



Epidemiology of alcohol use in the general population of Togo[☆]



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ABSTRACT

Introduction: Alcohol use is responsible for a high level of mortality and morbidity throughout the world. The WHO global strategy recommends that the detrimental effects of alcohol use be reduced.

Aims: The objective of this paper was to investigate, using data from the 2010 Togo STEPS survey, alcohol use and other health-related factors in the general population of Togo.

Methods: This epidemiological investigation using the STEPwise approach was undertaken from December 1st, 2010, to January 23rd, 2011, throughout the five regions of Togo. Togo is a low-income country (World Bank) located in West Africa. The study involved 4800 people aged 15 to 64 who were representative of the population of Togo and who were selected using the one-stage cluster sampling method.

Results: The sample was young and predominantly male. Approximately one-third of the respondents were alcohol abstainers, with the majority of these being women. Approximately the same proportion of current drinkers (daily consumption) by gender was observed. The reported daily average consumption of alcohol was 13 g of pure alcohol for men and 9 g for women. The mean number of heavy drinking days over the previous 30 days was higher for men (3 days), and this included 37.5% of the men who drink.

Conclusion: We suggest a comparative analysis of the prevalence of harmful alcohol use in Togo and the WHO African region.

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1. Introduction

According to the WHO (World Health Organization), alcohol use represents the third strongest risk factor for morbidity and mortality in the world. The damage due to harmful or hazardous alcohol use is plentiful. Alcohol is a major determinant of non-communicable diseases and neuropsychiatric disorders (Adeyiga, Udofia, & Yawson, 2014;

Hoertel, Crochard, Rouillon, & Limosin, 2014; Pierucci-Lagha & Derouesné, 2003; WHO, 2014). Every year, alcohol use is likely to cause 2.5 million deaths, including direct mortality caused by automobile accidents and hetero-aggressive and auto-aggressive behavior (suicide) as well as deferred mortality (e.g., cancers, cardiovascular diseases, and hepatic diseases). Excessive alcohol use constitutes the primary cause of cognitive impairment among people younger than 60 (Menecier, Affi, Menecier-Ossia, et al., 2006) with alcohol dependency being a widespread disorder whose lifetime prevalence is estimated to be 7–12.5% in the majority of Western countries (Pirkola, Poikolainen, & Lönnqvist, 2006). Based on the global status report on alcohol and health, alcohol use is trending downward in the WHO African region (AFR), though the alcohol-attributable mortality in this region is not among the lowest globally (WHO, 2010, 2014). To reduce the burden of alcohol use worldwide, the WHO developed an overarching strategy which includes epidemiologic surveillance of alcohol use (WHO, 2010). Thus, Togo conducted a national survey on risk factors for non-communicable diseases in 2010 using the WHO STEPwise approach (WHO STEP, 2005).

The goal of this paper is to investigate using the 2010 Togo STEPS research data alcohol use and other health-related factors in the general population of Togo.

[☆] The authors' contributions can be described as follows: Dr Nubukpo, the last author, wrote the paper after elaboration from the database where the hypothesis was focused on, indicated the statistical analysis frame, and collaborated to analysis and summary of data. He supervised Dr Agoudavi, the local focal investigator and first author who coordinated all the implementation processes of the STEPS survey including training of data collectors and supervisors and training of data managers and data analysis. For this article, he updated the methodology, data analysis and results. M Dalmay did the statistical analysis. M Legleye contributes to statistical analysis. PR Fallissard had read the paper and made major suggestions for its improvement. Pr Preux supervised the statistical analysis. Dr Kumako worked on the results part and has contributed in the data collection process.

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2. Methods

2.1. Modality of investigation

This is an epidemiological study using the STEPS framework for the screening and supervision of risk factors for non-communicable diseases (NCD) as advised by the WHO (WHO STEP, 2005). It was conducted between December 1, 2010, and January 23, 2011, and included an approximately representative sample of Togo's population. Togo is a low-income country (GDP per capita: US\$1400). It is located in West Africa and has an area of 56,000 km² and a population of approximately 6,306,000 inhabitants. The majority of the people are older than 15 (58%) and live in rural areas (57%).

2.2. Selection criteria

The investigation was conducted nationally with 4800 adults of both genders. The tested subjects lived in urban and rural areas within the sampled area for at least 6 months and were between 15 and 64 years of age at the time of the investigation. They were recruited after they gave their informed consent to participate in the study. Individuals who could not answer the recruitment questions were not included.

2.3. Sampling

Four hundred thirty-two people per age group and sex were chosen, following the Schwartz formula (Schwartz, 1993) and the recommendations outlined in the STEPS manual in part 2, Section 2. Taking into consideration our target sample of people between 15 and 64 years of age, it was found that the number required per age group and per sex was 10. This gave a provisional size of 4320 people (2160 men and 2160 women) as the minimum number of individuals necessary for the study. This population specification was used for weighting. Taking into consideration previous investigations in the field of health in Togo (with an estimated non-response rate of 10%), the definitive size of the retained sample was 4800 individuals.

Three hundred clusters were drawn randomly in a systematic draw with a probability proportional to the size of the cluster (number of households) on the basis of the survey by the *Direction Générale de la Statistique*. Sixteen households per cluster were selected at random in the second step of the survey. In each selected household, an individual was chosen as the participant in the survey by following the pattern of Kish's method (Berthier, Caron, & Neros, 1998). Kish's method can be used to select individuals within households regardless of the chosen method of sampling to select these households. A household was defined as a group of people who regularly share their main meal with one another (regardless of their parental relationships). In cases where the selected person was absent or was not well when the data collectors were present, they had to actively look for him/her later or would arrange an alternate meeting at an agreed time. Based on Kish's method, no household was replaced because of the eligible person's rejection or because of two fruitless visits. For the 55–64 year age range, an additional sampling was conducted. This is because it proved difficult to satisfy the quota for this age range in the original sampling.

2.4. Data collection

The data collection device was the WHO STEPS version 2.1 for the control of risk factors for chronic diseases. It includes 104 questions that are divided into four parts: introduction, step 1, step 2 and step 3. The introduction section includes 10 questions that introduce the survey, achieve anonymity, and obtain informed consent. Step 1 (questions 11 to 79) includes socio-demographic data and behavioral measures (alcohol and tobacco use, diet, physical exercise, history of high blood pressure, and history of diabetes). Step 2 (questions 80 to 95) collects clinical variables. Step 3 (questions 96 to 104) collects biological

variables. The 2010 Togo STEPS survey data were directly collected in PDAs (Personal Digital Assistants) provided by the STEPS team in the WHO office in Geneva.

The data were collected by a team of 22 pairs of trained interviewers using the STEPS device under the supervision of 12 supervisors. Each pair included one interviewer with a minimum of a high school degree and one health worker (nurse/medical assistant/medical school student/laboratory assistant). The data collectors were trained for 5 days in the STEPS approach and the use of the data collection tools. They participated in a one-day pilot test before the beginning of the data collection. The data collection was conducted in the selected households in line with the STEPS recommendations. The data from steps 1 and 2 were collected on the first day; data from step 3 were collected the following day.

2.5. Data processing and analysis

The collected data stored in the PDAs were transferred to computer-based Excel files using the WHO STEPS data management software. The transferred data were later exported to the software SAS 9.1.3 (SAS Institute, Cary, USA) for statistical analyses. The definitions that were used in the data analyses were those of the WHO.

2.5.1. Alcohol

The alcohol use under consideration was the alcohol use over the previous 30 days preceding the survey. Classifications were established (see Table 1).

2.5.2. Tobacco

The categories used were current smoker, and current daily smoker.

2.5.3. Employment

For this survey, participants who did not earn salaries (students, men and women who stay at home assisting their family in the management of an enterprise without expecting remuneration, the retired, and the jobless) were included in the category 'unpaid'. The category 'independent' refers to participants who owned their own business (small, medium-sized or large) or commercial enterprise.

2.5.4. Hypertension

A participant with a systolic blood pressure (BP) ≥ 140 mm Hg and/or a diastolic blood pressure (BP) ≥ 90 mm Hg or who was undergoing an antihypertensive treatment was considered to have high blood pressure.

2.5.5. Diabetes

A participant with a capillary blood sugar level ≥ 110 mg/dl (6.1 mmol/l) was classified in the category of diabetic hyperglycemia.

2.5.6. Cholesterol

Total hypercholesterolemia was defined as a capillary cholesterol level of ≥ 190 mg/dl.

Table 1

WHO alcohol consumption and associated risk level.

Source: WHO (2010).

	Total alcohol consumption (TAC) (g/day)	
	Men	Women
Category I – low risk	1–40	1–20
Category II – moderate risk	>40–60	>20–40
Category III – high risk	>60–100	>40–60
Category IV – very high risk	>100	>60

Heavy drinking days (HDDs) are days when alcohol use is more than 60 g/day for men or more than 40 g/day for women.

2.5.7. Overweight and obesity

The overweight category was defined as individuals with a body mass index (BMI) between 25 kg/m² and 30 kg/m². Obesity was defined as a BMI of ≥ 30 kg/m². Pregnant women were not considered in the BMI classification.

2.6. Statistical analyses

The results for the quantitative variables are presented as mean \pm standard deviation, minimum, maximum and median, and are expressed in frequencies and percentages. The Shapiro–Wilk method of verifying the normality of the quantitative variables' distributions was used.

The comparisons between two subject groups were computed with Chi-square tests and Fisher's exact tests, depending on the theoretical number of participants and the number of classes and/or items in the different groups under consideration. The variables' distributions were compared using Student's *t*-tests. ANOVAs were performed to compare the quantitative variables with more than two classes that had a normal distribution. The designated significance threshold for the statistical analyses was 0.05. The software used was SAS 9.1.3 (SAS Institute, Cary, USA).

2.7. Ethical aspects and confidentiality

The international protocol of the STEPS investigations that was validated and recommended by the WHO was used for the data collection of the 2010 Togo STEPS investigation. Verbal and written informed consent was obtained from each participant. No vein sampling was kept for subsequent analyses or for analyses related to genetic analysis.

3. Results

A total of 4371 people were included (2088 men and 2283 women). The sample was rather young, with a mean age of 34.01 ± 12.65 years (men: 34.58 ± 12.84 ; women: 33.49 ± 12.45). The sample participants were predominantly from rural areas, uneducated, part of a family, and working in the agricultural and informal sectors, with a predominance of the Adja-Ewe, Kabye-Tem and Para-Gourma-Akan ethnic groups. The reported mean annual family income was close to a monthly minimum wage (US\$80.00; see Table 2).

Approximately one-third of the respondents did not drink alcohol, with a majority of this group being women (40.22% non-drinkers). Abstinence from alcohol was more notable among young men and women in the 15–24 age group, with proportions of 40.3% and 43.1% respectively. Almost two-thirds of the respondents had consumed an alcoholic beverage in their lifetime, while slightly more than half had consumed alcohol in the previous year or the previous month. Nearly half of those who had consumed at least one alcoholic beverage in the previous year drank 5 to 6 days a week. The proportion of those who drank in the month before the survey was 68.5% [95% CI: 65.2–71.8] for men vs 56.7% [95% CI: 53.3–60.0] for women. Among alcohol drinkers, daily drinking was the most common frequency (41.76% of men and 34.6% of women).

The reported mean daily alcohol use is 1.3 alcohol units (AUs) or standard drinks (that is, 13 pure alcohol grams) for men and 0.9 AU for women (that is, 9 pure alcohol grams), the equivalent of drinking 9 AU or 6 AU, respectively, weekly. The mean number of occasions of alcohol use (8.7 for men vs 7.5 for women), the mean number of AU drunk per occasion (4.2 for men vs 2.5 for women) and the mean number of heavy drinking days (HDDs; 3.3 for men vs 2.3 for women) were higher among men than women. The prevalence of HDDs was 35.7% [95% CI: 32.0–39.3] for men vs 21.7% [95% CI: 18.4–24.9] for women, and HDDs were more frequent in the 35–64 age group (see Table 3).

The category III risk level [high risk drinking (60–100 g of pure alcohol/day for men and 40–60 g of pure alcohol/day for women) and very high risk drinking (more than 100 g of pure alcohol/day for men

Table 2

Socio-demographic parameters in the 2010 Togo STEPS survey.

	Total (N = 4371)		Men (N = 2088)		Women (N = 2283)	
Mean age \pm SD (years)	34.01 \pm 12.65		34.5 \pm 12.8		33.4 \pm 12.4	
	Total (N = 4371)		Men (N = 2088)		Women (N = 2283)	
	N	(%)	N	(%)	N	(%)
Age distribution						
15–24	1164	26.63	539	25.81	625	27.38
25–34	1283	29.35	583	27.92	700	30.66
35–49	1283	29.35	632	30.27	651	28.52
50–64	641	14.66	334	16.00	307	13.45
Place of residence						
Urban	1168	24.3	433	20.7	600	26.0
Rural	3632	75.7	1655	79.3	1686	73.7
Level of education						
Illiterate	1802	41.3	612	29.4	1190	52.2
Less than primary school education	927	21.3	424	20.4	503	22.1
Primary school education	884	20.3	518	24.9	366	16.1
Junior high school education	508	11.6	355	17.0	153	6.7
Senior high school education	133	3.0	101	4.8	32	1.4
Post-secondary education	107	2.4	73	3.5	34	1.5
Civil status						
Never married	955	21.9	636	30.5	319	14.0
Married	871	20.0	424	20.4	447	19.7
Separated	100	2.3	43	2.1	57	2.5
Divorced	45	1.0	28	1.3	17	0.7
Widowed	187	4.3	26	1.2	161	7.1
Concubinage	2195	50.4	925	44.4	1270	55.9
Profession						
Salary earner, public sector	110	2.5	87	4.2	23	1.0
Salary earner, private sector	133	3.0	88	4.2	45	2.0
Liberal/informal	982	22.5	425	20.4	557	24.4
Homemaker	723	16.6	12	0.6	711	31.2
Student	448	10.3	292	14.0	156	6.8
Agriculturist/farmer	1839	42.1	1093	52.4	746	32.7
Retired	65	1.5	53	2.5	12	0.5
Inactive/jobless	64	1.5	34	1.6	30	1.3
Ethnic group						
Adja-Ewe	1464	33.6	636	30.6	828	36.3
Akposso-Akebou	181	4.1	91	4.4	90	3.9
Ana-lfe	124	2.8	59	2.8	65	2.8
Kabye-Tem	1485	34.1	753	36.2	732	32.1
Para-Gourma-Akan	936	21.5	458	22.0	478	21.0
Peul-Haoussa	169	3.9	83	4.0	86	3.8

The sample participants were rather young, predominantly from rural areas, uneducated, part of a family, and working in the agricultural and informal sectors with a predominance of the Adja-Ewe, Kabye-Tem and Para-Gourma-Akan ethnic groups.

and more than 60 g of pure alcohol/day for women)] were more frequent among men (12.0%) than women (9.9%). People who were in the high risk (category III) or very high risk (category IV) group also had more HDDs (see Table 3). The category III risk level of alcohol use was more frequent in the 45–54 age group among both men (4.2%) and women (3.9%). We found a relatively high proportion of women (22.6%) in the risk category II, which is much higher than the proportion of men in this category (12.2%).

Subjects with noxious alcohol use (category III) had significantly higher weight (64 ± 22 kg) and higher BMI than those with moderate drinking (risk category II: 62 ± 18 kg; $p = 0.02$) or only a slight risk (category I: 60 ± 11 kg; $p < 0.0001$). Subjects with moderate alcohol risk (category II) had significantly ($p < 0.001$) higher fasting blood glucose (74.7 ± 3.9) than those with only slight drinking risk (69.4 ± 24.7). Subjects with high alcohol risk (category III) had significantly ($p = 0.03$) higher blood cholesterol (84.7 ± 80.7) than those with category II risk of alcohol use (70.2 ± 78.9).

The prevalence of noxious alcohol use (high and very high risk categories, or category III) was high among married and divorced participants. In terms of gender, the prevalence was higher among divorced

Table 3
Description of alcohol use in the 2010 Togo STEPS survey.

	Total		Men		Women	
	% (N)	95% CI	% (N)	95% CI	% (N)	95% CI
Lifetime alcohol abstinence	36.6 (1387)	33.7–39.5	30.1 (552)	26.7–33.6	42.6 (835)	38.9–46.2
Lifetime alcohol consumption	66.6 (2910)	63.9–69.4	72.1 (1508)	68.8–75.3	61.8 (1402)	58.4–65.3
No alcohol in the past year	4.5 (152)	3.4–5.6	3.6 (57)	2.2–5.1	5.4 (95)	3.8–6.9
Alcohol consumption in the last month	62.2 (2758)	59.5–64.9	68.5 (1451)	65.2–71.8	56.7 (1307)	53.3–60.0
Alcohol less than 1 time/month	3.0 (119)	2.2–3.8	4.0 (74)	2.7–5.3	2.1 (45)	1.3–2.9
Alcohol 1–3 days/month	6.0 (247)	5.1–7.0	7.4 (144)	6.0–8.8	4.8 (103)	3.7–5.9
Alcohol 1–4 days/week	6.7 (247)	5.6–7.7	7.8 (144)	6.2–9.4	5.6 (103)	4.3–6.9
Alcohol 5–6 days/week	9.2 (348)	7.9–10.5	9.6 (174)	7.9–11.3	8.9 (174)	7.2–10.6
Alcohol every day	33.9 (1518)	31.3–36.5	37.5 (816)	33.8–41.1	30.7 (702)	27.9–33.4
				Total	Men	Women
				Mean ± SD	Mean ± SD	Mean ± SD
Total alcohol consumption (TAC)						
Monday				1.1 ± 1.9	1.4 ± 2.1	0.8 ± 1.5
Tuesday				1.1 ± 1.9	1.3 ± 2.0	0.9 ± 1.7
Wednesday				1.3 ± 2.2	1.5 ± 2.6	1.0 ± 1.5
Thursday				1.2 ± 2.1	1.5 ± 2.4	0.9 ± 1.5
Friday				1.3 ± 2.3	1.5 ± 2.5	1.0 ± 2.1
Saturday				1.3 ± 2.3	1.6 ± 2.7	1.0 ± 1.5
Sunday				1.3 ± 2.3	1.6 ± 1.6	1.1 ± 1.1
Number of occasions of consuming at least one alcoholic beverage in the last 30 days				8.2 ± 8.3	8.7 ± 8.8	7.5 ± 7.7
Mean number of standard drinks of alcohol per occasion in the last 30 days				3.4 ± 4.4	4.2 ± 5.5	2.5 ± 2.0
Heavy drinking days (HDDs)						
Consumption of >5 (M) or >4 (F) standard alcoholic drinks per occasion in the last 30 days				2.8 ± 4.5	3.3 ± 4.9	2.3 ± 4.1
WHO risk category of alcohol consumption			Men		Women	
			% (N)		% (N)	
Category III*			12.0 (154)		9.9 (110)	<0.00*
Category II			12.2 (158)		22.6 (252)	
Category I			75.9 (986)		67.6 (755)	
WHO risk category and HDDs (M: >60 g/day, F: >40 g/day)			Men		Women	
			M ± SD		M ± SD	
Category III*			7.46 ± 7.6		7.9 ± 8.2	<0.00*
Category II			5.3 ± 5.8		7.0 ± 6.4	
Category I			1.59 ± 2.59		1.9 ± 2.8	
Tobacco use	Total		Men		Women	
	% (n/N)		% (n/N)		% (n/N)	
Current smoker	6.8 (379/4300)		12.4 (335/2062)		1.8 (44/2238)	<0.0001*
Current daily smoker	75.9 (287/379)		79.1 (265/335)		50.0 (22/44)	<0.0001*

Approximately one-third of the respondents did not drink alcohol, with a majority of this group being women (40.22% non-drinkers).

Almost two-thirds of the sample consumed alcohol at some point in their lifetime. Among alcohol drinkers, daily drinking is the most common frequency (41.76% of men and 34.6% of women). The reported mean daily alcohol use is 1.3 standard drinks for men and 0.9 standard drinks for women. The mean number of heavy drinking days (HDDs) was higher for men (3.3) than for women (2.3). There are more women (22.6%) in risk category II (moderate) than men. Risk category III (high or very high) was more frequent among men (12.0%) than among women (9.9%). People who are at high or very high risk also have more heavy drinking days (HDDs). 8.7% of the participants currently smoke, with a strong predominance of men; approximately 3/4 of this group are current daily smokers.

* category III risk of alcohol consumers have significantly more HHD than category II and I

men (12.2%) and married men (10%). Married and widowed women had the highest prevalence of category III alcohol use, at 5.0% and 4.3%, respectively. Noxious alcohol use (category III) was higher in rural areas (3.6%, 95% CI: 2.4–4.8) than in urban areas (2.2%, 95% CI: 0.5–3.9). The highest prevalence of noxious alcohol use was observed in the Kara (6.2%, 95% CI: 2.8–9.7), Savannah (5.3%, 95% CI: 2.0–8.6), and Central (4.2%, 95% CI: 0.0–8.5) regions. It was higher for the uneducated (4.3%, 95% CI: 0.0–7.2) participants and almost zero for participants with a university degree. The prevalence of noxious alcohol use was highest among those who were retired (12.8%, 95% CI: 0.2–25.3).

Among the participants in this STEPwise study in Togo, 6.8% were current smokers, with this group being predominantly male (12.4% current smokers); approximately 75.0% were daily smokers. Noxious alcohol use was higher among tobacco users (5.9%) than tobacco non-users (2.8%; $p < 10^{-5}$).

4. Discussion

The results of this transversal population study highlight the prevalence of alcohol use in Togo. This country might therefore attend more to the total tangible and intangible costs of alcohol to the economy in the context of global human development.

A WHO (2014) report noted that people in Togo reported a consumption of 1.3 l of pure alcohol per capita between 2008 and 2014, although in the WHO African region, the mean TAC was approximately 6.0 l of pure alcohol per capita. In our study, the mean daily TAC reported (1.3 AU for men and 0.9 AU for women) was below the WHO cut-off (less than 3 AU/day for men and less than 2 AU/day for women).

The same WHO report highlighted a prevalence of alcohol use of 12.2% for men, which is comparable to our findings (12.0% noxious alcohol use), and an alcohol dependence rate of 5.2%. However, it is baffling that this prevalence in men is approximately four times higher than

what was found in the WHO African region (3.3%; WHO, 2014). However, the situation is not catastrophic; from the results of the Global Survey on Alcohol and Health, the latest survey by the WHO in 2012, projections showed that the TAC (in liters of pure alcohol consumed per capita among drinkers age 15+) in Togo will probably decrease from 3.0 in 2010 to 1.9 in 2015, 1.7 in 2020, and 1.6 in 2025. This is interesting to compare with the situations in France (12.9 in 2010 to 11.6 in 2015 and 10.6 in 2020) and the USA (13.3 in 2010 to 9.0 in 2015 and 9.0 in 2020; WHO, 2014).

We also found a relatively high proportion (22.6%) of women in risk category II, which is much higher than that of men, which seems to be a modern cultural fact. However, in terms of noxious alcohol use, men predominate. We will, in the near future, start a new investigation to understand this phenomenon in Togo. Some differences between the categories of alcohol use in terms of general health conditions were also observed. People with a lower socioeconomic status (SES) appear to be more vulnerable to the tangible problems and consequences of alcohol use. Greater economic wealth is broadly associated with higher levels of consumption and lower abstinence rates. Moreover, an increase in alcohol use is expected to increase the alcohol-attributable burden of disease in developing economies (Grittner, Kuntsche, Graham, & Bloomfield, 2012). Although the burden of alcohol use during pregnancy was a significant problem, limited data currently exist for the majority of SSA countries (Adeyiga et al., 2014). The social burdens (e.g., domestic violence and sexual violence) of alcohol also must not be neglected (Culley, Ramsey, Mugenyi, et al., 2013; Semahegn, Belachew, & Abdulahi, 2013) which were not a subject of our investigation.

5. Conclusions

This is the first important study of alcohol use in the general population of Togo. The methodology is not specific to alcohol use, though it was based on the WHO STEPwise protocol for evaluating non-communicable diseases (NCD), but the results emphasize the prevalence of alcohol use in the country. The findings call for improvement in addiction medical policy in the country, even though the situation is not catastrophic. Further studies need to be conducted to better understand alcohol use among women in Togo and Sub-Saharan Africa.

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