A report

on

"Study of prevalence and causes of alcohol consumption among females in Sunsari district"

S R Niraula, N Jha and P M Shyangwa
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Authorship

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The undersigned authors warrant that this research report entitled " *A study of prevalence and causes of alcohol consumption among females in Sunsari district: A Study from eastern Nepal* " is the original one and has not been published elsewhere. It is currently not under consideration for publication by any other journal (except in the form of an abstract; if applicable in such cases please quote the reference).

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Title Page

A study of prevalence and causes of alcohol consumption among females in Sunsari district: a study from eastern Nepal

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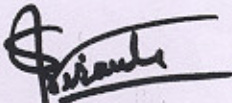   Dharan, Nepal.

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Acknowledgement

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1. Title of the research

A study of prevalence and causes of alcohol consumption among females in Sunsari district: a study from eastern Nepal.

2. Objectives

General

- To assess the strength, cause and problem of alcohol consumption in females in Sunsari district

Specific

- To assess the prevalence rate of alcohol consumption in females in Sunsari

- To assess the distribution of quantity of alcohol consumption

- To assess the factors related to the habit.

3. Summary

The study was structured to focus the current problems of alcohol consumption among the women of Sunsari. On the basis of above mentioned objectives, the findings will be useful for further study.

This study covered 2397 females in Sunsari district, which was statistically enough to represent the district. Cluster and simple random sampling method was used to select the females of age 15 years and above.

The pre-tested questionnaire in Nepali language was designed to collect the information. The data was entered in computer through dBAESIV program. Finally screened data was analyzed by using SPSS 10.0 version package. Appropriate statistical tools were used for analyzing the data.

4. Introduction

Alcohol consumption is increasing day by day in Nepal. This is not only seen recently, but is also described in the "VEDAS", "KIRANT MUNDHAM", and "BIBLE". The origin of the production and consumption of alcoholic beverages are as old as the origin of the books. There is no doubt that alcohol consumption plays supportive role in causation of mortality and morbidity; it reduces the duration of quality life of human beings.

Some people in Nepal generally believe that alcohol is a medicine for cold, pain, tension and tiredness; some believe that the celebration, parities and festivals are success if alcohol is served. It has become an essential thing for the Kirat and Newari cultures. Generally they take alcohol thinking as a given right by their religion. Due to which, females have also fallen into the habit of consumption; but alcohol intake of female is a serious issue. Not only on social impact, have this habits directly affected on heath of pregnant mother, which also affects fetus. Again, the drinking habit of female may lead to divorce in family life because of not accepting this situation in Nepalese society. Due to these reasons alcohol may be one of the great problems among female, if we serious considered the magnitude and extent of the problem it has created in Nepal. Thus, the study was focused to identify the problems of alcohol consumption among the women in Sunsari.

5. Statement of the problem

So far, none or very few studies have been done in this regard. The alcohol consumption habit is increasing day by day in female also. The habit of the alcohol in the female may be one of the serious problems in eastern Nepal. So, it seems that this study will be a valuable tool to design and implement the awareness programs for the female alcohol users.

6. Rationale of the study

There is no doubt that alcohol consumption plays vital role in causation of mortality and morbidity. It is therefore said that alcohol intake reduces the duration of quality life of human beings. The World Health Assembly in 1983, declared alcohol related problems to be a major public health concern all over the world. The term 'alcohol problems' (problems caused by alcohol that may require treatment) refers as to a broad array of acute and chronic medical, behavioral and social problems[1]. They may range from mild to server[2] depending upon several factors including the pattern of consumption.

The child is the future pillar of the country. The learning phase starts right from the childhood. It is therefore said the house is a first school and a mother is a first teacher of a child. The environment of house and nature of the mother deeply influence in mind and habit of the child. That is why; a mother is most responsible person in a family. If a mother is drunk, her children may also start to take alcohol without hesitation.

In this context nation has to face a great problem in its development as the future manpower may be unproductive. Therefore alcohol intake of female is a serious issue. The drinking habit of female may lead to divorce in family life because of not accepting this situation in Nepalese society. Not only has the social impact, this habit directly affects on heath of pregnant mother which also affects newborn baby. Due to these reason alcohol could be one of the great problem if we serious consider the magnitude and extent of the problem it has created in Nepal.

In this scenario, we from the Community Medicine and Psychiatry department were tried to focus on the study on alcohol drinking habit on female group in Sunsari district which constitutes 2.7% of Nepal population, among with 49.6% are female[3]. Considering to the female of Kirat caste and having more

leisure time and enough money, might make to enjoy and take alcohol. Some of the caste regular use thinking as their rights by religion. In this regards the prevalence of consumption might be more. So the immediate action should be taken care for controlling the bad habit in female community.

This study was so chosen to know the prevalence of this habit and the factors affects to consume alcohol. It has also set the relationship between alcohol drinking habit to the other factors. Finally, the problems and the reason of alcohol intake in female are highlighted.

7. Research Design and Method

Research Questions

Was there serious problem of alcohol consumption in females?

Research Hypothesis

There was significance difference of alcoholic habit and health status of females.

The study site was Sunsari district of eastern Nepal, where B. P. Koirala Institute of Health Sciences is situated. This was a cross-sectional study. Sunsari district consists of 3 municipalities and 49 VDCs with unequal population distribution. The sample from each municipality and VDC was selected so as to be representative the population of Sunsari district.

Target Population : The females in Sunsari

Sample Unit

The female of age group 15 and above was the sample unit.

Study Variables

Dependent variables:

Alcohol drinking, Smoking, Knowledge expenses in the habit etc

Independent variables:

Demographic variables, Family income etc.

Sample Size and Sampling Process including Criteria for Sample Selection

The Sample size was set all the females in 2000 households. The sampling frame was all females in Sunsari districts. There are 49 VDCs and 3 municipalities in Sunsari districts. The 2000 households were set in 100 compact clusters of households, each of 20 households, one clusters was allocated purposively in each VDC and municipality, totaling 52 clusters in 49 VDCs and 3 municipalities. This

enhanced the representatives of each VDC and municipality. The remaining 48 clusters were distributed in the VDCs and municipalities with probability proportionate to size. As a result the number of clusters per VDC and municipality varies from a minimum of 1 and a maximum of 10.

Again to select the 20 household for each clusters, the number from 11 to 49 was chosen randomly, excluding the number end with 0; then first digit showed the direction to precede survey from a Chowk of VDC or municipality, indicating 1-north, 2-east, 3-south and 4-west. The second digit showed number of house from where the survey was started in that direction. The females were interviewed continuously on that direction till to get 20 households from each cluster.

Sampling Methods

Cluster and Simple Random Sampling technique was used to select the women.

Techniques and Tools for Data Collection

An interview method with pre-tested questionnaire in Nepali language was used. The ten trained female enumerators were collected the information.

Validity and Reliability

Appropriateness of questionnaire format, validity of content, level of difficulty, and length of time required to complete the survey were also determine. The face validity and content validity of the questionnaire were tested with 100 women who did not participate in the study. The Kappa reliability coefficient was calculated 0.73, indicating that, overall, participants responded consistently to questionnaire items.

Data Entry and Analysis

The data was entered into the computer by means of questionnaire entry format in dBASE IV program to avoid entry error. The database file (dbf file) was screened again by a programmer. The purified data was analyzed in SPSS 10.0 program (Statistical Package for Social Sciences). Chi square test for proportion and Logistic regression were used to know the significant factor affecting in habit of alcohol.

8. Research Results

8.1. Sample Characteristics

The total households in the 100 clusters, each consisted of 20 households, from the randomly selected wards of 49 Village Development Committees (VDC) and 3 municipalities were 2000. The number of clusters selected from the VDCs and municipalities of the Sunsari district ranged from 1 to 10 according to their population. The selected wards from the different places are shown in figure 1. The maximum clusters was chosen from Dharan municipality and Itahari municipality, consisted of 11.1% and 4.2% of the sample respectively, remaining were comprised 0.9% to 3.4% of samples according to population size.

The overall sample consisted of 2397 women aged 15 years and above, which was representing the Sunsari district for the alcohol consumption among the women of the age group. In rural areas 81.8% of women participated in the study whereas there were 18.2% of women in urban areas *(Table 1)*.

The oldest age of sample was 92 years women. Maximum percentage of participants was in the age group of 25-to-34 years (28.6%) and followed by 35-to-44 years (25.7%). Only 4.7% of participants were in the age group 65 years and above. The women in the reproductive age group 15-to-49 years comprised more (81.4%) in the sample than older age (50+ years). The distribution of the age group with 10 years interval was significantly differ according the residence (P<0.05). However, the significance was not seen with the groups of reproductive age and old age between the residences. The unmarried women were 5.8%; there were 85.1% of married women, the rest (9.1%) were living alone due to the reason of death of husband or separation. Married women participation in the sample was more from rural than the urban (P<0.0001) *(Table 1)*.
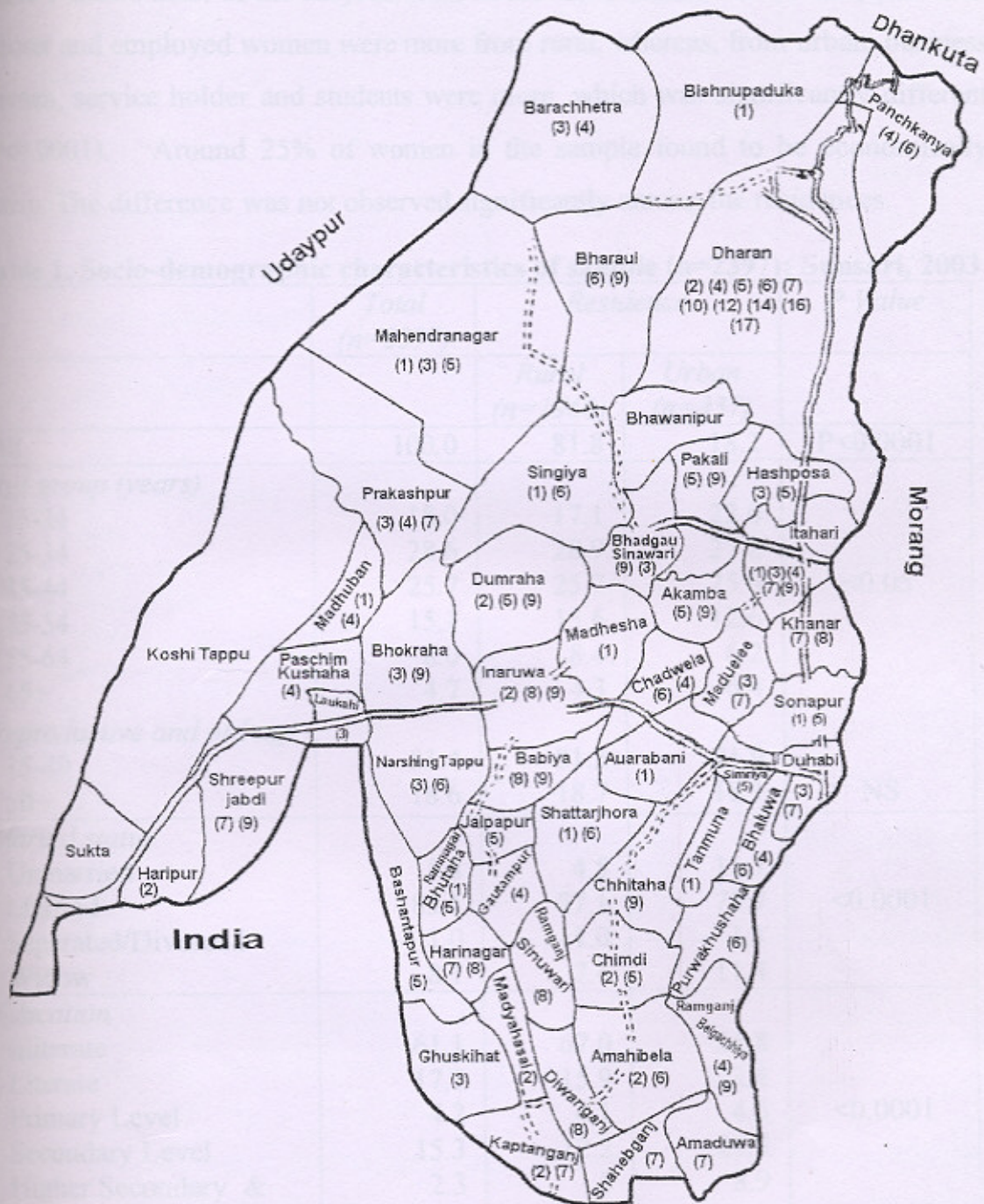
Figure 1. Clusters taken from 49 VDCs and 3 municipalities of Sunsari

Table 1 shows most of the subjects were housewife (70.0%). Housewife, unskilled laborer and employed women were more from rural, whereas, from urban, business women, service holder and students were more, which was significantly different (P<0.0001).   Around 25% of women in the sample found to be economically active. The difference was not observed significantly among the residences.

Table 1. Socio-demographic characteristics of sample (n=2397); Sunsari, 2003

	Total (n=2397)	Residence		P Value
		Rural (n=1960)	Urban (n=437)	
All	100.0	81.8	18.2	P<0.0001
Age group (years)				
15-24	18.0	17.1	22.0	
25-34	28.6	28.9	27.2	
35-44	25.7	25.7	25.6	<0.05
45-54	15.1	15.6	12.6	
55-64	8.0	8.4	6.2	
65+	4.7	4.3	6.4	
Reproductive and old age				
15-49	81.4	81.3	81.9	
50+	18.6	18.7	18.1	NS
Marital status				
Unmarried	5.8	4.5	11.7	
Married	85.1	87.1	75.7	<0.0001
Separated/Divorced	1.0	1.0	1.1	
Widow	8.1	7.4	11.4	
Education				
Illiterate	61.1	67.0	34.8	
Literate	17.1	15.9	22.4	
Primary Level	4.2	4.1	4.6	
Secondary Level	15.3	12.2	29.3	<0.0001
Higher Secondary & above	2.3	.8	8.9	

Contd...

	Total (n=2397)	Residence		P Value
Occupation				
Housewife	70.0	70.9	65.9	
Business	5.0	2.5	16.0	
Services	.7	.4	2.1	<0.0001
Unskilled laborer	19.0	21.9	5.7	
Unemployment	3.3	3.5	2.3	
Students	2.0	.7	8.0	
*Economically active/inactive**				
Economically active	24.7	24.8	23.8	NS
Economically inactive	75.3	75.2	76.2	
*Caste/Ethnicity***				
Major hill caste	16.6	10.7	43.0	
Hill occupational caste	2.8	2.1	5.7	
Hill native	12.3	9.0	26.8	
Major terai caste	29.5	34.2	8.0	<0.0001
Terai occupational caste	26.1	29.5	10.8	
Terai trader	1.7	1.2	3.9	
Religious caste	8.3	10.1	.7	
Others	2.8	3.2	1.1	
Religion				
Hindu	89.2	88.9	90.4	
Christian	.5	.3	1.4	
Kirat	1.0	.3	4.1	<0.0001
Buddhist	1.2	.7	3.2	
Muslim	8.2	9.8	.9	

* *Economically active – Business, Service, Unskilled labor and Agriculture; Economically Inactive – Housewife, Unemployed and students.*

** *Ethnicity: Major Hill – Brahmin, Chhetri, Newar; Hill Occupational – Bishwakarma, Sarki, Pariyar, Giri; Hill Native - Rai, Limbu, Magar, Tamang, Gurung; Major Terai Caste – Jha, Sharma, Tiwari, Tharu, Yadav etc; Terai occupational caste – Khatbe,Musahar, Raut, Sutia, Jhangad, Batar, Mandal, Dhobi etc.; Terai Traders – Kayestha, Marwadi,Gupta, Baniya etc; Religious Caste Musalman, Ansari; Others Bhujel, Sardar, Sherpa, Jain, Sinha, Singh, Bangali etc.[4,5,6]*

Most of the participants (29.5%) were major terai caste; and then, followed by terai occupational cast (26.1%). There were 16.6% major hill caste and 10.5% hill native caste. Religious caste referring to Muslim comprised 8.3% of the sample. The caste difference was also significantly observed among the residences

(P<0.0001). Maximum women was Hindu (89.2%); which was followed by Muslim, Buddhist, Kirat and Christian comprising 8.2%, 1.2%, 1.0%, 0.5% respectively. The distribution according to the residence was significantly differed. *(Table 1)*.

8.2. Prevalence of alcohol consumption

The prevalence of alcohol consumption among the women in Sunsari was 16.6%; no difference was observed among urban and rural population. The prevalence of alcohol consumption was increased with increasing age groups from 6.2% in 15-to-24 years age group to peak at 29.3% in the 55-to-64 years age group, after which decreased at 18.7% in the 65 years and above age group (P<0.0001). Again, 24.9% of those in the age 50 years and above, compared with 14.7% of the reproductive age group 15-to-49 years were alcohol users (P<0.0001) *(Table 2)*.

Widow and separated/divorced women were significantly likely to take alcohol in comparison with others (P<0.0001). The table 2 shows that the prevalence of alcohol consumption according to the level of education was significantly decreased (P<0.0001). Business women, unskilled laborer and unemployed women were found more likely to use alcohol that others. There was only one case of alcohol consumption among female students.

Economically active population was more likely to have the alcohol use than economically inactive group (P<0.0001). No single Christian and Muslim were found to use alcohol, whereas, women of Kirat, Buddhist and Hindu religion were respectively found 58.3%, 42.9% and 17.4% *(Table 2)*.

Table 2. Prevalence of alcohol consumption among the women by socio-demographic characteristics (n=2397); Sunsari, 2003

	Alcohol		P Value
	Consumption, % (n=397)	*No consumption, % (n=2000)*	
Current users	16.6	83.4	<0.0001*
Past users (n=46)	2.3	97.7	<0.0001*
Residence			
Rural	16.6	83.4	NS**
Urban	16.2	83.8	
Age group (years)			
15-24	6.2	93.8	
25-34	13.4	86.6	
35-44	18.2	81.8	<0.0001**
45-54	24.7	75.3	
55-64	29.3	70.7	
65+	18.8	81.2	
Reproductive and old age			
15-49	14.7	85.3	
50+	24.9	75.1	<0.0001**
Marital status			
Unmarried	6.5	93.5	
Married	16.4	83.6	<0.0001**
Separated/Divorced	45.8	54.2	
Widow	21.5	78.5	
Education			
Illiterate	19.6	80.4	
Literate	12.9	87.1	
Primary Level	15.0	85.0	<0.0001**
Secondary Level	10.1	89.9	
Higher Secondary & above	9.1	90.9	

Occupation			
Housewife	14.1	85.9	
Business	26.1	73.9	
Services	5.9	94.1	<0.0001**
Unskilled laborer	24.8	75.2	
Unemployment	17.7	82.3	
Students	2.0	98.0	
Economically active/inactive			
Economically active	24.5	75.5	<0.0001**
Economically inactive	14.0	86.0	
Caste/Ethnicity			
Major hill caste	13.6	86.4	
Hill occupational caste	34.8	65.2	
Hill native	42.2	57.8	
Major terai caste	7.2	92.8	<0.0001***
Terai occupational caste	21.1	78.9	
Terai trader	0.0	100.0	
Religious caste	0.0	100.0	
Others	19.4	80.6	
Religion			
Hindu	17.4	82.6	
Christian	0.0	100.0	
Kirat	58.3	41.7	<0.0001***
Buddhist	42.9	57.1	
Muslim	0.0	100.0	

*-Test of proportion, **-Chi-Square test, ***-Chi-square test excluding zero prevalence

8.3. Pattern of alcohol use

The pattern of alcohol in this study refers to the types of product, duration and frequency of consumption, and its' estimated quantity in milliliters (ml). One glass contains about 175 ml of alcohol. It was seen that about 88.0% of women were taking homemade distilled products, 'Local Raksi' and nearly 57% were taking 'Jhandh', 'Tongba', 'Chhyang' etc. Among industrial products, non-distilled product (12.0%), beer was consumed nearly double than industrial distilled

products, like Whisky, Wine, and Vodka. Industrial products were less in use in comparison to the use of homemade products. The popularity was also the same among all type of users i.e. daily, weekly and occasional. About 61% of users were occasional and 20% were daily users. Among the users 37% were taking alcohol for 20 years. In addition to that among the daily users 65% of them were taking for 20 years and above. This shows that daily users were likely to have habit of alcohol consumption for long period than other type of users *(Table 3)*.

Table 3. Pattern of alcohol consumption among the women in Sunsari, 2003

Pattern	Users			Total (n=397)
	Daily (n=80)	Weekly or More (n=76)	Occasional (n=241)	
All	20.2	19.1	60.7	100.0
*Types of product**				
Distill homemade	96.3	96.1	82.2	87.7
Non-distill homemade	66.3	61.8	52.3	56.9
Industrial distill	11.3	3.9	6.6	7.1
Industrial non-distill	11.3	9.2	13.3	12.1
Duration				
<1	1.3	1.3	4.1	3.0
1-5	7.5	5.3	22.4	16.1
6-10	5.0	19.7	22.4	18.4
11-15	12.5	21.1	11.6	13.6
16-20	8.8	7.9	14.1	11.8
>20	65.0	44.7	25.3	37.0

* Type: Homemade distilled product- Local Raksi; non-distilled product-Tongwa, Chhyang, Jhandh, etc ; Industrial distilled product – Whisky, Rum, Vodka and Jin, etc; Non-distilled product – Beer

Distilled homemade and Industrial products usually contain high concentration of alcohol. The concentration of alcohol in distilled liquor was assumed to be 40% and 5% in non-distilled liquor[4]. The concentration in normal

beer ranges from 4.4% to 6.5% and normally 42.8% in distillates and 12.5% in wine[7].

About 23.4% of women, who were taking more than 524 ml of distilled homemade products among daily users, were at high risk of alcohol addiction. The percentage of drinkers who used to take less than 176 ml of alcohol were more for all type of users i.e. daily, weekly or more and occasional, in both homemade products; but in case of industrial products, more than 524 ml of alcohol consumption were found to be more among them. This may be due to less number of daily users in case who used to take industrial products *(Table 4)*.

Table 4 Quantity and frequency of consumption by the type of products

Frequency of consumption	Quantity of consumption* (ml)			
	< = 175	176-524	>=525	Total
Distilled homemade products	61.8 (215)	25.9 (90)	12.4 (43)	100.0 (348)
Daily	48.0 (37)	28.6 (22)	23.4 (18)	22.1 (77)
Weekly	52.0 (38)	37.0 (27)	11.0 (8)	21.0 (73)
Occasionally	70.7 (140)	20.7 (41)	8.6 (17)	56.9 (198)
Non-distilled homemade products	64.6 (146)	23.9 (54)	11.5 (26)	100.0 (226)
Daily	50.9 (27)	30.2 (16)	18.9 (10)	23.4 (53)
Weekly	53.2 (25)	36.2 (17)	10.6 (5)	20.8 (47)
Occasionally	74.6 (94)	16.7 (21)	8.7 (11)	55.8 (126)
Industrial distilled products	71.4 (20)	74.3 (4)	14.3 (4)	100.0 (28)
Daily	22.2 (2)	33.3 (3)	44.5 (4)	32.1 (9)
Weekly	100.0 (3)	0.0 (0)	0.0 (0)	10.7 (3)
Occasionally	93.7 (15)	6.3 (1)	0.0 (0)	57.1 (16)
Industrial non-distilled products	68.8 (33)	10.4 (5)	20.8 (10)	100.0 (48)
Daily	22.2 (2)	33.3 (3)	44.5 (4)	18.7 (9)
Weekly	85.7 (6)	14.3 (1)	0.0 (0)	14.6 (7)
Occasionally	78.1 (25)	3.1 (1)	18.8 (6)	66.7 (32)

* one tea glass=175 ml (approx.)

8.4. Some factors in consumption of alcohol

The belief of caste right (59.4%) and to know the test (42.3%) were the leading causes to start alcohol. The average age at which the alcohol use began was 21 years with standard deviation of 9 years and Confidence Interval (20 to 22) years (Table 5). The top three reasons for continuation of alcohol consumption were belief on caste rights (48.8%), fallen down on the habit (28.0%) and tension (11.7%). According to the respondents shortage of money (42.2%) and weakness (15.9%) were the major problem due to consumption of alcohol. However, around 35.0% of women were reported not have any problem due to consumption *(Table 5)*.

Table 5 Factors in alcohol consumption among females; 2003

Factors	Percentage, %	Frequency (n=397)
*Thoughts at first drink**		
Caste rights	59.4	236
To know the test	42.3	168
To get rid of tension	15.9	63
Peer pressure	14.6	58
To enjoy	6.0	24
Age at first drink		
Mean age = 21.35 years S D =9.3 95% C I for mean =[20.43, 22.26]		
*Reason for continuing alcohol**		
Caste rights	67.3	267
Habit	38.5	153
Tension	16.1	64
Peer pressure	8.1	32
Enjoy	6.5	26
Frustrated	1.3	5
*Problems due to alcohol**		
Shortage of money	49.4	196
Weakness	15.9	63
Increase anger/temper	8.1	32
No interest in work	6.3	25
Others	2.0	8
No problems	35.3	140

* Multiple responses

8.5. Alcohol drinking with tobacco use; its health effects and others factors

Among 21.4% smokers in the sample, 47.1% of them were smoking 'Bidi' and 42.4%, 'Cigarette'. 'Paper' and 'Chilim' users were also found in small numbers. Around 49% of alcohol users had habit of smoking. It was found that alcohol consumption was significantly related with smoking, as alcohol users were nearly 3 times likely to smoke than non-users (P<0.0001). Similarly there was significant relation with the tobacco chewing habit. It showed that the women alcohol consumers were nearly 4 times likely to chew tobacco than non consumers (P<0.0001) *(Table 6)*.

About 15.0% of women were found to take alcohol even in pregnancy. This is serious issue for her health and also to her fetus. However the difference of the habit according to the pregnancy status was not significance (P> 0.05). Among the alcohol consumers, 42% of users reported to have health problem whereas 27.5% of non-users reported to have health problems. The difference was statistically significance (P<0.0001). And also the alcohol users were nearly 2 times to report health problem than the non-users.

The consumption of alcohol among females was significantly affected by the husband's habit (P<0.0001). And also, the married women including separated, divorced were nearly 12 times likely to consume alcohol than the female of non users' husband *(Table 6)*.

Table 6. Alcohol drinking, tobacco use habit; its health impact on women; and other factors

	Alcohol Consumption		Total	O R	95% C I	P Value
	Yes (n=397)	No (n=2000)	(n=2397)			
Smoking						
Yes	48.6	16.0	21.4			
Bidi	47.1					
Cigarette	42.4			3.5	[2.9, 4.1]	<0.0001
Paper	7.2					
Others (Hukka,Chilim etc.)	3.4					
No	51.4	84.0	78.6			
Tobacco Chewing						
Yes	34.0	7.9	12.2	3.7	[3.1, 4.4]	<0.0001
No	66.0	92.2	87.8			
Pregnancy						
Yes	15.0	85.0	5.0	1.2	[0.7, 2.0]	NS
No	17.3	82.7	95.0			
Self reported Health problem						
Yes	42.1	27.5	29.9	1.7	[1.4, 2.0]	<0.0001
No	57.9	72.5	70.1			
Alcohol uses by husband (n=2063)						
Yes	86.4	33.8	42.7	12.4	[9.0,17.2]	<0.0001
No	13.6	66.2	57.3			

*NS – Not significant

Of the alcohol users, health problem reported by 42.1% women. The top five illnesses reported by them were gynecological problem (40.1%), muscular-skeletal problem (18.6%), headache (18.6%), cardiovascular problem (14.4%) and Respiratory problem (9.0%) respectively *(Table 7)*.

Table 7. Percentage distribution of illness among the alcohol users

Symptoms	Percentage (n=167)
Gastrointestinal problem	40.1
Musculoskeletal problem	18.6
Headache	18.6
Cardiovascular problem	14.4
Respiratory problem	9.0
Gynecological problem	4.8
Hepatic-cellular problem	4.8
Others	8.4

Multiple responses

8.6. Logistic regression model on alcohol consumption with the associated variables.

A logistic regression analysis was under taken to determine the independent variables that best predicted current alcohol users after consideration of the effects of the others variables[8] *(Table 8)*. The following variables were not associated with current alcohol use and were excluded from the model; marital status, education, religion and economically active.

The women whose family included at least a alcohol user were nearly 8 times likely to be alcohol users than non alcohol user's family. Similarly, person who used to take smoke, smokeless tobacco, suffered with health problems and older aged (50+ years) women were more likely to be alcohol users. But the use of alcohol among women were negatively associated with the factors; housewife, unemployed women, major hill caste and Terai occupational and other castes women and urbanized women in the variables, which were less likely to be alcohol users *(Table 8)*.

From the summary of the model, -2 log likelihood was calculated as 1372.94 and Cox and Snell R Square value was 0.28, indicating that 28% of the variance in alcohol use was explained by the logistic regression model.

Table 8. Final Logistic Regression; predictor variable of alcohol consumption, (n=397)

Variables	Coefficient (SE)	P Value	OR	95% C I
Older age (vs. reproductive age)	0.35 (0.17)	0.038	1.40	[1.02-1.96]
Housewife (vs. businesswomen)	-0.69 (0.28)	0.015	0.50	[0.29-0.87]
Unemployed (vs. businesswomen)	-3.04 (1.05)	0.004	0.05	[0.01-0.38]
Major hill caste (vs. Hill native)	-0.92 (0.22)	0.000	0.40	[0.26-0.61]
Major Terai caste (vs. Hill native)	-2.25 (0.23)	0.000	0.11	[0.07-0.17]
Terai (vs. Hill native)	-1.44 (0.22)	0.000	0.24	[0.16-0.36]
Other (vs. Hill native)	-1.16 (0.39)	0.003	0.31	[0.15-0.68]
Urban (vs. Rural)	-0.41 (0.20)	0.039	0.67	[0.45-0.98]
Alcohol users in family (vs. non users in family)	2.06 (0.17)	0.000	7.84	[5.60-10.98]
Smoker (vs. non smoker)	1.26 (0.16)	0.000	3.51	[2.58-4.79]
Tobacco chewing (vs. non user)	1.30 (0.18)	0.000	3.66	[2.59-5.18]
Health problem (vs. no health problem)	0.53 (0.15)	0.000	1.70	[1.28-2.26]

9. Discussion

This is a community-based survey, carried out in a district of eastern Nepal, aimed to report the prevalence and pattern of alcohol use and factors related to the habit among the women. The study reported the prevalence of alcohol consumption among the women aged 15 years and above in Sunsari district was 16.6%. This show that the alcohol consumption among the women has been nearly doubled in the period of nine years because Sunsari Health Interview Survey, 1994 had reported 8.3% women consumed alcohol in Sunsari[9].The study supports the current findings that the prevalence of alcohol use was increased with increasing age groups and declined after older age. The finding was supported by a study done in Taiwan, also[10].

Women belonging to hill native castes were most likely to consume alcohol than the others; generally they were originated from hill area of northern part of Sunsari district, where life is quite hard. Over the period of time, these people tend to migrate to urban and plain areas for easy life and better job prospective; therefore, there are a good number of people belonging to the caste in Sunsari. The castes also called 'Matawali' demands the alcohol for social, cultural and religious purposes. Nearly 20% of Nepalese society is belonging to this category[5].

A study in young Australian women reported that non-drinkers were more likely than drinkers to be married[11]. But the finding of this study reported that separated/divorced women were more likely to and unmarried were less likely to use alcohol than others. The result might not show real picture in that subjects as the separated/divorced women were very small to draw a conclusion and it was therefore considered as a limitation.

This study could not able to notice about family income of the respondents because most of them did not want to respond truly about it, however they were

provided the confirmation that the data would not be disclosed for other purpose. It might be due to the fear of Maoist. During the survey, the country was currently suffering increasing attacks on properties and incidents of violence related to a brutal Maoist insurgency.

The study revealed that homemade products were more common than Industrial products; moreover, the local Raksi was most popular drinks among the women. The reason may be that it can be produced in own houses and raw materials for preparation are easily available and cheaper in cost. This is in contrary to practices in developed countries like Denmark, as a study showed the industrial products like beer or wines were more common[12].

The study reported that among the daily users, 65% of them were regularly taking alcohol for more than 20 years. The group may be in alarming situation for health if the consumption exceed out of limit. The quantity and frequency of alcohol should be limited to obtain its beneficial effect; otherwise, the excess consumption may lead to serious health hazards. A study showed that there was a linear relationship between alcohol intake and the risk of type II diabetes. Serum insulin and HDL-Cholesterol explained a small amount (20%) of the reduction in risk of type II diabetes associated with moderate drinking. The adverse effect of heavy drinking seemed to be partially mediated through its effect on body weight[13]. Similarly, many studies supported that heavy drinking is a risk factor for diabetes[14,15,16].

Problems related to alcohol use and misuse can seriously affect many of the health concerns common among older women, including chronic illness and depression[17]. The finding of a prospective study among women of Maryland added evidence that the assessment of vulnerability to heavy alcohol use in women include consideration of depression[18]. Furthermore, there are some studies, which reported that there was no association of alcohol with diabetes[19,20]. Again, low

level of recent alcohol intake was associated with a reduced risk for non-Hispanic white women[21]. Although the females in this study reported significant health problems among the women due to the alcohol consumption than non-users, the health problems might have been more if they were examined clinically. Alcohol abuse, with all its adverse effects does not come to the attention of doctors, is largely tolerated and problems are treated by 'local quacks', and faith healers with dubious results. Despite the high prevalence, records show that not more than 2% of the patients attending a psychiatric clinic in Nepal reported with alcohol-related problem[22]. There is a scope to identify the degree of problem drinking and alcohol dependence among the group using screening instruments like CAGE, AUDIT, TWEAK etc.

The result showed that the chance of taking alcohol by a woman in a house was very low, if nobody was consuming alcohol in the family, and also alcohol drinking was positively associated with tobacco use; again, tobacco use is obviously risked of different diseases like cancer, asthma, adenoma etc. Moreover, alcohol and smoking in pregnancy are risk factors for different diseases as it not only affects mother, but also affects fetus. It was supported by a prospective study done in Japanese men and women, which reported the association of alcohol use and smoking with risk of adenoma[23]. The alcohol consumption among the females should be discouraged through effective media, although low dosage regular consumption in old age has reduced risk in some disease as discussed above.

Limitation

This study paper has not classified the alcoholism among the female drinkers; it has only attempted to disclose the prevalence, drinking pattern and causes of alcohol consumption among them, but not its exact concentration. Our result may have underestimated the true prevalence of alcohol consumption as most of the females in Nepalese society do not want to express their alcoholic habits freely.

10. Conclusion

The double increased of prevalence of alcohol use may be four times more again, if the group is not made aware in time. The prevalence of alcohol use among the women was 16.6% in Sunsari. The prevalence was significantly more in older age group than reproductive age. Separated/Divorced women, illiterate, business women, women belonging to hill native caste and Kirat religion were at risk.

The common drinks were homemade products among which 'Local Raksi', a distilled homemade product, constitutes high concentration of alcohol was most popular drinks. Among the daily users, 65% of them were taking for more than 20 years is a significant finding; moreover about 23% of daily users, who were taking more than 524 ml (approx.) of 'Local Raksi' were at high risk.

Mean age at first drink was 21 years; the thoughts of caste rights and curious to know the test of alcohol were the leading causes to start alcohol. Again thoughts of caste rights and fallen into habit of alcohol consumption were the common causes for its continuation. The main problem for the women after consumption of alcohol was shortage of money.

About 15% of women were taking alcohol even in pregnancy. Alcohol users were nearly 3 times likely to smoke and 4 times likely to chew tobacco than non-users. There was significant relation of alcohol consumption with self reported health problems. The findings suggest that the women whose family included at least a alcohol user were nearly 8 times likely to be alcohol users than non-alcohol users in family. The consumption of alcohol among the females was significantly affected by the husband's habit.

11. Recommendation

The following recommendations have been made according to the finding of the study.

- Awareness and effective program should be launched to discourage the excessive consumption of alcohol, which may lead to many diseases, with special focusing on pregnant women.

- It is also equally important to highlight the magnitude of the health hazard due to tobacco and alcohol consuming together as tobacco use was associated with alcohol.

- Although nearly 58% of females responded of not having any problem; this might due to their ignorance and nature of not openly disclose. Therefore, clinical health check up should be made among the female users to reveal the real health problems and its consequences.

- The females should be encouraged to go for regular health check up in health institution.

- There is a scope to do analytical study in these group using AUDIT and CAGE Scale to reveal many associated health hazards due to alcohol and smoking in our community specially in Sunsari from where the study was done.

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Annexes 1

Questionnaire

Study of prevalence and causes of alcohol consumption among females in Sunsari

Ward no. .... Age: .... Marital status: 1) Unmarried 2) Married 3) Separated 4) Divorce 5) Widower

Education: 1) Illiterate 2) Just literate 3) .... Class 4) SLC 5) Intermediate 6) Bachelor 7) Degree

Occupation: 1) Housewife 2) Business 3) Govt. Service 4) Private Service 5) Labour 6) Unemployed 7) Other
(Specify)............

Ethnicity/Caste: 1) Brahmin 2) Chhetri 3) Newar 4) Marwadi 5) Rai 6) Limbu 7) Magar 8) Tamang
9) Gurung 10) Sherpa 11) Bishwakarma (Kami) 12) Pariyar 13) Yadav 14) Jha 15) Others ......

Religion: 1) Hindu 2) Christian 3) Kirat 4) Buddhist 5) Muslim 6) Others.......

Family Income (Per year)............ Rs.

No. of family ....

Husband's occupation: 1) Foreign Service 2) Business 3) Govt. Service 4) Private Service 5) Labour 6) Unemployed 7) Others ....

1) How many children you have ? ....
2) Are you currently pregnant ? 1) Yes 2) No
3) Is there any alcohol addicted members in family ? 1) Yes 2) No
4) If you are married, does your husband take alcohol ? 1) Yes 2) No
5) Do you have habit of tobacco chewing ? 1) Yes 2) No
6) Do you smoke ? 1) Yes 2) No
   If yes, Quantity of smoking (No. of sticks per day) 1) 1-5 2) 6-10 3) 11-20 4) >20
   Duration of smoking (per year) 1) <1 2) 1-5 3) 6-10 4) 11-15 5) 16-20 6) >20
7) Do you take alcohol ? 1) Yes 2) No
   If yes, Frequency of alcohol intake, 1) Daily 2) 2-3 times per week 3) Once a week 4) Occasionally
   Quantity of alcohol taken (per glass) 1) Up to 1/2 2) 1/2 to 1 3) 1 to 2 4) 2-4 5) >4
   Duration of taking alcohol (per year) 1) <1 2) 1-5 3) 6-10 4) 11-15 5) 16-20 6) >20
   Type of alcohol usually consumed
   1) Distilled home made: Raksi 2) Non-distilled home made : Jandh, Tungba, Chhyang etc.
   3) Industrial non-distilled product: Beer (soft drinks)
   4) Industrial distilled product: Vodka, Rum, Whiskey etc. (hard drinks)
8) What was your thinking when you start to take alcohol first time ?
   1) to know the taste 2) friend's pressure 3) to become smart 4) to relieve the tension 5) for enjoying 6) Others (Specify)............
9) Why do you continuous to drink ?
   1) Religion 2) to relieve the tension 3) for enjoying 4) Other (Specify)............
10) Does your any child consume alcohol ? 1) Yes 2) No 3) Don't know
11) What problem does alcohol consumption cause in your daily life ?
    1) No problem 2) fighting to other 3) shortage of money 4) tiredness 5) Loss of work 6) Angry 7) Other (Specify)............
12) Do you have health problem ? 1) Yes 2) No
    If yes, What happen ? ....

(Thank You)

Glimpses of field work

Manufacturing Local Raksi

Purring the Prepared Local Raksi

Local Raksi Ready for Sell

Industrial Products for Sell

Supervision in field (Investigator enquiring with enumerators)

Supervision in field (Professor and Investigators)

Interviewing in field (Enumerator and participant)

Interviewing in field (Enumerator and participant)

Interviewing in field (Enumerator and participant)

Interviewing in field (Enumerator and participant)