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ORIGINAL RESEARCH

Alcohol Consumption Patterns for Excessive Drinkers in a Multi-Ethnic Society Short Running Title: Drinking Patterns and Health Education

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Objective: Culture and eating habits, which vary greatly across different ethnic groups, have a substantial impact on drinking behavior. This study aimed to examine whether the drinking patterns and reasons differ by ethnic groups, and provide useful insights for multi-ethnic areas that seek to cut down alcohol intake.

Methods: We recruited excessive drinkers and collected the drinking patterns and motivations by questionnaire in a multi-ethnic society. Multiple linear regressions were used to evaluate the variations in drinking characteristics among different ethnic groups.

Results: We recruited 1287 participants through convenience sampling (a non-probability sampling technique used in research where the researcher selects participants or units for a study based on their accessibility and proximity), among whom 439 excessive drinkers were eligible. The mean age was 38 years for the 439 participants, 92.9% were men, 36.0% were Han, and 64.0% were minorities mainly composed of the Yi. The majority of the participants were married (75.9%) and did physical work (58.1%). Ethnic minorities consumed more alcohol on a single occasion than Han people did (47.3 vs 41.8g/session) while drinking less frequently. For the minority and Han participants, 67% and 42% were not used to drinking with food, respectively. Peer pressure and fostering a good atmosphere were the most common drinking reasons for the minority and Han, respectively.

Conclusion: We found substantial differences in drinking patterns and reasons between ethnic minorities and Han ethnicity, attributable to their culture and customs. Findings highlight the importance of drinking habits and motivations in exploring alcohol control education strategies in the context of ethnic integration and population immigration.

Keywords: health education, alcohol drinking habits, motivations, ethnic groups

Introduction

More than one third of the world's population use alcohol,[1] making it one of the most common beverages in social situations worldwide.[2] According to the Global Burden of Disease research, alcohol use accounts for 2.07 million deaths in males and 0.37 million deaths in females in 2019 and is among the leading ten risk factors for DALYs (Disability-adjusted life years) worldwide.[3] Excessive or harmful drinking leads to alcohol use disorder, chronic liver damage, malignant tumors, and cardiovascular and cerebrovascular diseases.[4–8] The consequences of alcohol consumption vary by drinking patterns, such as the type of alcohol, the frequency, amount, and speed of drinking, and the time of drinking in relation to meals.[9–13]

It is well known that drinking behavior is affected by culture and eating habits.[14–16] China has a well-known drinking culture and a long history of alcohol consumption,[17,18] and the per-capita alcohol consumption has been rising over time.[19] Some ethnic minority regions in China have unique and strong drinking cultures shaped by their living environment, customs,

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and other factors, including genetic predispositions. With the development of society and economy, minorities (accounting for 8.9% of the total population) and Han, the majority ethnic group in China (accounting for 91% of the total population), are always integrated with prevailing cultural exchange and collision. In multi-ethnic areas or cities with large numbers of immigrants, researchers should pay particular attention to cultural factors such as ethnic identification and orientation.[20] Thus, understanding the drinking patterns and causes should be the first step in culturally-specific health education strategies. However, previous studies did not describe the differences in drinking patterns and reasons of diverse ethnicities.[18,19]

Yi is one of the largest minority groups in China, with a population of 8.71 million (33.7%), have a high prevalence of alcohol use and drinking-related health risks the same as Han,[21,22] and both ethnic groups took alcohol as an essential part in their life occasions such as birth, marriage, business, and holidays.[23] This study took Liangshan Yi Autonomous Prefecture, a typical mixed living area for Yi and Han in China,[24] as an example to explore the drinking patterns and the reasons behind drinking in different ethnic groups, to provide a basis for developing targeted health education strategies for drinking control among different ethnic groups. This study aimed to characterize the drinking patterns and reasons of the Yi population and how they differ from the Han. Results may have implications for health education strategies considerations in multiethnic areas that seek to cut down alcohol intake.

Materials and Methods

Study Design

This cross-sectional questionnaire-based survey was conducted in 2021 in Xichang City, Liangshan Yi Autonomous Prefecture. Report of the study was based on the STROBE Statement (http://www.strobe-statement.org).

Selection and Description of Participants

Recruitment activities were conducted in urban communities and suburban villages in Xichang through print advertising (posters). We invited 1287 participants who lived in Xichang through convenient sampling to take a quick on-site questionnaire survey to select the eligible participants. All enumerators (college student volunteers) could speak Mandarin and the local dialect of Mandarin fluently; they can conduct the interview using either language that is more familiar to participants. Trained enumerators were organized to gather demographic data, medical history (specifically, whether they had abstinence experience,[25] epilepsy, liver disease, usage of sedative drugs). Additionally, the Alcohol Use Disorder Identification Test (AUDIT) was also administered to measure whether a respondent meets the criteria of an excessive drinker. Eligible participants are aged between 18 years and 65 years, who reported having no history of abstinence experience, epilepsy, or liver diseases, were not currently using sedative drugs, and exhibited signs of excessive alcohol consumption with an AUDIT score ≥ 8.[26] Upon screening, a total of 439 eligible participants were identified eligible for inclusion in the study.

Data Collection and Measurements

Trained enumerators (college student volunteers) collected basic information from all participants, including age, gender, ethnicity, weight, marital status, occupation, education, household income, age of first drinking, and self-reported health status by in-person questionnaires. We also collected drinking patterns in the previous week: (1) beverage type on a general drinking occasion; (2) times of drinking/day; (3) the average volume of drinking on a general drinking occasion; (4) drinking in relation to meals; (5) times of heavy drinking (consuming more than 60 g of alcohol on one occasion for men, and more than 40 g for women);[26] and (6) amount of alcohol consumed on heavy drinking occasions. Participants were also asked about the reasons for drinking, a multiple-choice question that at most three reasons could be selected from “Peer pressure”, “For a good atmosphere”, “Enjoying drinking”, “Feeling depressed and stressed”, “Required by superiors or elders”, “Regarding alcohol as the only drink”. Among which, “For a good atmosphere”, “Enjoying drinking”, “Feeling depressed and stressed” showed the participants drink actively and due to their self-motivation. However, “Peer pressure”, “Required by superiors or elders”, “Regarding alcohol as the only drink” showed the participants have to accept the environment or others demand without considering their own preferences, which are defined as drink passively.

The amount of drinking was measured by pure alcohol consumed in grams which was calculated according to the beverage type (Eq. (1)) based on the assumption of the following alcohol content by volume (v/v) typically seen in China:[27] strong spirits 53%, foreign liquor 40%, rice wine 15%, grape wine 12%, and beer 4%. To ensure the accuracy of the amount of pure alcohol consumption, we adopted a logical step-by-step questioning method. Firstly, we constrained the time span of recalling as one week, a relatively short time period. Secondly, we emphasized that we care about the general drinking patterns rather than specific occasions of alcohol consumption. Third, we collected alcohol type to obtain the alcohol content, drinking time each day and drinking days last week to obtain the drinking times, and the volume of drinking each time to obtain the total drinking volume, which makes it possible to calculate the pure alcohol consumption in grams. The blood alcohol concentration changes as a function of time, here we just estimated the highest level to reflect the most series situation: the blood alcohol concentration in heavy drinking occasions by Eq. (2), where we assumed blood is 7.5% of the body weight, and the density of blood is 1.05 g/mL.[28] We took the unit as mg alcohol per 100mL blood to be compared with the standard of drunk driving (20mg alcohol per 100mg blood).[29]

$$\text{Pure alcohol (grams)} = 0.789 \times \text{Drink Volume (ml)} \times \frac{\text{Alcohol Content (\% by volume)}}{100} \quad (1)$$

$$\textit{Blood alcohol concentration} = \frac{\textit{Amount of pure alcohol (mg)}}{\frac{\textit{weight (g)} * 7.5\%}{1.050 * 100}} \quad (2)$$

Statistical Analyses

The baseline characteristics of participants were reported as percentage, mean with Standard Deviation (SD) or median with Interquartile Range (IQR). We compared the AUDIT score and drinking patterns of Han and ethnic minorities, and Wilcoxon Rank Sum test, Chi-squared () test, or *t*-test were used as appropriate. The analysis of drinking patterns was restricted to those who drank last week before our survey.

Multiple linear regression was used to examine the associations between drinking patterns and ethnicity, controlling for other demographic factors and socioeconomic status. AUDIT score and three principal indices of drinking patterns including weekly amount of alcohol consumption, alcohol intake per session, and weekly drinking frequency were selected as dependent variables since the current literatures documented the importance of drinking frequency and usual quantities in evaluating individuals' drinking pattern.[30–32]

We ranked the reasons of drinking among Han and other ethnic minorities according to the percentage of each reason that was chosen to identify the primary motivations. We analyzed the percentage of drinking reasons chosen in various age, education, household income, geography, job, and marital status groups to further explore whether other characteristics affected the drinking reasons within ethnicity.

All statistical analyses were performed using R software version 4.0.1. Two-sided p-values < 0.05 were considered statistically significant.

Results

Socio-Demographic Characteristics of the Participants

The mean age was 38 years (SD 12) for the 439 participants, 92.9% were men, 36.0% were Han, and 64.0% were minority mainly composed of the Yi (62% of the 439 participants were Yi). The majority of the participants were married (75.9%) and did physical work (58.1%). The average monthly household income was less than 7000 yuan (US $ 1018.9) for most participants (84.5%) (Table 1).

Drinking Patterns Among Ethnic Groups

Overall, the mean alcohol consumption per session was 65.6 grams, and the average drinking frequency was 3.4 times per week. Table 2 showed the results of different drinking patterns among each ethnic groups. In terms of drinking-related health risks, the median AUDIT score was 12 points, which was higher in the minority ($p<0.05$). More than three-quarters of participants reported drinking alcohol in the previous week, and all of them reported heavy drinking experiences last week.

Table 1 Description Statistics of Participants

	Han	The Minority	Total	*P*-value
Number of participants, NO. (%)	158 (36.0)	281 (64.0)	439 (100)	
Age, years				**0.005** [a]
Mean (SD)	41 (12)	37 (12)	38 (12)	
Birth year, NO. (%)				0.071 [b]
<1969	38(24.1)	42(15)	80(18.2)	
1970~1979	42(26.6)	63(22.4)	105(23.9)	
1980~1989	32(20.3)	67(23.84)	99(22.6)	
1990~1999	39(24.7)	91(32.4)	130(29.6)	
2000~	7(4.43)	18(6.4)	25(5.7)	
Gender, NO. (%)				**0.003** [b]
Male	155 (98.1)	253 (90.0)	408 (92.9)	
Highest education, NO. (%)				**<0.001** [b]
No formal education	28(17.7)	96(34.2)	124(28.3)	
Primary school	19(12.0)	59(21.0)	78(17.8)	
Middle or high school	70(44.3)	54(19.2)	124(28.3)	
Technical school/college or above	41(26.0)	72(25.6)	113(25.7)	
Household income, Yuan/month, NO. (%)				**<0.001** [b]
<=1000	5(3.2)	53(18.9)	58(13.2)	
1001 ~ 3000	21(13.3)	93(33.1)	114(26.0)	
3001 ~ 5000	48(30.4)	81(28.8)	129(29.4)	
5001 ~ 7000	40(25.3)	30(10.7)	70(16.0)	
>7000	44(27.9)	24(8.6)	68(15.6)	
Area, NO. (%)				**<0.001** [b]
Urban	97(61.4)	92(32.7)	189(43.1)	
Rural	61(38.6)	189(67.3)	250(57.0)	
Job, NO. (%)				**0.027** [b]
Physical work	103(65.2)	152(54.1)	255(58.1)	
Office work	44(27.9)	89(31.7)	133(30.3)	
Unemployed	11(7.0)	40(14.2)	51(11.6)	
Marital Status, NO. (%)				0.740 [b]
Single	33(20.9)	60(21.4)	93(21.2)	
Married and living together	119(75.3)	214(76.2)	333(75.9)	
Separated/divorced/widowed	6(3.8)	7(2.5)	13(3.0)	

Notes: Data are mean (SD) or number (%). Boldface indicates statistical significance. [a]For "Age", we used *t* test. [b]For categorical variables, Chi-squared (χ^2) test was applied. The exchange rate of Chinese Yuan to US dollars is 6.87 (2023–03-14).

The median alcohol intake per session of the minority was higher than that of Han (47.3 vs 41.8g/session) (p<0.01). However, compared with Han, more participants of the minority reported lower weekly drinking frequency (p <0.01). Thus, we did not see the difference between those ethnic groups in terms of the weekly consumption amount. In addition, the minority tended to drink more than the Han in heavy drinking occasions (83.6 vs 62.7) (p<0.05). Unlike the minority who preferred beer, strong spirits were the most common beverage type consumed among Han drinkers. Han drinkers (58%) preferred to drink with a meal than the minority (33%) (p<0.01).

The Association Between Ethnicity and Drinking Patterns

Table 3 presents the crude and multivariate adjusted coefficients and 95% confidence intervals for the association of AUDIT score and drinking patterns with ethnicity. In the age and sex adjusted model, the minority was significantly associated with an increased AUDIT score (p<0.001), more alcohol intake per session (p <0.001), and a larger amount of weekly alcohol consumption (p <0.05), but not weekly drinking frequency (p >0.05). After multivariate adjustment, we found similar results,

Table 2 AUDIT Scores and Drinking Patterns Among Different Ethnic Groups

	Han	The Minority	Total	*P*-value
Number of participants, **NO.**	158	281	439	
Audit score				**0.006**[a]
Median (IQR)	11 (4.0)	12 (6.0)	12 (6.0)	
First-drinking age				**<0.001**[a]
Mean (SD)	18.6 (6.3)	21.6 (7.2)	20.5 (7.0)	
Among participants who drank last week				
Number of participants, No.	134	206	340	
Alcohol consumption per session, grams				**0.004**[a]
Median (IQR)	41.8 (33.0)	47.3 (63.1)	41.8 (52.1)	
Number of drinking times per week, NO. (%)				**<0.001**[b]
1~3	63 (47.0)	129 (62.6)	192 (56.5)	
4~7	62 (46.3)	58 (28.2)	120 (35.3)	
≥8	9 (6.7)	19 (9.2)	28 (8.2)	
Alcohol consumption per week, grams				0.511[a]
Median (IQR)	188.2 (229.6)	126.2 (313.2)	157.8 (264.3)	
Alcohol consumption in heavy drinking occasions, grams/session				**0.021**[a]
Median (IQR)	62.7 (62.7)	83.6 (78.9)	78.9 (83.6)	
Heavy drinking occasions, times per week, NO. (%)				0.725[b]
1~2	99 (73.9)	144 (70.0)	243 (71.5)	
3~5	23 (17.2)	40 (19.4)	63 (18.5)	
≥6	12 (9.0)	22 (10.7)	34 (10)	
Blood alcohol concentration in heavy drinking occasions, mg/100mL blood				**0.036**[a]
Median (IQR)	1377.3 (1445.3)	1836.4 (2025.3)	1580.4 (1761.1)	
Types consumed, NO. (%)				**<0.001**[b]
Strong spirit (≥40% alcohol)	68 (50.8)	57 (27.7)	125 (36.8)	
Beer	60 (44.8)	145 (70.4)	205 (60.3)	
Others (grape wine, rice wine, foreign wine)	6 (4.5)	4 (1.9)	10 (2.9)	
Drinking with meal, n(%)				**<0.001**[b]
Yes	78 (58.2)	67 (32.5)	145 (42.7)	
No	56 (41.8)	139 (67.5)	195 (57.4)	

Notes: [a]For numerical variables, we used Wilcoxon rank sum test and *t* test. [b]For categorical variables, Chi-squared (χ^2) test was applied. Boldface indicates statistical significance.

the minority were associated with greater AUDIT score (ß=1.45, 95% confidence interval 0.50 to 2.41), alcohol intake per session (ß=162.27, 27.40 to 297.14), and weekly alcohol consumption (ß=34.13, 17.76 to 50.49), respectively.

Reasons for Drinking Among Different Ethnic Groups

Table 4 shows the most common reasons for drinking among different ethnic groups. Among the excessive drinkers in this study, over two thirds of them reported peer pressure as their main reason for drinking, particularly for the minority. The most common reasons followed by "for a good atmosphere" (53.3% of the participants reported) and "enjoying drinking" (37.6%). Other reasons for drinking were "feeling depressed and stressed" (21.2%), "required by superiors or elders" (11.6%), or "regarding alcohol as the only drink" (1.8%) (Table S1). Reasons for drinking varies by age and other factors among Han. Han individuals in their 20s, with higher levels of education or lesser incomes, drank mostly for a good atmosphere. Enjoyment of drinking was the primary driving factor for Han participants in the older age and separated/divorced/widowed groups. However, for the minority, drinking reasons did not vary by demographic or socioeconomic characteristics, peer pressure is the most frequent reason in all subgroups.

Table 3 Drinking Related Health Risks and Drinking Patterns Associated with Ethnicity

	AUDIT Score		Alcohol Consumption Weekly (Grams)		Alcohol Consumption per Session (Grams)		Times of Drinking Per Week	
	Median (IQR)	**Coef. (95% CI)**	**Median (IQR)**	**Coef. (95% CI)**	**Median (IQR)**	**Coef. (95% CI)**	**Median (IQR)**	**Coef. (95% CI)**
Ethnicity								
Han	11(4)	1(ref)	188.2(229.6)	1(ref)	41.8 (33)	1(ref)	4(5)	1(ref)
The minority	12(6)	–	126.2(313.2)	–	47.3 (63.1)	–	3(5)	–
Model 1[a]		**1.37(0.56,2.18) *****		**113.78(5.39,222.17)***		**24.03(10.84,37.23) *****		−0.3(−1.14,0.55)
Model 2[b]		**1.22(0.28,2.16) ***		**143.11(11.18,275.04)***		**33.3(17.37,49.22) *****		0.04(−0.98,1.06)
Model 3[c]		**1.45(0.5,2.41)****		**162.27(27.4,297.14)***		**34.13(17.76,50.49) *****		−0.02(−1.06,1.03)

Notes: Coefficients in the table are Ordinary Least Square (OLS) coefficients (95% confidence intervals) of ethnicity for AUDIT score, weekly alcohol consumption, drinking frequency and heavy drinking frequency. Boldface indicates statistical significance (*p<0.05, **p<0.01, ***p<0.001). [a]Model 1: multiple linear regression model, adjusted for age and gender. [b]Model 2: model 1+adjusted for education, monthly household income, occupation, marital status, and geographic region. [c]Model 3: Model 2+adjusted for self-reported health status.

Table 4 Most Common Reasons for Drinking Among Different Ethnic Groups

	Han				The Minority			
	No.	**Peer Pressure**	**For a good Atmosphere**	**Enjoying Drinking**	**No.**	**Peer Pressure**	**For a Good Atmosphere**	**Enjoying Drinking**
Overall	158	70(44.3)	77(48.7)	72(45.6)	281	200(71.2)	157(55.9)	93(33.1)
Birth Year								
<1969	38	13 (34.2)	15 (39.5)	27 (71.1)	42	32 (76.2)	25 (59.5)	20 (47.6)
1970~1979	42	20 (47.6)	19 (45.2)	18 (42.9)	63	51 (81.0)	35 (55.6)	25 (39.7)
1980~1989	32	13 (40.6)	13 (40.6)	15 (46.9)	67	48 (71.6)	33 (49.3)	21 (31.3)
1990~1999	39	21 (53.9)	28 (71.8)	10 (25.6)	91	59 (64.8)	53 (58.2)	25 (27.5)
2000~	7	3 (42.9)	2 (28.6)	2 (28.6)	18	10 (55.6)	11 (61.1)	2 (11.1)
Highest Education								
No formal education/ Primary school	47	18 (38.3)	20 (42.6)	26 (55.3)	155	124 (80.0)	87 (56.1)	59 (38.1)
Middle/high school	70	36 (51.4)	32 (45.7)	34 (48.6)	54	34 (63.0)	25 (46.3)	16 (29.6)
Technical school/college or above	41	16 (39.0)	25 (61.0)	12 (29.3)	72	42 (58.3)	45 (62.5)	18 (25.0)
Household income, yuan/ month								
<=3000	26	14 (53.9)	16 (61.5)	11 (42.3)	146	104 (71.2)	83 (56.9)	52 (35.6)
3001 ~ 7000	88	36 (40.9)	45 (51.1)	40 (45.5)	11	81 (73.0)	64 (57.7)	37 (33.3)
>7000	44	20 (45.5)	16 (36.4)	21 (47.7)	24	15 (62.5)	10 (41.7)	4 (16.7)
Area								
Rural	61	28 (45.9)	27 (44.3)	31 (50.8)	189	135 (71.4)	112 (59.3)	64 (33.9)
Urban	97	42 (43.3)	50 (51.6)	41 (42.3)	92	65 (70.7)	45 (48.9)	29 (31.5)
Job								
Physical work	120	60 (50.0)	55 (45.8)	60 (50.0)	154	120 (77.9)	82 (53.3)	54 (35.1)
Office work	28	9 (32.1)	15 (53.6)	9 (32.1)	87	57 (65.5)	50 (57.5)	27 (31.0)
Other/Unemployed	10	1 (10.0)	7 (70.0)	3 (30.0)	40	23 (57.5)	25 (62.5)	12 (30.0)
Marital Status								
Single	33	11 (33.3)	17 (51.5)	10 (30.3)	60	33 (55.0)	39 (65.0)	14 (23.3)
Married and living together	119	57 (47.9)	59 (49.6)	57 (47.9)	214	161 (75.2)	114 (53.3)	77 (36.0)
Separated/divorced/widowed	6	2 (33.3)	1 (16.7)	5 (83.3)	7	6 (85.7)	4 (57.1)	2 (28.6)

Notes: Percentages showed in the parentheses are the proportions of participants choosing each of the drinking reasons listed above in each subgroup, participants can choose multiple reasons. The exchange rate of Chinese Yuan to US dollars is 6.87 (2023–03-14).

Discussion

This study is one of the first to investigate the drinking patterns and reasons of different ethnic groups, and provide real world evidence for policy-making to cut down alcohol intake in the context of population mobility and multi-ethnic settlements. We demonstrated substantially different drinking patterns and reasons for drinking among the minority and Han. Compared to the Han, the minority's weekly alcohol consumption was higher and got higher AUDIT score. The minority also showed more dangerous drinking patterns such as consuming more alcohol on a single occasion and not used to drinking with food. Peer pressure was the most common drinking reason for the minority, while fostering a good atmosphere, and the enjoyment of alcohol were the most often mentioned reasons for the Han.

The amount and frequency of drinking in our study were higher than previous studies conducted in China or abroad.[9,18,19,33] Interestingly, despite Han drinkers experienced higher frequency, the minority suffer higher risk of being an excessive drinker in terms of AUDIT score since they consume more in a single session and are more likely to drink without a meal, which should be discouraged.[34] Large amounts of alcohol consumed quickly is associated with greater alcohol-related harm.[9] For the minority, peer pressure was a typical reason of drinking, indicating a passive drinking issue, while most of the Han drank for a good atmosphere or enjoying drinking, implying they drank actively. In terms of the ethnic culture, the Yi people have a moderate drinking culture and enjoy alcohol but do not overindulge,[35] while active drinking and drinking competitions are more common in Han. Influenced by Han's drinking customs, Yi's

controlled drinking habits were violated, ethnic identification or discrimination might be the reason behind this. Therefore, reasons of drinking should be considered when developing health education strategies.

As for the health education strategies, studies showed it is crucial to discuss the drinking customs of various ethnic groups because the responsiveness to the alcohol intervention programs varies among them.[20,36,37] Hence, distinct therapeutic strategies should be used for excessive drinkers of different nationalities. Intervention programs for the minority and Han people should target on lowering the amount and frequency of drinking, respectively. For the minority, interventions should place an emphasis on raising awareness of the dangers of excessive drinking in Yi culture, and well-known traditional proverbs should be employed to communicate these ideas to encourage the internalization of concepts into behavioral routines. The minority are not used to drinking with meals according to their customs, it is best to choose a low-alcohol beverage and consume it more slowly to minimize the adverse effects of alcohol on health. For Han people, we recommend them to quit or reduce drinking by the following approaches. First, inform drinkers the health risks of alcohol and convince the drinkers to cut back on drinking from the perspective of family and in the voice of family members. Secondly, persuade drinkers to take part in drinking events as little as possible. Third, encourage drinkers and their peers to join teams and collaborate to cut back on alcohol use. Fourth, consume non-alcoholic drinks simultaneously, such as water, yogurt, and juice. Further quantitative or qualitative researches are necessary to disentangle the possible mechanism for acculturation and its alcohol drinking consequences to better formulate tailored interventions for different ethnic groups.[13]

Limitations

There are several limitations to note. First, this study was carried out in Yi autonomous prefecture, which represents only one type of minority culture. More studies with a wider range of cultural perspectives are required to fully understand how culture affects patterns and reasons of alcohol consumption. Second, we did not sample the entire Yi community throughout China, thus unable to find other changes in culture or acculturation that may be influenced by other factors such as geography. But this study merits attention because of its findings supporting culture-tailored health education.

Conclusions

We found substantial differences in drinking patterns and reasons between ethnic minorities and Han ethnicity, attributable to their culture and customs. The minority showed more dangerous drinking patterns such as consuming more alcohol on a single occasion and not used to drinking with food. For the minority, peer pressure was a typical reason of drinking, indicating a passive drinking issue, while most of the Han drank for a good atmosphere or enjoying drinking, implying they drank actively.

Exploring the differences of drinking patterns and reasons among different ethnic groups could be advantageous in tailoring health interventions. In the future, we will carry out precise interventions for excessive minority and Han drinkers respectively using the evidence from this study. In the context of ethnic integration and population immigration, paying attention to the influence of different cultures on drinking habits is an important step to develop health education strategies. Further large-scale studies with participants from wider range of culture context are needed.

Policy and Ethics

This study has been carried out in accordance with The Code of Ethics of the Declaration of Helsinki and received ethical approval from Peking University Health Science Center Institutional Review Board (IRB00001052-20049). All participants gave their consent for their involvement in the study and signed an informed consent form during the first face-to-face contact. All methods were carried out in accordance with relevant guidelines and regulations.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

All authors declare no competing interests in this work.

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