Alcohol Use and Associated Factors among Older Adults in Northern Thailand

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ABSTRACT The aim of this study was to assess the prevalence of alcohol use and associated factors in older adults in Northern Thailand. A cross-sectional study of a randomly selected population sample of older adults (50 years and above) (N=2273) was conducted in Northern Thailand. Results indicate that almost two-thirds (64%) indicated that they were lifetime alcohol users, 25.2% were daily alcohol users and 13.1% engaged in drinking and driving. Major barriers to drinking alcohol included general barriers (57.6%), followed by financial barriers (56.1%), moral barriers (38.6%) and physical barriers such as closed shops (6.6%). In multivariable analysis being male, lower education, personal income and lack of moral barriers but not age were associated with daily alcohol use, and being male, personal income and physical barriers were associated with drinking and driving. This study reveals high rates of alcohol consumption and factors identified with drinking can be utilized for intervention programmes.

INTRODUCTION

As the population of older adults continues to grow, there is an increased need to reexamine alcohol use in this population (Sorocco and Ferrell 2006). Alcohol abuse poses special risks for increased morbidity and mortality among older adults, contributing to the heightened use of medical resources and the related increase in medical costs (Cummings et al. 2008). "Older alcohol misusers and abusers are at excess risk for myriad physical problems and premature death because alcohol interacts with the natural aging process in negative ways to increase risks for injuries, hypertension, cardiac dysrhythmic events, cancers, gastrointestinal problems, neurocognitive deficits, bone loss, and emotional challenges, most notably depression" (Stevenson 2005: 245).

Many older adults in USA drink alcohol and take medications that may interact negatively with alcohol (Moore et al. 2007). Some of these interactions are due to age-related changes in the absorption, distribution, and metabolism of alcohol and medications. Others are due to disulfiram-like reactions observed with some medications, exacerbation of therapeutic effects and adverse effects of medications when combined with alcohol, and alcohol's interference with the effectiveness of some medications (Moore et al. 2007). Although the prevalence of alcohol use disorders in the older adults is generally less than that found in younger groups, it is expected to increase with the aging of the generation (Cummings et al. 2008).

Alcohol use data of older adults from high income countries found among older adults in Japan that 47.9% of men and 10.1% of women drank alcohol almost daily (Hirayama et al. 2009), 9% of elderly Medicare beneficiaries (in the US) reported unhealthy drinking, with higher prevalence in men (16%) than women (4%) (Merrick et al. 2008) and Schultz et al. (2002) reported that about 15% of older persons in a rural state in the US were at risk for alcoholism. Studies from low and middle income countries found that in Brazil among older adults (60) 12% reported heavy drinking behaviour, while 10.4% and 2.9% were binge drinkers and alcohol dependent respectively (Castro-Costa et al. 2008). Among rural 50 years and older in Tanzania, 4.3% and 6.0% among men and women respectively, had more than one drink per day (Negin et al. 2011) and in a national survey of 2004 in Thailand 13.0% of older persons who were 55 years and above were hazardous or harmful alcohol drinkers (Aekplakorn et al. 2008), and in a more recent survey of 2007 in Thailand 14.7% and 1.4% among older

(45-65 years) men and women, respectively were hazardous or harmful alcohol users (Assanangkornchai et al. 2010). The research question is how high is the prevalence alcohol use and factors associated with its use among older adults (50 years and above) in Thailand?

Based on literature review, it is hypothesized that alcohol misuse or abuse in older adults is associated with higher or lower education and income; better health status male gender; younger age; smoking; being white; being divorced, separated, or single; self-reported depressive symptoms; race and ethnicity variables; and religious involvement (Krause 2003; Castro-Costa et al. 2008; Merrick et al. 2008; Barnes et al. 2010; Towers et al. 2011).

Few studies exist investigating alcohol use among older adults in low and middle income countries. Therefore the aim of this study was to assess the prevalence of alcohol use and associated factors in older adults in Northern Thailand.

METHODS

Sample and Procedure

The sample included 2273 persons 50 years and above from three provinces (Chiang Mai, Chiang Rai and Phitsanulok) in Northern Thailand, the individual response rate was 97.5%. A multistage sampling scheme was used. Provinces, districts, sub-districts, villages or town blocks and households were randomly selected in sequence, using probability sampling proportional to size. The final sampling unit was the household with one adult 50 years and older who had lived in their current household for >3 months were included All questionnaires were completed through face-to-face interviews administered by researchers who were trained for one week in interview administration and ethics. The confidentiality of all respondents was strictly maintained. Standardised training and structured questions prevented interviewer variability. The study was approved by the ethics committees for research in human subjects of Chiang Mai University. All respondents gave their informed consent to participate in the study. The study was conducted from April to June in 2008.

Measures

The individual questionnaire comprised sections on the respondent's socio-economic characteristics, prevalence and barriers of alcohol consumption. The prevalence of alcohol use was assessed with 4 questions on life time, past 12 months and past 3 months alcohol use as well as frequency of alcohol use in the past 3 months, with the response options ranging from 1=daily to 1-3 times in a month=4. In addition, 3 questions asked about 1) "over drinking", 2) Drinking more even when warned to stop, and 3) Drinking and driving even when told to stop. Response options for these 3 questions were "Yes" and "No". Finally, barriers to drinking alcohol were assessed with 10 questions, 4 questions for general barriers, for example, "Get sick (fever, headache)", 2 questions for physical barriers, for example, "The shops are closed", 2 questions on financial barriers, for example, "No money to buy", and 2 questions on moral barriers, for example, "Family forbidden to drink." The questionnaire was tested for validity by five experts and in a pilot study in Bangkok. Cronbach alpha reliability for the alcohol use prevalence questions was 0.59 and for the barriers to drinking alcohol questions 0.64.

Data Analysis

Data from the questionnaires were entered manually into International Business Machines Cooperation (IBM) Statistical Package for the Social Sciences (SPSS). The verification process included double data entry of all questionnaires and its fields, doing programmed range checks by computer to identify outlying values, checking for missing values, and checking for inconsistencies in the data. Data were converted to and analysed using IBM-SPSS for Windows software application programme version 19.0. The study sample was weighted to adjust for the probabilities of multistage sampling selections. The primary sampling unit was the province and the final unit was the household. The sampling probability at each stage was calculated from the number of people in the selected unit divided by the total number of people in the higher stage of sampling. For example, the probability of sampling people in a household was calculated from the number of people in the selected household divided by the number of people in all of the households in the town block or village in which the household was located. Frequencies, means, standard deviations, were calculated to describe the sample. Adjusted odds

ratios and 95% confidence intervals were calculated from multiple logistic regression models to examine associations between problem drinking (daily drinking) and drinking and driving and socio-economic variables.

RESULTS

Sample Characteristics

The sample included 59.8% 50 to 59 year-olds, 23.3% 60 to 69 year-olds and 16.9% were 70 years and older. Most (82.4%) had Grade 1 to 9 education, were married (75.2%), 57.9% had a personal income of less than 5000 Baht a month, 54.1% were from a rural district, 86.1% from outside the municipality, 45.8% from Chiangrai, 36.0% from Phisanulok and 18.5% from Chiang Mai province. Education and personal income levels were higher among men than women (see Table 1).

Alcohol Use and Accessibility

From the total sample 64% (76.2% among men and 45.7% among women) were lifetime alcohol users; 25.2% were daily alcohol users (29.3%

among men and 14.8% among women) and 13.1% (16.2% among men and 5.3% among women) engaged in drinking and driving. Men engaged more frequently in drinking than women. Major barriers to drinking alcohol included general (getting sick, campaign and Buddhist lent) (57.6%), followed by financial barriers (56.1%), moral barriers such as family forbids drinking (38.6%) and physical barriers such as closed shops (6.6%). Buddhist lent refers to the day on which the Buddhist monks take the vow to stay only at one particular place or temple for three months. The implication is that many people in Thailand practice some good thing for themself such as stop drinking of alcohol for the period of 3 months. (see Table 2).

Among daily drinkers the most frequently mentioned barriers to alcohol use were financial barriers (34.8%), general barriers (30.8%) and moral barriers (20.2%), while among drinking and driving people the three most frequently mentioned barriers to alcohol use included physical (26.8%) and moral barriers (22.1%).

Table 1: Sample characteristics

	Total N =2273 (%)	Male N=1357 (59.7%)	Female N =916 (40.3%)	χ^2
Age				
50-59	1349 (59.8)	826 (60.9)	523 (58.2)	5.65
60-69	526 (23.3)	323 (23.8)	203 (22.6)	
70-99	380 (16.9)	208 (15.3)	172 (19.2)	
Education				
Grade 1-9	1638 (82.4)	962 (79.9)	676 (86.3)	14.49**
Grade 10-12	128 (6.4)	85 (7.1)	43 (5.5)	
Diploma	54 (2.7)	37 (3.1)	17 (2.2)	
Bachelor or more	167 (8.4)	120 (10.)	47 (6.0)	
Marital Status				
Single	87 (3.9)	42 (3.1)	45 (5.1)	119.28***
Married	1664 (75.2)	1112 (83.2	552 (62.9))	
Divorced	462 (20.9)	182 (13.6)	280 (31.9)	
Personal Income				
0-2999 Bhat	493 (29.6)	259 (24.3)	234 (38.8)	42.69***
3000-4999	471 (28.3)	310 (29.1)	161 (26.7)	
5000-7499	356 (21.4)	243 (22.8)	113 (18.7)	
7500 or more	347 (20.8)	252 (23.7)	95 (15.8)	
Rural district	1220 (54.1)	718 (52.9)	502 (55.9)	1.95
Urban district	1035 (45.9)	639 (47.1)	396 (44.1)	
Outside municipality	1941 (86.1)	1154 (85.0)	787 (87.6)	3.05
Inside municipality	314 (13.9)	203 (15.0)	111 (12.4)	
Province				
Chiang Mai	418 (18.5)	244 (18.0)	174 (19.4)	0.70
Chiang Rai	1032 (45.8)	625 (46.1)	407 (45.3)	
Phitsanulok	805 (36.0)	488 (36.0)	317 (35.3)	

Table 2: Alcohol use and accessibility

	Total N =2273 (%)	Male N=1357 (59.7%)	Female N =916 (40.3%)	χ^2
Lifetime alcohol user	1444 (64.0)	1034 (76.2)	410 (45.7)	218.86[***]
Past 12 months alcohol user	983 (77.2)	723 (74.2)	260 (67.2)	6.70[**]
Past 3 months alcohol user	823 (63.5)	609 (65.5)	214 (57.5)	7.90[**]
Drinks 1-2 times a week	400 (27.7)	284 (27.7)	116 (27.8)	0.00
Daily alcohol user	337 (25.2)	282 (29.3)	55 (14.8)	29.79[**]
Over drinking	613 (42.4)	496 (48.0)	117 (28.4)	46.21[***]
Drinks more even when warned to stop	283 (19.6)	232 (22.4)	51 (12.4)	18.94[***]
Drinks and drives even when told to stop	190 (13.1)	168 (16.2)	22 (5.3)	30.71[***]
Barriers to Drinking Alcohol				
General Barriers	837 (57.6)	612 (59.2)	422 (40.8)	3.86
Get sick (fever, headache)	657 (45.2)	472 (45.6)	562 (54.4)	0.30
Campaign "not drink and drive"	187 (12.9)	144 (13.9)	43 (10.2)	3.63
During Buddhist lent	376 (25.9)	276 (26.7)	100 (23.8)	1.30
Physical Barriers	96 (6.6)	65 (6.3)	3 (7.4)	0.58
The shops are closed	76 (5.2)	53 (5.1)	23 (5.5)	0.07
No places to drink	31 (2.1)	21 (2.0)	10 (2.4)	0.18
Financial Barriers	815 (56.1)	586 (56.7)	229 (54.5)	0.56
Expensive	525 (36.1)	372 (36.0)	153 (36.4)	0.03
No money to buy	571 (39.3)	412 (39.8)	159 (37.9)	0.50
Moral Barriers	561 (38.6)	425 (41.1)	136 (32.4)	9.59[**]
Be forbidden to drink	102 (7.0)	74 (7.2)	28 (6.7)	0.11
Family forbidden to drink	511 (35.1)	388 (37.5)	123 (29.3)	8.89[**]

[***]P<.001; [**]P<.01; N=Number

Associations between Problem Drinking and Socio-demographic Factors and Barriers to Alcohol Drinking

Bivariate and multivariable analysis found that being male, lower education and middle income were associated with daily alcohol drinking; age, marital status, geolocality and province were not found to be associated with daily drinking of alcohol. Further, in bivariate analysis being male, lower age, higher education and higher income were associated with drinking and driving, while in multivariable analysis being male and middle income were retained to be associated with drinking and driving (see Table 3).

In univariate and multivariable analysis both general and financial barriers were associated with daily drinking of alcohol, while moral barriers were protective of daily drinking of alcohol (see Table 4).

DISCUSSION

The study found among persons 50 years and older in three provinces (Chiang Mai, Chiang Rai and Phitsanulok) in Northern Thailand a high prevalence of problem drinking (dai-ly drinking and drinking and driving). Other studies from low and middle income countries also identified alcohol problem drinking among older adults (Aekplakorn et al. 2008; Assanangkorn-chai et al. 2010; Castro-Costa et al. 2008; Negin et al. 2011). Therefore public health interventions should be targeted at alcohol problem drinking in older adults.

The study further found that major barriers to drinking alcohol included general barriers (getting sick from drinking, anti-alcohol campaigns and Buddhist lent, financial barriers, moral barriers such as family forbids drinking and physical barriers such as closed shops. These barriers of alcohol buying or use can be used to increase public health interventions to prevent alcohol misuse among the elderly in Thailand, for example, by increasing the price for alcoholic beverages (Sornpaisarn et al. 2012), by reinforcing moral barriers of drinking alcohol through religious eduation and enforcing the policy on limiting alcohol accessibility and alcohol purchasing (Lertpitakpong et al. 2009). In another study in Thailand it was found that practicing Buddhists were less likely to drink alcohol than non-practicing Buddhists, and had fewer positive and more negative expectancies about alcohol (New-

Table 3: Prevalence of problem drinking and association between socio-economic factors and problem drinking

	Daily drinking of alcohol			Drinking and driving even after warning		
	N (%) (95% CI)	UOR (95% CI)a	AOR	N (%)	UOR (95% CI)	AOR (95% CI)b
All	337 (25.2)			190 (13.1)		
Female	55 (14.8)	1.00	1.00	22 (5.3)	1.00	1.00
Male	282 (29.3)	2.38 (1.73-3.28)***	1.94 (1.31-2.88)***	268 (16.2)	3.44 (2.17-5.45)***	3.41 (1.94-5.99)***
Age						
50-59	223 (25.6)	1.00	-	148 (15.7)	1.00	1.00
60-69	70 (23.5)	0.89 (0.66-1.22)		37 (11.4)	0.69 (0.47-1.02)	0.76 (0.48-1.21)
70-99	46 (26.0)	1.02 (0.71-2.48)		5 (2.6)	0.14 (0.06-0.35)***	0.37 (0.11-1.23)
Education						
Grade 1-9	239 (25.4)	1.00	1.00	115 (11.3)	1.00	1.00
Grade 10-12	19 (22.4)	0.85 (0.50-1.44)	0.53 (0.27-1.04)	19 (20.4)	2.02 (1.18-3.46)*	1.49 (0.79-2.84)
Diploma	10 (27.8)	1.13 (0.54-2.38)	1.18 (0.53-2.62)	9 (23.7)	2.44 (1.13-5.28)*	2.22 (0.94-5.21)
Bachelor or more	17 (15.3)	0.53 (0.31-0.91)*	0.50 (0.26-0.95)*	22 (18.3)	1.77 (1.07-2.91)*	1.29 (0.67-2.49)
Marital Status						
Single	7 (16.7)	1.00	-	6 (12.8)	1.00	-
Married	274 (25.8)	1.74 (0.77-3.97)		151 (13.2)	1.04 (0.43-2.48)	
Divorced	53 (24.2)	1.60 (0.67-3.80)		24 (10.0)	0.58 (0.29-1.98)	
Personal Income						
0-2999 Bhat	45 (17.2)	1.00	1.00	21 (7.3)	1.00	1.00
3000-4999	98 (31.8)	2.24 (1.50-3.34)***	1.72 (1.10-2.67)*	48 (14.3)	2.11 (1.23-3.62)**	1.62 (0.88-2.99)
5000-7499	70 (29.4)	2.00 (1.31-3.06)***	1.84 (1.16-2.91)**	51 (20.2)	3.20 (1.86-5.49)***	2.35 (1.28-4.33)**
7500 or more	51 (23.2)	1.45 (0.93-2.27)	1.61 (0.94-2.77)	45 (18.5)	2.88 (1.66-4.99)***	1.80 (0.91-3.56)
Rural district	196 (25.1)	1.00		115 (13.9)	1.00	
Urban district	143 (25.2)	1.01 (0.78-1.29)		75 (11.9)	0.84 (0.62-1.15)	
Outside municipality	302 (25.9)	1.00	-	157 (12.7)	1.00	-
Inside municipality	37 (20.2)	0.72 (0.49-1.06)		33 (15.1)	1.23 (0.82-1.85)	
Province						
Chiang Mai	56 (24.0)	1.00	-	30 (11.3)	1.00	-
Chiang Rai	164 (23.7)	0.98 (0.69-1.39)		101 (13.4)	1.22 (0.79-1.89)	
Phisanulok	119 (28.3)	1.25 (0.86-1.80)		59 (13.3)	1.21 (0.76-1.94)	

[a]Hosmer and Lemeshow Chi-square = 1.31, $P=0.971$; Nagelkerke R2 : 0.05
[b]Hosmer and Lemeshow Chi-square = 4.41, $P=0.818$; Nagelkerke R2 : 0.09
***$P<.001$; **$P<.01$; *$P<.05$; UOR=Unadjusted Odds Ratio; AOR=Adjusted Odds Ratio

Table 4: Association between accessibility and problem drinking, drinking and driving even after warning

	Drinking alcohol daily	*Drinking and driving after warning*
Barriers to alcohol	UOR (95% CI)	UOR (95% CI)
General barriers	1.21 (0.93-1.57)	1.15 (0.83-1.59)
Physical barriers	1.39 (0.87-2.23)	1.94 (1.14-3.30)[*]
Financial barriers	1.08 (0.84-1.39)	1.03 (0.76-1.41)
Moral barriers	.60 (0.45-0.78)[***]	1.28 (0.93-1.77)

[***]P<.001; [*]P<.05;   UOR=Unadjusted Odds Ratio

man et al. 2006). Buddhism teaches its followers five precepts including refraining from taking intoxicants, yet alcohol is commonly used and is an important part in many ceremonies and family celebrations (Newman et al. 2006).

In multivariable analysis the study found that being male, lower education, personal income and lack of moral barriers but not age were associated with daily alcohol use, and being male, personal income and physical barriers were associated with drinking and driving among older adults in Northern Thailand. Shaw et al. (2011) also found a direct association between changes in levels of financial strain and the odds of heavy drinking and those with low levels of education in USA. Exposure to financial strain places some groups of older adults at decreased risk for unhealthy drinking. In agreement with other studies this study found significantly higher problem drinking among men than women (Castro-Costa et al. 2008; Merrick et al. 2008; Barnes et al. 2010; Towers et al. 2011). This gender difference may be in some way attributed to sociocultural norms that hinder women to engage in alcohol drinking. The study found that there was a decrease of alcohol use with age but this was not significant, as found in some other studies (Merrick et al. 2008; Barnes et al. 2010). This would indicate that daily drinking would continue to pose a problem as with aging and would require specific attention.

LIMITATIONS OF THE STUDY

This study had several limitations. Firstly, this survey was limited to only three provinces in Northern Thailand. Further, the self-report of alcohol use should be interpreted with caution; it is possible that respondents underreported alcohol use, especially females. To help reducing this problem interviewers were as much as possible matched by gender with their inter-

viewees. Another limitation was that although the frequency of drinking alcohol was assessed but not the number of alcohol units per day. Therefore it was not possible to calculate hazardous or harmful drinking specifically. A number of risk factors associated with alcohol misuse or abuse in older adults found in other studies such other chronic conditions such as hypertension, depression, medications intake which may interact negatively with alcohol, other drug use such as tobacco use, health status; smoking; depressive symptoms, and religious involvement (Krause 2003; Stevenson 2005; Moore et al. 2007; Castro-Costa et al. 2008; Merrick et al. 2008; Barnes et al. 2010; Towers et al. 2011) were not assessed and should be assessed in future studies. Furthermore, this study was based on data collected in a cross-sectional survey. We cannot, therefore, ascribe causality to any of the associated factors in the study. Prospective studies are required to follow up alcohol use and associated factors. Further, it would be useful to repeat this study in a different part of the country to confirm study findings. In addition to replication, it would be useful to research a better understanding about the social and cultural context of alcohol use among older adults in Thailand by conducting qualitative studies.

CONCLUSION

We have estimated the prevalence of problem drinking (daily drinking and drinking and driving) amongst older adults in Northern Thailand. Public health intervention aimed to prevent alcohol misuse and abuse among older adults should be designed with the understanding that exposure to financial strain and moral barriers place some groups of older adults at decreased risk for unhealthy drinking.

RECOMMENDATIONS

Screening and identification of older adults with alcohol problems in primary care is recommended. On a societal level the price for alcoholic beverages should be increased, moral barriers of drinking alcohol should be reinforced through religious eduation and the policy on limiting alcohol accessibility and alcohol purchasing should be enforced.

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