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Alcohol Use by Nepalese Women: Evidence from Non Communicable Disease Risk Factors STEPS Survey Nepal 2013

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ABSTRACT

Background: Over the centuries, the world has witnessed alcohol use as a common phenomenon among the male population. Owing to the vulnerability of women towards alcohol and its possible consequences on women as well as children when pregnant or lactating mothers drink alcohol, there is utmost need to know the alcohol use among this population. The study sought to assess alcohol use among the Nepalese women aged 15-69 years.

Methods: It was a sub-set analysis of 2807 women aged 15-69 years, extracted from a data of national cross-sectional study, NCD Risk Factors: STEPS Survey Nepal 2013 carried out among 4200 adults in 2013 using a multistage cluster sampling. Data collected in personal digital assistants using WHO NCD STEPS instrument version 2.2 were transferred to Microsoft Excel, cleaned in SPSS 16.0, and analyzed in STATA 13.0.

Results: We reported 11.7% (95% CI: 9.5-14.3) ever users of alcohol, 9.4% (95% CI: 7.4-11.7) last 12 months alcohol users, 7.1% (95% CI: 5.2-9.0) current drinkers, and 0.9% (95% CI: 0.5-1.6) with harmful use of alcohol. As compared to 15-29 years women, 30-44 and 45-69 years women were 1.61 (95% CI: 1.02-2.55) and 1.58 (95% CI: 1.03-2.43) times more likely to be drinkers in the last 12 months, respectively. Likewise, 45-69 years women were 2.84 (95% CI: 1.05-7.63) times more likely to indulge into harmful use of alcohol than their younger counterparts (15-29 years). Women from the Terai belt had lower odds of any drinking pattern than the women from hills: ever use (0.43, 95% CI: 0.27-0.70), alcohol use in the last 12 months (0.44, 95% CI: 0.26-0.75), current drinking (0.38, 95% CI: 0.22-0.65), and harmful use of alcohol (0.11, 95% CI: 0.03-0.37). Primary education holders were found to have 0.64 times (95% CI: 0.43-0.95) chances of current drinking than those without formal education.

Conclusions: Women from upper age groups, hills, and with no formal education were found likely to be consuming alcohol. Contextual and culture friendly anti alcohol behaviour change communication interventions on community settings of hills and mountains, promoting active participation of relatively older women (45-69 years) and illiterate women are of great importance.

Keywords: Alcohol use; NCD risk factor; Nepal; women

INTRODUCTION

Evidences assembled from the largest part across the globe suggest that gender matters when it comes to alcohol drinking, with men drinking more than women.[1] Alcohol consumption prevalence as reported by the STEPS Survey Nepal 2013 portrays the similar picture.[2] Nepal, nevertheless, does not have literature exclusively on female alcohol drinking at national scale. As researches depict women encountering alcohol-related health problems at lower drinking levels than their men counterpart,[3] investigating how much women drink, and

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drivers behind would be indeed a footstep for the commencement of alcohol prevention and control programs. Most importantly, women drinking, particularly during pregnancy is the pathway to severe health consequences for newborns.[4] In the light of epidemic of Non Communicable Diseases (NCDs) in Nepal,[5] it's a high time to spot alcohol use among the vulnerable populace, women. An evidence of alcohol consumption pattern among the women would assist in helping target alcohol interventions, especially to prevent alcohol-exposed pregnancies. Study aimed to answer the question of alcohol use among the Nepalese women.

METHODS

This study represents a sub set of NCD Risk Factors: STEPS Survey Nepal 2013. [6] It was a cross-sectional study conducted from January to June 2013.

A sample size of 4200 was calculated using the prevalence of low fruits and vegetables intake (61.9%) from the 2008 STEPS survey[7] and expecting a response rate of 80%. The Primary Sampling Unit (PSU) of this survey was the Ilaka (an administrative unit at the sub-district level). Out of the 921 Ilakas in Nepal, 70 were selected using Probability Proportionate to Size (PPS) sampling. The total Ilakas in Nepal were divided into three strata's across Nepal's three ecological belts and a proportionate number of Ilakas were selected from mountains (five Ilakas), hills (30 Ilakas) and Terai (35 Ilakas), as per the population proportion of the National Population and Housing Census 2011 of Nepal.[8] At the second stage, each individual wards in Village Development Committee (VDC) or municipality within the Ilakas was allotted as clusters and regarded Secondary Sampling Unit (SSU). Three clusters were selected from each of the sampled Ilakas using the PPS sampling method, leading to the selection of 210 wards. At the third stage, 20 households were selected from each cluster using systematic random sampling leading to a total of 4200 sample. Finally, at the fourth stage, one participant of the eligible candidates (15–69 years) in each selected household was invited to take part in the survey using the Kish method.[9] Of the 4,200 adults (15-69 years) targeted, we had 4143 adults respondent in STEP I (response rate 98.6%) including men and women. As this study focussed on alcohol use among women, 2807 female respondents were considered for the analysis.

The survey was conducted using the WHO NCD STEPS instrument version 2.2,[10] which prescribes three steps for measuring NCD risk factors. STEP I assesses behavioural risk factors, STEP II covers physical measurements, and STEP III measures biological risk factors. As a part of STEP I, pattern of alcohol consumption in the last 12 months, and the last 30 days was gathered through face-to-face interview.

Those consuming alcohol at least once in their lifetime were considered as ever users of alcohol. Likewise, respondents who acknowledged drinking in the last 12 months were marked as last 12 months alcohol users. Those who have had at least one drinking episode in the last 30 days were considered as current drinkers. An average consumption of ≥40 gm of pure alcohol per day in the last 30 days was considered as harmful use of alcohol.[9] We assessed the pattern of drinking alcohol in the last 12 months as well as last 30 days. We also investigated harmful use of alcohol among the current drinkers.

Digital data collection was undertaken with the aid of Personal Digital Assistants (PDAs), a digital device especially designed with software to allow the data collection digitally. Two weeks prior to data collection, a week-long training was organized to acquaint enumerators and supervisors with PDAs and tool.

The STEPS instrument was translated into Nepali and validated through a pilot study and expert meetings. Pilot study was carried out in Kirtipur Municipality among 20 households. Necessary changes were made into the questionnaire following the pilot study. Frequent monitoring and supervision was carried out from the central level during data collection.

Data collected in PDAs were transferred to Microsoft Excel. For data cleaning, we used SPSS 16.0. Likewise, required analysis was done in STATA 13.0. Univariate [expressing % of alcohol use pattern], bivariate [expressing association between alcohol use and socio-demographic variables in the form of crude Odds Ratio (OR)], and multivariable analysis [showing relationship between alcohol use and socio-demographic variables in the form of adjusted OR] were done objectively. Confidence Interval (CI) of 95% was used as an indicator to judge the strength of association.

The study obtained ethical approval from an independent Ethical Review Board (ERB) of Nepal Health Research Council (NHRC). We also obtained formal permission from the concerned authorities of the selected ward as required from the district authority, VDC/municipality authority, and written consent from the respondents. We also provided respondents with an information sheet containing the information on research detail: objectives, data collection methods, role of respondents, personal and community benefits, and any possible harm.

RESULTS

Of the total sample of 4143, we included 2807 samples, that of women, in analysis for which we had all responses for the variables selected for this analysis.

One out of ten (11.7%, 95% CI: 9.5-14.3) acknowledged drinking any time during their lives. Having looked at various socio-demographic strata's, we observed considerable proportion of ever users of alcohol from 45-69 years (15.6%, 95% CI: 12.4-19.5) mountain inhabitants (26.1%, 95% CI: 10.6-51.3), non-formal education holders (15.3%, 95% CI: 12.2-18.9), and married (12.6%, 95% CI: 10.2-15.6). There was not much difference in the proportion of alcohol users between urban and rural women (Table 1).

Female from 45-69 years were 1.69 times (95% CI: 1.11-2.59) more likely to ever use alcohol than those from 15-29 years. Unfolding similar result, 30-44 years women too carried 1.74 times (95% CI: 1.18-2.59) higher odds of ever using alcohol than 15-29 years women. Women from the Terai belt had lower likelihood of all patterns of alcohol use, compared to women from the hills [ever use of alcohol (0.43, 95% CI: 0.27-0.70), alcohol use in the last 12 months (0.44, 95% CI: 0.26-0.75), current drinking (0.38, 95% CI: 0.22-0.65), and harmful use of alcohol (0.11, 95% CI: 0.03-0.37)]. An evidence of lower probability of ever using alcohol was traced out, with a rise of educational level. With no formal education as a reference, odds of ever use of alcohol lessened by 0.63 times (95% CI: 0.45-0.88) among the primary education holders, and 0.53 times (95% CI: 0.30-0.93) among the secondary education achievers. The only exception was higher education, which remained insignificant (Table 2).

Table 1. Alcohol consumption among the Nepalese women.

Characteristics	Categories	Ever used alcohol	Used alcohol in the last 12 months	Used alcohol in the last 30 days	Harmful use of alcohol
		% (95%CI)	% (95%CI)	% (95%CI)	% (95%CI)
Age group (years)	15-29 (n=683)	7.6 (5.3-10.8)	6.2(4.0-9.3)	4.4(2.1-6.7)	0.4(0.1-1.3)
	30-44(n=1141)	14.7 (11.3-18.9)	11.8(8.8-15.6)	8.9 (6.3-11.6)	1.0(0.4-2.2)
	45-69(n=983)	15.6(12.4-19.5)	12.4(9.8-15.7)	9.9 (7.4-12.4)	1.9(1.0-3.4)
Ecological belt	Hill (n=1197)	14.6(11.2-18.9)	11.4(8.4-15.2)	8.8(6.2-12.1)	1.5(0.7-3.1)
	Mountain(n=193)	26.1(10.6-51.3)	23.7(9.5-47.8)	21.0(7.4-47.1)	3.0(0.8-9.8)
	Terai(n=1415)	7.1(5.1-9.9)	5.7(3.9-8.1)	3.7(2.6-5.4)	0.2(0.1-0.4)
Residence	Rural(n=2299)	11.7(9.2-14.7)	9.8(7.6-12.6)	7.6(5.6-10.2)	1.0(0.5-1.8)
	Urban(n=508)	11.7(7.7-17.4)	7.0(4.3-11.4)	4.6(2.6-8.1)	0.5(0.1-1.9)
Educational level	No formal(n=1152)	15.3(12.2-18.9)	12.2(9.6-15.3)	9.8(7.5-12.7)	1.4(0.1-2.6)
	Primary(n=619)	9.7(7.2-12.9)	8.5(6.1-11.8)	6.1(4.2-8.8)	0.9(0.1-2.0)
	Secondary(n=415)	6.6(4.1-10.4)	5.4(3.2-9.1)	4.3(2.3-7.9)	0.5(0.1-3.5)
	Higher(n=221)	9.9(5.3-17.8)	6.7(2.9-14.7)	2.9(1.0-8.1)	0
Marital status	Never married (n=171)	5.7(2.8-11.2)	2.9(1.2-7.2)	2.4(0.8-6.7)	0
	Currently married (n=2452)	12.6(10.2-15.6)	10.4(8.2-13.1)	7.8(5.9-10.2)	1.0(0.5-1.9)
	Divorced / widowed / separated (n=184)	10.2(6.3-15.9)	8.1(4.7-13.6)	7.0(3.8-12.5)	1.5(0.3-6.7)
Total	n= 2807	11.7(9.5-14.3)	9.4(7.4-11.7)	7.1(5.2-9.0)	0.9(0.5-1.6)

Table 2. Correlates of alcohol consumption among the Nepalese women.

Characteristics	Categories	Ever used alcohol		Used alcohol in the last 12 months		Used alcohol in the last 30 days		Harmful use of alcohol	
		Crude OR (95% CI)	Adjusted OR (95% CI)	Crude OR (95% CI)	Adjusted OR (95% CI)	Crude OR (95% CI)	Adjusted OR (95% CI)	Crude OR (95% CI)	Adjusted OR (95% CI)
Age group (years)	15-29 (n=683)	1	1	1	1	1	1	1	1
	30-44(n=1141)	2.08 (1.40-3.11)	1.74 (1.18-2.59)	2.03 (1.27-3.25)	1.61 (1.02-2.55)	2.13 (1.28-3.56)	1.61 (0.98-2.65)	2.79 (0.62-12.50)	1.81 (0.51-6.39)
	45-69(n=983)	2.24 (1.51-3.34)	1.69 (1.11-2.59)	2.16 (1.38-3.38)	1.58 (1.03-2.43)	2.39 (1.43-4.00)	1.57 (0.96-2.57)	5.23 (1.42-19.22)	2.84 (1.05-7.63)
Ecological belt	Hill (n=1197)	1	1	1	1	1	1	1	1
	Mountain(n=193)	2.05 (0.72-5.86)	1.97 (0.61-6.35)	2.40 (0.84-6.83)	2.13 (0.67-6.76)	2.76 (0.86-8.88)	2.32 (0.63-8.49)	2.04 (0.52-7.94)	1.57 (0.35-7.00)
	Terai(n=1415)	0.45 (0.28-0.71)	0.43 (0.27-0.70)	0.46 (0.28-0.77)	0.44 (0.26-0.75)	0.40 (0.24-0.68)	0.38 (0.22-0.65)	0.11 (0.03-0.36)	0.11 (0.03-0.37)
Residence	Rural(n=2299)	1	1	1	1	1	1	1	1
	Urban(n=508)	1.03 (0.59-1.78)	1.03 (0.59-1.78)	0.69 (0.38-1.27)	0.72 (0.39-1.32)	0.59 (0.30- 1.18)	0.66 (0.34-1.27)	0.51 (0 .13- 2.05)	0.53 (0 .12-2.41)
Educational level	No formal education(n=1152)	1	1	1	1	1	1	1	1
	Primary(n=619)	0.60 (0.43-0.82)	0.63 (0.45-0.88)	0.67 (0.48-0.95)	0.74 (0.51-1.05)	0.60 (0.41-0.87)	0.64 (0.43-0.95)	0.63 (0.25-1.57)	0.81 (0.34-1.92)
	Secondary(n=415)	0.39 (0.24-0.64)	0.53 (0.30-0.93)	0.42 (0.24-0.72)	0.61 (0.34-1.11)	0.42 (0.23-0.77)	0.60 (0.30-1.17)	0.36 (0.05-2.56)	0.78 (0.13-4.57)
	Higher(n=221)	0.61 (0.31-1.21)	0.91 (0.43-1.96)	0.52 (0.21-1.25)	0.88 (0.34-2.32)	0.27 (0.09-0.81)	0.46 (0.16-1.27)	Empty	-
Marital status	Never married (n=171)	1	1	1	1	1	1	1	-
	Currently married (n=2452)	2.40 (1.14-5.05)	1.42 (0.63-3.21)	3.83 (1.48-9.93)	2.42 (0.88-6.67)	3.47 (1.16-10.37)	1.87 (0.62-5.61)	0.68 (0.13-3.58)	1.30 (0.24-7.11)
	Divorced / widowed / separated (n=184)	1.88 (0.81-4.36)	0.76 (0.31-1.89)	2.90 (0.94-9.00)	1.29 (0.40-4.19)	3.11 (0.85-11.29)	1.11 (0.30-4.03)	Omitted	-

Of the total women, 9.4% (95% CI: 7.4-11.7) drank alcohol in the last 12 months. Women from mountains (23.7%, 95% CI: 9.5-47.8) and with no formal education (12.2%, 95% CI: 9.6-15.3) comprised of major alcohol users within the related strata (Table 1).

Based on multivariable analysis, we found 1.61 times (95% CI: 1.02-2.55) higher likelihood of the last 12 months drinking in 30-44 years women compared to 15-29 years. Correspondingly, 45-69 years women too had 1.58 times (95% CI: 1.03-2.43) higher chance of drinking than 15-29 years. Also, women from the Terai were less likely to be current drinkers than those from hill (Table 2).

About 7.1% (95% CI: 5.2-9.0) reported drinking alcohol in the last 30 days. One-tenth of the (9.9%, 95% CI: 7.4-12.4) women from 45-69 years and one-fifth (21.0%, 95% CI: 7.4-47.1) of the women from the mountains were current drinkers (Table 1).

While all other explanatory variables remained insignificant, only being Terai women (compared to hilly women) and primary education holders (compared to those without formal education) were related to current drinking (Table 2).

One out of 100 (0.9%, 95% CI: 0.5-1.6) were indulged into harmful use of alcohol (Table 1). Women who belonged to 45-69 years were 2.84 times (95% CI: 1.05-7.63) more likely to be addicted to harmful use of alcohol than 15-29 years women (Table 2).

DISCUSSION

This manuscript presents alcohol use by women in Nepal analyzed as a subset of a nationwide survey, Non Communicable Diseases Risk Factors: STEPS Survey Nepal 2013. Of the total adults in the age group 15-69 years in the survey, analysis was done for women. Alcohol use remained a substantial problem among: 45-69 years, mountain and hilly residents, and informal education holders. Our results are well supported by the previous Nepalese literature.[11]

An existence of more alcohol users from the older women (45-69 years) could be challenging, particularly due to the greater chances of alcohol-related health problems. We also observed 2.84 times higher likelihood of older women (45-69 years) to indulge into harmful alcohol use than their younger counterparts (15-29 years). Older women always carry special vulnerability towards alco-

hol problems, as they have longer life expectancy than their male counterparts, living the life of loneliness and depression.[12] Furthermore, late-life drinking may be regarded as the response to particular late-life social context and coping mechanisms among women.[13]

The current report of 9.4% women drinking alcohol in last 12 months is twice that of Indian women (5.8%).[14] Another Indian study reported a figure of 2.8% drinking among the women.[15] On the other hand, a study from eastern district of Nepal depicted 16.8% current alcohol users.[11] Various study settings, methodological differences, and sample characteristics might be accounted to the variations in findings.

A nominal figure of harmful alcohol use was noted, standing at 0.9%. Evidences accumulated unfold the similar findings: 2.4% high-risk drinking women in Brazilian sample[16] to 1% problem drinking in Indian women.[17] However, the proportion of women with harmful use of alcohol was substantial (13.2%) among the current drinkers which is higher than that of current drinking men in the same study.[6]

Compared to 15-29 years, 45-69 years was 1.69 times more likely to ever use alcohol and 1.58 times more likely to use alcohol in the last 12 months. A Nepali study too depicted two times higher probability of older women (50 years and above) to be addicted to drinking than the younger ones.[11] An Indian study portrayed two times higher odds of alcohol consumption among older women than in younger age-groups.[15] Increase in age has been shown to raise odds of being a current drinker.[18]

Women from hills had significantly higher probability of drinking than women from the Terai across all patterns of alcohol consumption. This result is in line with an earlier Nepalese study.[11] High altitude residents use alcohol as a belief that it helps to cope with the severe cold in the winter season. Likewise, having no formal education also somehow triggered the possibility of ever using alcohol and current drinking; the current study gave the evidence.

An investigation of alcohol consumption by women is of paramount importance, considering the fact that newborn may suffer with low birth weight, pre-term birth, small for gestational age[19] fetal alcohol spectrum disorders[20] to birth defects,[21] if a woman continues to drink in a periconceptional period. Besides, alcohol consumption also brings a heavy death toll as it attributes from cancer to alcohol use disorders, stroke, Coronary Heart Disease (CHD), and unintentional and intentional injuries.[22] Further social consequences brought by alcohol use are devastating.[1]

The current study explored the fact of substantial alcohol problems among older women (45-69 years), women from mountains and hills, and those without formal education. The findings generated by this study do have significant implications on NCD prevention, and maternal and neonatal health promotion.

The statistics of alcohol use among various sociodemographic groups provided by this study calls for suitable approaches to counter the problem. Based on findings, significant approach could be an initiation of health education campaigns, chiefly in the community settings of hilly and mountainous areas. Culturally sensitive and specific alcohol interventions would be an important step for anti-alcohol programs. Equally, a special place to older age group (45-69 years) needs, paying special attention to medical and mental health issues that this at-risk population has to bear.

The major strengths of the current study were: use of validated STEPS instrument for NCD risk factor surveillance, multistage cluster sampling, and cluster adjusted weighted analysis. We admit the limitations as well. As this was a cross-sectional design, results showing association of outcome and explanatory variables might have been biased. The possibility of underreporting by the respondents cannot be denied, as culture of male-approved drinking is highly prevalent in Nepal. However to minimize respondent bias, mostly intentional underreporting by respondents, we maintained privacy during interviews and ensured that responses would be reported anonymously. Moreover, assessment of alcohol consumption habit based on self-report was likely to suffer from the information bias, especially recall one.

CONCLUSIONS

Hilly women, 45-69 years, and non-formal educations holders drove the alcohol consumption habits. Specific community-based anti-alcohol behavior change communication interventions, health education campaigns, with active

community participation may help alleviate the problem. This will also reduce the neonatal and maternal mortality and morbidity, injuries, and violence significantly.

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REFERENCES

1. WHO. Global status report on alcohol and health 2014. Geneva: World Health Organization; 2014.
2. Aryal KK, Mehata S, Neupane S, Vaidya A, Dhimal M, Dhakal P, et al. The Burden and Determinants of Non Communicable Diseases Risk Factors in Nepal : Findings from a Nationwide STEPS Survey. PLoS One. 2015;10(8):e 0134834.
3. NIH. Women and alcohol. National Institute on Alcohol Abuse and Alcoholism; 2013 [updated August 2013; cited 2015 10 July 2015]; Available from: http://pubs.niaaa.nih.gov/publications/womensfact/womensfact.htm.
4. Henderson J, Kesmodel U, Gray R. Systematic review of the fetal effects of prenatal binge-drinking. Journal of epidemiology and community health. 2007;61(12):1069-73.
5. Bhandari GP, Angdembe MR, Dhimal M, Neupane S, Bhusal C. State of non-communicable diseases in Nepal. BMC public health. 2014;14(1):23.
6. Aryal K, Neupane S, Mehata S, Vaidya A, Singh S, Paulin F, et al. Non Communicable Diseases Risk Factors: STEPS Survey Nepal 2013. Kathmandu: Nepal Health Research Council; 2014.
7. Karki KB, Dahal BR, Regmi A, Poudel A, Gurung Y. WHO STEPS Surveillance: Non Communicable Diseases Risk Factors Survey 2008. Kathmandu: Ministry of Health and Population, GoN, Society for Local Integrated Development Nepal (SOLID Nepal) and WHO; 2008.
8. CBS. National Population and Housing Census 2011. Kathmandu: Central Bureau of Statistics; 2012.
9. WHO. STEPS Manual. Geneva: World Health Organization; 2014 [cited 2014 12 November 2014]; Available from: http://www.who.int/chp/steps/manual/en/.
10. WHO. The STEPS Instrument and Support Materials. Geneva: World Health Organization; 2014 [cited 2014 22 November 2014]; Available from: http://www.who.int/chp/steps/instrument/en/.
11. Niraul S, Jha N, Shyangwa P. Alcohol consumption among women in a district of eastern Nepal. Health Renaissance. 2014;11(3):205-12.
12. Blow FC, Barry KL. Use and misuse of alcohol among older women. Alcohol Research and Health. 2002;26(4):308-15.
13. Moos RH, Schutte K, Brennan P, Moos BS. Ten-year patterns of alcohol consumption and drinking problems among older women and men. Addiction (Abingdon, England). 2004;99(7):829-38.
14. Benegal V, Nayak M, Murthy P, Chandra P, Gururaj G, Obot I, et al. Women and alcohol use in India. Alcohol, gender and drinking problems: Perspectives from low and middle income countries. 2005:89-123.
15. Mini G. Socioeconomic and demographic correlates of tobacco use and alcoholic consumption among Indian women. Indian Journal of Community Medicine. 2007;32(2):150.
16. Almeida-Filho N, Lessa I, Magalhães L, Araújo MJ, Aquino E, Kawachi I, et al. Alcohol drinking patterns by gender, ethnicity, and social class in Bahia, Brazil. Revista de Saúde Pública. 2004;38(1):45-54.
17. Potukuchi PS, Rao PG. Problem alcohol drinking in rural women of Telangana region, Andhra Pradesh. Indian journal of psychiatry. 2010;52(4):339.
18. Martinez P, Røislien J, Naidoo N, Clausen T. Alcohol abstinence and drinking among African women: data from the World Health Surveys. BMC Public Health. 2011;11(1):160.
19. Patra J, Bakker R, Irving H, Jaddoe VW, Malini S, Rehm J. Dose–response relationship between alcohol consumption before and during pregnancy and the risks of low birthweight, preterm birth and small for gestational age (SGA)—a systematic review and meta-analyses. BJOG: An International Journal of Obstetrics & Gynaecology. 2011;118(12):1411-21.
20. May PA, Gossage JP. Maternal risk factors for fetal alcohol spectrum disorders: not as simple as it might seem. Alcohol Research & Health. 2011;34(1):15.
21. O'Leary CM, Nassar N, Kurinczuk JJ, de Klerk N, Geelhoed E, Elliott EJ, et al. Prenatal alcohol exposure and risk of birth defects. Pediatrics. 2010;126(4):e843-e50.
22. Rehm J, Room R, Graham K, Monteiro M, Gmel G, Sempos CT. The relationship of average volume of alcohol consumption and patterns of drinking to burden of disease: an overview. Addiction (Abingdon, England). 2003;98(9):1209-28.