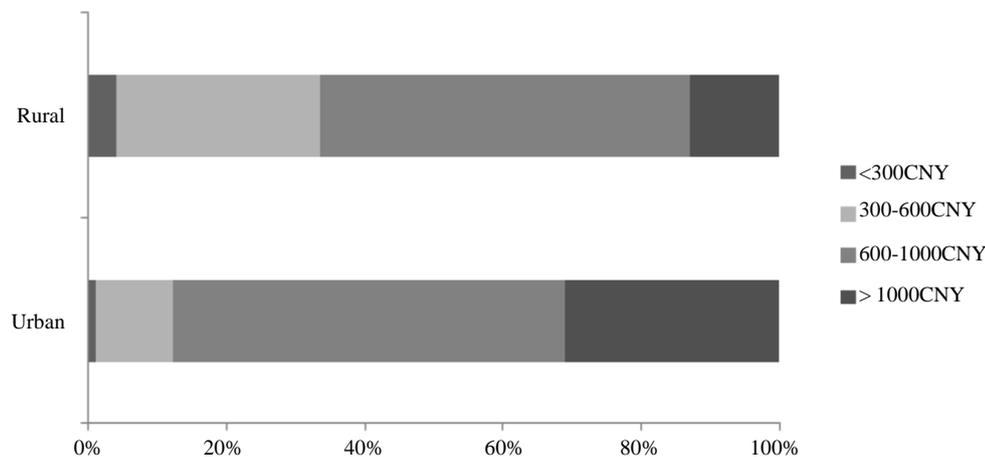


Figure 2. Proportion of alcohol consumption for various monthly expenses students between urban and rural.

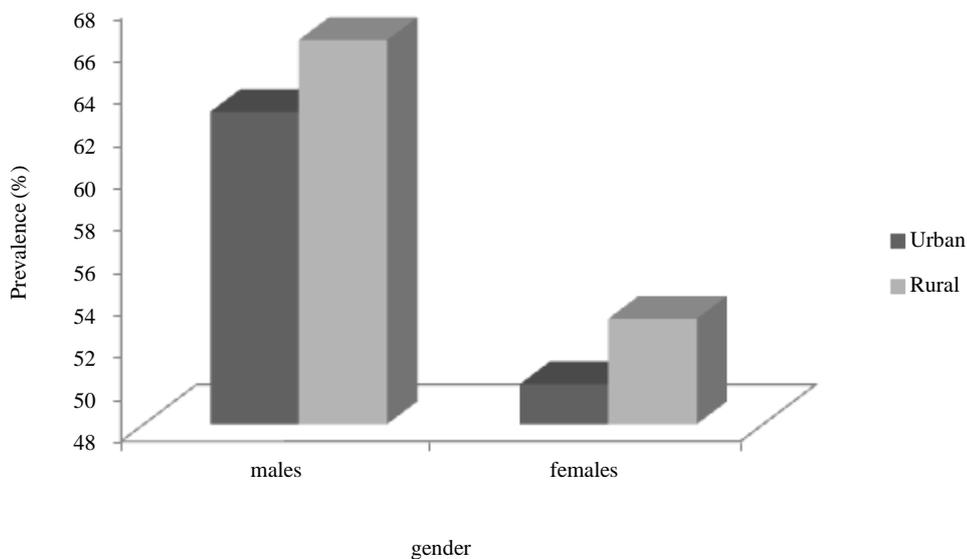


Figure 3. Prevalence of alcohol consumption for various genders students between urban and rural.

4. Discussion

Our study shows that the prevalence of alcohol use in rural area was higher than that in urban area. Similarly, in Australia, alcohol use is more prevalent in rural area than urban area [17]. A study revealed the reason why adolescents from rural area were at higher risk of alcohol use was likely that rural adolescent and peer attitudes regarding alcohol use are influenced by lower levels of parental less disapproval of adolescent alcohol use and the higher tolerance for alcohol use in rural communities [9]. Although there are significant difference in the prevalence of alcohol use between rural and urban area (56.6% vs 53.5%), the difference is small.

The prevalence of alcohol use among students who major in pharmacy or come from Traditional Chinese Medicine and Mongolian Medicine faculties in rural area was higher than that in urban area. The reason of the urban-rural difference is that the proportion of Mongolia students come from pharmacy or Traditional Chinese Medicine and Mongolian Medicine faculties in rural area is far higher than that in urban area and Mongolia is also associated with increasing odds of alcohol use in our study. It is well known that Mongolians have drinking culture that more likely to drink [18].

Both in rural and urban area, the prevalence of alcohol use for males is higher than that for females in our study. A research indicates that no matter which countries they are from and what cultures they have, males are more likely to drink alcohol [19]. In our study, we also find out that there is no significant urban-rural difference in the prevalence of alcohol use among males. This is similar with the study in South Africans [20]. Whereas, the prevalence of alcohol use among female students in rural area is higher than that in urban area.

The proportion of alcohol use among students with lower expenses in rural area was higher than that in urban area. It is reported that economic strain and life stress predicted symptoms for lower-income families in rural area [21] and stress induced drinking [22]. On the contrary, the proportion of alcohol use among students with higher expenses in rural area was lower than that in urban area. Some literatures revealed that drinking is perceived as the most effective way of providing social support, and high-income urban people more like to social and increased social drinking occasions [23].

5. Conclusion

There was urban-rural difference in the prevalence of alcohol use. It is well-known that Mongolians like to drink. Mongolia students who major in pharmacy or come from Traditional Chinese Medicine and Mongolian Medicine faculties in rural area are more than in urban area which leads to their higher prevalence of alcohol use than those in urban area. Life level of students also impacts on urban-rural difference in alcohol use.

References

- [1] General, O.O. (2007) The Surgeon General's Call to Action to Prevent and Reduce Underage Drinking. Office of the Surgeon General, Falls Church.
- [2] Casswell, S. and Pledger, M.R. (2003) Socioeconomic Status and Drinking Patterns in Young Adults. *Addiction*, **98**, 601-610. <http://dx.doi.org/10.1046/j.1360-0443.2003.00331.x>
- [3] Fillmore, K.M., Hartka, E., Johnstone, B.M., Leino, E.V., Motoyoshi, M. and Temple, M.T. (1991) A Meta-Analysis of Life Course Variation in Drinking. *British Journal of Addiction*, **86**, 1221-1267. <http://dx.doi.org/10.1111/j.1360-0443.1991.tb01702.x>
- [4] Sebens, R., Orosova, O., Mikolajczyk, R.T. and Dijk, J.P.V. (2011) Selected Sociodemographic Factors and Related Differences in Patterns of Alcohol Use among University Students in Slovakia. *BMC Public Health*, **11**, 849-849. <http://dx.doi.org/10.1186/1471-2458-11-849>
- [5] Grube, J.W., Morgan, M. and McGree, S.T. (1986) Attitudes and Normative Beliefs as Predictors of Smoking Intentions and Behaviours: A Test of Three Models. *British Journal of Social Psychology*, **25**, 81-93. <http://dx.doi.org/10.1111/j.2044-8309.1986.tb00707.x>
- [6] Caetano, R., Clark, C.L. and Tam, T. (1998) Alcohol Consumption among Racial/Ethnic Minorities. *Alcohol Health & Research World*, **22**, 233-241.
- [7] Ding, X., Mao, D., Shen, Z., Lv, X. and Zhang, C. (2015) Comparison of Lifestyle and Behavior Related to Chronic Non-Communicable Diseases between Urban Residents And Rural Residents in Chongqing City. *Chinese Journal of Prevention and Control of Chronic Non-Communicable Diseases*, **23**, 512-515. <http://dx.doi.org/10.16386/j.cjpcd.issn.1004-6194.2015.07.009>
- [8] Lasser, J., Schmidt, E., Diep, J. and Huebel, A. (2010) Underage Rural Drinking: Survey Data and Implications for

Educators. *Rural Educator*, **31**.

- [9] Cronk, C.E. and Sarvela, P.D. (1997) Alcohol, Tobacco, and other Drug Use Among Rural/Small Town and Urban Youth: A Secondary Analysis of the Monitoring the Future Data Set. *American Journal of Public Health*, **87**, 760-764. <http://dx.doi.org/10.2105/AJPH.87.5.760>
- [10] Sarvela, P.D., Pape, D.J., Odulana, J. and Bajracharya, S.M. (1990) Drinking, Drug Use, and Driving among Rural Midwestern Youth. *Journal of School Health*, **60**, 215-219. <http://dx.doi.org/10.1111/j.1746-1561.1990.tb05918.x>
- [11] The National Center on Addiction and Substance Abuse at Columbia University (2000) No Place to Hide: Substance Abuse in Mid-Size Cities and Rural America. New York.
- [12] Sun, J., Yi, H., Liu, Z., Wu, Y., Bian, J., Wu, Y. and Yang, Y. (2013) Factors Associated with Skipping Breakfast among Inner Mongolia Medical Students in China. *BMC Public Health*, **13**, 42. <http://dx.doi.org/10.1186/1471-2458-13-42>
- [13] Chen, J., Yi, H., Liu, Z., Fan, Y., Bian, J., Guo, W. and Sun, J. (2013) Factors Associated with Being Overweight among Inner Mongolia Medical Students in China. *BMJ Open*, **3**, e003900-e003900. <http://dx.doi.org/10.1136/bmjopen-2013-003900>
- [14] Chen, J., Wu, Y., Yi, H., Li, Z., Eshita, Y., Qin, P. and Sun, J. (2013) The Impact of Academic Stress on Medical Students Attending College in the Inner Mongolia Area of China. *Open Journal of Preventive Medicine*, **3**, 149-154. <http://dx.doi.org/10.4236/ojpm.2013.32019>
- [15] Bian, J., Du, M., Liu, Z., Fan, Y., Eshita, Y. and Sun, J. (2012) Prevalence of and Factors Associated with Daily Smoking among Inner Mongolia Medical Students in China: A Cross-Sectional Questionnaire Survey. *Substance Abuse Treatment, Prevention, and Policy*, **7**, 20. <http://dx.doi.org/10.1186/1747-597X-7-20>
- [16] Xiao, J., Huang, J. P., Xu, G.F., Chen, D.X., Wu, G.Y., Zhang, M. and Cai, H. (2015) Association of Alcohol Consumption and Components of Metabolic Syndrome among People in Rural China. *Nutrition & Metabolism (London)*, **12**, 5. <http://dx.doi.org/10.1186/s12986-015-0007-4>
- [17] Chan, G.C.K., Bhsc, J.L., Quinn, C., Kelly, A.B., Connor, J.P., Psyc, M.W.B. and Hall, W.D. (2015) Rural and Urban Differences in Adolescent Alcohol Use, Alcohol Supply, and Parental Drinking. *Journal of Rural Health*. <http://dx.doi.org/10.1111/jrh.12151>
- [18] Zhang, W. (2007) Mongolian Drinking Customs & the Reflection of Mongolian Values. *Liquor-Making Science & Technology*.
- [19] Sieri, S., Agudo, A., Kesse, E., Klipstein-Grobusch, K., San-José, B., Welch, A.A. and Overvad, K. (2002). Patterns of Alcohol Consumption in 10 European Countries Participating in the European Prospective Investigation into Cancer and Nutrition (EPIC) Project. *Public Health Nutrition*, **5**, 1297-1310. <http://dx.doi.org/10.1079/phn2002405>
- [20] Peer, N., Bradshaw, D., Laubscher, R., Steyn, N. and Steyn, K. (2013) Urban-Rural and Gender Differences in Tobacco and Alcohol Use, Diet and Physical Activity among Young Black South Africans between 1998 and 2003. *Global Health Action*, **6**, 19216. <http://dx.doi.org/10.3402/gha.v6i0.19216>
- [21] Wadsworth, M.E., Raviv, T., Compas, B.E. and Connor-Smith, J.K. (2005) Parent and Adolescent Responses to Poverty Related Stress: Tests of Mediated and Moderated Coping Models. *Journal of Child and Family Studies*, **14**, 283-298. <http://dx.doi.org/10.1007/s10826-005-5056-2>
- [22] Cooper, M.L., Russell, M. and Frone, M.R. (1990) Work Stress and Alcohol Effects: A Test of Stress-Induced Drinking. *Journal of Health & Social Behavior*, **31**, 260-276. <http://dx.doi.org/10.2307/2136891>
- [23] Wu, B., Mao, Z.-F., Rockett, I.R.H. and Yue, Y.W. (2008) Socioeconomic Status and Alcohol Use among Urban and Rural Residents in China. *Substance Use & Misuse*, **43**, 952-966. <http://dx.doi.org/10.1080/10826080701204961>