

BMJ Open Alcohol consumption in Spanish primary health care providers: a national, cross-sectional study

Esperanza Romero-Rodríguez,¹ Luis Ángel Pérula de Torres,^{1,2,3,4} José Ángel Fernández García,^{1,5} Juan Manuel Parras Rejano,^{1,6} Ana Roldán Villalobos,^{1,2,7} Francisco Camarelles Guillén,^{3,8} Grupo Colaborativo Estudio Alco-AP

To cite: Romero-Rodríguez E, Pérula de Torres LÁ, Fernández García JÁ, *et al.* Alcohol consumption in Spanish primary health care providers: a national, cross-sectional study. *BMJ Open* 2019;**9**:e024211. doi:10.1136/bmjopen-2018-024211

► Prepublication history for this paper is available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2018-024211>).

Received 19 May 2018

Revised 1 November 2018

Accepted 18 December 2018



© Author(s) (or their employer(s)) 2019. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

For numbered affiliations see end of article.

Correspondence to

Dr Luis Ángel Pérula de Torres; langel.perula.sspa@juntadeandalucia.es

ABSTRACT

Aim To estimate the prevalence of alcohol consumption and analyse the drinking patterns among primary healthcare (PHC) providers.

Design Observational, cross-sectional, descriptive study.

Setting PHC centres in the Spanish National Health System (SNHS).

Participants Doctors and nurses who completed an online questionnaire which explored their alcohol intake, using the Alcohol Use Disorders Identification Test (AUDIT-C) alcohol assessment tool. The study population was recruited by random sampling stratified by regions of the SNHS PHC centres.

Primary and secondary outcome measures Frequency of alcohol consumption, number of alcohol drinks on a typical day, frequency of more than six standard drinks (SDs) intake.

Results A total of 1760 PHC providers completed the questionnaire. The frequency of alcohol consumption was: abstinence (12%, 95% CI 10.4% to 13.5%); one or less SDs/month (26%, 95% CI 23.8% to 27.9%); 2–4 SDs/month (32.2%, 95% CI 29.7% to 34.1%); 2–3 SDs/week (17.9%, 95% CI 16.0% to 19.6%); four or more SDs/week (11.9%, 95% CI 10.3% to 13.3%). The number of drinks on a typical day was: none (45.6%, 95% CI 42.9% to 47.6%); 1–2 drinks (47.3%, 95% CI 23.8% to 27.9%); 3–4 drinks (6.5%, 95% CI 5.3% to 7.6%). The percentage of hazardous drinking, according to AUDIT-C criteria, was 32% (95% CI 26.7 to 37.3), with a greater frequency of intake in older professionals ($p<0.001$), in contrast to a higher number of drinks consumed on a typical day by younger providers ($p<0.001$). Intake was higher among males ($p<0.001$), primary care physicians ($p<0.001$) and resident trainers ($p<0.001$).

Conclusions Our study discloses the most up-to-date portrait of current alcohol consumption among Spanish PHC providers, showing a higher prevalence of alcohol intake, compared with the general population. Preventive strategies should be implemented to improve the awareness and training of PHC professionals towards alcohol consumption.

INTRODUCTION

The European Union has the highest level of alcohol consumption worldwide.¹ Harmful

Strengths and limitations of this study

- The main strength of the study, in comparison with others published in this area, lies in its sample size, due to the fact that it is a nationwide research with one of the broadest samples to date.
- The wide variety of sociodemographic and occupational variables of alcohol consumption recorded in this paper provides a comprehensive analysis of this issue in the primary care setting.
- The validity of self-reported alcohol use of primary healthcare providers could lead to an underestimation of the alcohol intake prevalence.

alcohol use generates a substantial mortality burden due to acute and chronic diseases.² Therefore, the WHO has established the reduction of the harmful use of alcohol as a public health priority,³ promoting awareness of the magnitude and nature of the social, health and economic problems caused by such consumption.

Nationally, alcohol was the most widely consumed legal drug in 2015 (77.6%), according to the Survey into Alcohol and Drugs in Spain (*Encuesta sobre Alcohol y Drogas en España*; EDADES),⁴ with consumption typically beginning at the age of 16. The EDADES survey indicates that alcohol is considered the substance of least risk of all those consumed by people aged between 15 and 65 years. Furthermore, even though consumption trends have remained stable since 2005, there is an increasing pattern of binge drinking or intake of more than six standard drinks (SDs), in one session in men or four SDs in women, considering one SD as the equivalent to 10 g of pure alcohol.⁵

Primary healthcare (PHC) providers play a key role in the approach of alcohol related problems⁶ as they are on the front lines of healthcare.⁷ According to the Clinician's

Guide (2007)⁸ by the US National Institute on Alcohol Abuse and Alcoholism, regular visits to PHC professionals that address alcohol consumption can lead to a significant improvement in patients who present hazardous drinking (a pattern of alcohol use that increases the risk of harmful consequence, corresponding to AUDIT-C questionnaire scores greater than 5 in men and 4 in women).⁹

The development of preventive strategies to reduce PHC professionals' alcohol consumption encompasses several factors, among which professional's drinking habits stand out.¹⁰ In their study, Frank *et al*¹¹ point out that drinking patterns of health professionals correlate significantly with their clinical practice when offering advice and screening for hazardous drinking. Currently, there are several studies addressing the alcohol use among healthcare providers from different health areas.¹²⁻¹⁴ However, only a limited number of studies have analysed the alcohol consumption of PHC professionals.¹⁵⁻¹⁷

The objectives of this study were: (1) to estimate the prevalence of alcohol consumption among PHC providers, (2) to identify the current alcohol drinking patterns reported by these professionals, (3) to evaluate the relationship between the providers' sociodemographic and occupational variables and their level of consumption.

METHOD

We designed an observational, cross-sectional, descriptive, multicentre study. The study population was composed of providers working in PHC centres belonging to the Spanish National Health System (SNHS). The study lasted 24 months, with a recruitment period running from August 2014 to August 2016.

Study data was collected through an ad hoc questionnaire designed by members of the Córdoba Family and Community Medicine Teaching Unit, under guidance from Preventive Activities and Health Promotion Programme (PAPPS) Evaluation and Improvement Group of the Spanish Society of Family and Community Medicine (semFYC), and subjected to a consensus, apparent-logic and content validity process. The questionnaire was designed to be anonymously self-completed. The selection criteria were: PHC provider (primary care physician, nurse or medical resident of family and community medicine) working at the SNHS and who consented to participate in the study. The sample size was calculated assuming an alpha error of 5%, an accuracy of 3% and an expected prevalence of alcohol consumption of 50% ($p=q=0.5$; maximum uncertainty). Consequently, it was necessary to include at least 1068 healthcare providers.

The study population was recruited by three ways:

1. Through participants from a previous study Código Europeo Contra el Cáncer-Atención Primaria (CECC-AP study),¹⁸ who were recruited through PAPPS and the semFYC Communication & Health Group.
2. By emailing the members of the semFYC and Spanish Society of Primary Care Physicians (SEMERGEN) da-

tabases and uploading the study survey to their websites, making it freely available for anyone who wished to complete it.

3. Through stratified random sampling of SNHS health centres, according to the number of centres in each Spanish region. An email was sent to the health centre managers, inviting both them and the other members of the Primary Care (PC) team to participate, using a snowballing technique.

The sample was obtained from the catalogue developed by the Spanish Ministry of Health.¹⁹ According to the 2014 database, there were 2997 health centres and 10 168 PC clinics, with an estimated amount of 33 482 doctors working in public PHC. Considering that 75% of the selected centres would like to collaborate in the study, and an average of four health providers per health centre and two per local clinic would like to participate, a sample of at least 430 local health centres and clinics was deemed necessary.

The global response rate, considering the affiliation with scientific societies, was 6.3%. The survey was sent to 16 474 semFYC members and 8000 SEMERGEN affiliates. Finally, 1110 semFYC members and 469 SEMERGEN affiliates completed the questionnaire.

The study variables were sociodemographic (age, sex, autonomous region), occupational (type of provider, resident trainer, time working in PHC, membership of scientific societies, affiliation to PAPPS) and related to alcohol intake. Alcohol consumption among the PHC professionals was measured using the AUDIT-C questionnaire²⁰ (frequency of alcohol consumption, number of alcohol drinks on a typical day, frequency of consuming more than 6 SDs/day). AUDIT-C questionnaire uses the three items of the original AUDIT questionnaire. Each question was scored from 0 to 4, with a possible summary score from 0 to 12. Hazardous drinking (a pattern of alcohol use that increases the risk of harmful consequence) was defined using AUDIT-C criteria as scores greater than 5 in men and 4 in women.²¹⁻²³ However, it is crucial to bear in mind that the selection of the cut-off point is influenced by national and cultural standards, hence, hazardous drinking definition may vary in several countries.

PHC providers completed the online questionnaire via Google Drive. The data were statistically analysed using SPSS V.17.0 and EPIDAT V.3.1 software. Descriptive statistics and 95% 95% CIs were calculated for the main study estimators. Subsequently, a bivariate analysis was conducted to test the relationship between the independent variables and the alcohol consumption questions (χ^2 test for qualitative variables, Student's t-test or analysis of variance for quantitative variables, previous verification of normality with the Kolmogorov-Smirnov test). Bilateral hypothesis testing with a p value ≤ 0.05 was used. Finally, a multivariate analysis was performed to verify which variables were independently associated with alcohol consumption. To this end, the following variables: alcohol consumption (dichotomised variable: alcohol intake or non-alcohol intake; derived from the item 'frequency

Table 1 Sociodemographic and occupational characteristics of providers surveyed

Characteristics of providers	n (%)	95% CI
Sex		
Male	653 (37.1)	34.8 to 39.4
Female	1107 (62.9)	60.6 to 65.2
Age (years)		
<35	475 (27.2)	24.9 to 29.1
36–45	432 (24.7)	22.5 to 26.6
46–55	426 (24.4)	22.2 to 26.2
≥56	415 (23.7)	21.6 to 25.6
Type of provider		
Primary care physician	1330 (75.6)	73.5 to 77.6
Nurse	220 (12.5)	10.9 to 14.1
Medical resident	201 (11.4)	9.9 to 12.9
Resident trainer		
Yes	588 (33.4)	31.2 to 35.6
No	1172 (66.6)	64.4 to 68.8
Affiliation with scientific societies		
semFYC	1117 (63.5)	61.2 to 65.7
SEMERGEN	472 (26.8)	24.7 to 28.9
SEMG	79 (4.5)	3.5 to 5.5
ASANEC	21 (1.2)	0.7 to 1.7
Other	71 (4.0)	3.1 to 5.0
Affiliation to specific programmes: PAPPS		
	456 (25.9)	23.8 to 28.0

PAPPS, Preventive Activities and Health Promotion Programme (semFYC); SEMERGEN, Spanish Society of Primary Care Physicians.

of consumption'; considering non-alcohol intake if the answer was 'never' and alcohol intake if the answer was any other option), age, sex, type of providers (which was treated as a dummy variable, taking as a reference category the lowest frequency of consumption in the bivariate analysis), time working in PHC, resident trainer and affiliation to PAPPS, were included in a maximum model. Those variables with a Wald test p value >0.05 were eliminated, obtaining the most parsimonious model. The Hosmer-Lemeshow test was applied to check the model's goodness of fit.

Patient involvement

There were no patients involved in the development of the research question, the design of the study, the recruitment and the conduct of the research.

RESULTS

A total of 1760 PHC providers participated in the study. The professionals' sociodemographic and occupational

characteristics are shown in [table 1](#). Participants were predominantly female (62.9%; 95% CI: 60.6% to 65.2%); had an average age of 47.7 years (SD 11.24, range: 26–64 years; 95% CI: 47.17 to 48.22); and had worked in the PHC setting for an average of 14.10 years (SD 10.55; range: 1–39; 95% CI: 13.60 to 14.59).

The frequency of alcohol consumption in PHC providers was: teetotaler 12% (95% CI: 10.4% to 13.5%), 1 or 2 SDs per month in 26% (95% CI: 23.8% to 27.9%) and 2–4 SDs every month in 32.2% (95% CI: 29.7% to 34.1%); 2–3/perweek 17.9% (95% CI: 16% to 19.6%); four or more/perweek 11.9% (95% CI: 10.3% to 13.3%) ([table 2](#)). Considering the number of alcoholic drinks on a typical day, 45.6% (95% CI: 42.9% to 47.6%) reported drinking 0 SD, whereas 47.3% (95% CI: 44.6% to 49.3%) said they consumed 1 or 2 SDs. With regard to binge drinking, 19.5% (95% CI: 17.5% to 21.2%) confirmed they drank six or more SDs at least once a month. Furthermore, hazardous drinking was recorded in 32.0% (95% CI: 26.7% to 37.3%) of the surveyed PHC providers, based on AUDIT-C criteria. Considering the gender of PHC professionals, 24% (95% CI: 22.4% to 27.5%) of the female providers and 34.2% (95% CI: 30.6% to 37.9%) of the male professionals had hazardous drinking.

There was a statistically significant relationship between the variables age and frequency of alcoholic drink consumption ($\chi^2=191.16$, $p<0.001$) ([table 3](#)); older professionals tended to drink more frequently. In contrast, the data revealed younger medical providers drank a greater number of drinks on a typical day ($\chi^2=74.18$, $p<0.001$) ([table 4](#)). Binge drinking was more prevalent among younger PHC providers ($\chi^2=78.45$, $p<0.001$) ([table 5](#)).

Evaluation of the frequency of alcohol intake with respect to gender ([table 3](#)) showed that women had a higher abstention rate than men (15.5% vs 6.2%) ($\chi^2=171.98$, $p<0.001$). On the other hand, a higher percentage of men (57.3%) consumed 1 or 2 drinks/day than women (41.2%) ($\chi^2=88.00$, $p<0.001$) ([table 4](#)). In terms of binge drinking, women have a higher abstention rate than men (82.5% vs 64.4%) ($\chi^2=78.33$, $p<0.001$) ([table 5](#)).

Analysing the frequency of alcohol consumption according to the type of PHC professional, data revealed that 33.2% of medical residents drink alcohol one or less times per month, in contrast to primary care physicians, who had a higher rate of alcohol intake with a frequency of 4 or more times per week (14.7%) ($\chi^2=75.59$, $p<0.001$). With respect to binge drinking, nurses presented the highest percentage of abstention from this drinking pattern. On the other hand, it was observed that residents had a higher percentage of intensive intake monthly (5.8%), compared with primary care physicians (3.2%) and nurses (2.3%) ($\chi^2=34.87$, $p<0.001$) ([table 5](#)).

Focusing on the resident trainer group, the percentage of 1–2 SDs consumed on a typical day was higher in this group than non-trainer group (55.0% vs 43.4%) ($\chi^2=23.81$, $p<0.001$) ([table 4](#)) and, also, the resident trainer group drank alcohol more frequently on a weekly basis (21.1%

Table 2 Alcohol consumption of primary healthcare providers

Alcohol consumption	n (%)	95% CI
Frequency of consumption		
Never	210 (12.0)	10.4 to 13.5
1–2/per month	455 (26.0)	23.8 to 27.9
2–4/per month	562 (32.2)	29.7 to 34.1
2–3/per week	313 (17.9)	16.0 to 19.6
≥4/per week	208 (11.9)	10.3 to 13.3
Number of alcoholic drinks on a typical day		
0	797 (45.6)	42.9 to 47.6
1–2	827 (47.3)	44.6 to 49.3
3–4	113 (6.5)	5.3 to 7.6
5–6	9 (0.5)	0.2 to 0.8
≥ 10	2 (0.1)	0.01 to 0.4
Drinking six or more drinks in 1 day		
Never	1325 (75.8)	73.2 to 77.3
Less than monthly	341 (19.5)	17.5 to 21.2
Monthly	59 (3.4)	2.5 to 4.2
Weekly	21 (1.2)	0.7 to 1.7
Daily	2 (0.1)	0.01 to 0.4

vs 15.8%) ($\chi^2=54.99$, $p<0.001$) (table 3). However, resident trainers reported a higher rate of abstinence from binge drinking pattern (79.15%) ($\chi^2=12.81$, $p=0.012$) (table 5).

As shown in table 6, the variables associated with alcohol intake by means of multivariate analysis, and after adjusting the model for the rest of the variables under consideration, were: age (greater consumption in older participants), sex (men drank more) and type of provider (highest alcohol intake was observed in medical residents and primary care physicians).

DISCUSSION

This study represents the first national analysis of alcohol consumption patterns among PHC providers in Spain. Therefore, it can be used to make comparisons against studies conducted in the Spanish general population, as well as, with health professionals worldwide.

There are currently several regional studies dealing with the alcohol drinking patterns of PHC providers, among which stand out those published by Rodríguez *et al.*¹⁵ and Aubá *et al.*¹⁶ These studies highlighted the need to quantify alcohol intake among PHC professionals. In addition, Galatea Foundation have conducted local studies towards PHC providers' lifestyle habits, including alcohol consumption, and working conditions in Catalonia.¹⁷ In this regard, Saeys and Cammu²⁴ suggested the behaviour of healthcare professionals demonstrated at work affected patient attitudes and their motivation towards making lifestyle changes, including the reduction or abstinence from drug substances such as alcohol.

One of the most relevant aspects of this research is the quantification of hazardous drinking, derived from the AUDIT-C questionnaire, which has been introduced in other national studies.²⁵ Rosta²⁶ detected a percentage of 16%–18% of professionals with hazardous drinking,

Table 3 Frequency of alcohol consumption of primary healthcare providers

Variable	Never	≤1/per month	2–4/per month	2–3/per week	≥4/per week	P value*
	n (%)	n (%)	n (%)	n (%)	n (%)	
Age (years)						
<35	60 (12.6)	137 (28.8)	193 (40.6)	70 (14.7)	15 (3.2)	<0.001
36–45	80 (18.5)	120 (27.8)	147 (34)	62 (14.4)	23 (5.3)	
46–55	42 (9.9)	115 (27.0)	127 (29.8)	80 (18.8)	62 (14.6)	
>55	28 (6.7)	83 (20.0)	95 (22.9)	101 (24.3)	108 (26.0)	
Sex						
Male	40 (6.2)	137 (21.1)	172 (26.5)	151 (23.3)	149 (23.0)	<0.001
Female	170 (15.5)	318 (28.9)	390 (35.5)	162 (14.7)	59 (5.4)	
Type of provider						
Primary care physician	135 (10.2)	323 (24.4)	413 (31.2)	257 (19.4)	194 (14.7)	<0.001
Medical resident	27 (13.0)	69 (33.2)	83 (39.9)	25 (12.0)	4 (1.9)	
Nurse	48 (22.0)	63 (28.9)	66 (30.3)	31 (14.2)	10 (4.6)	
Resident trainer						
Yes	50 (8.6)	126 (21.6)	173 (29.6)	129 (22.1)	106 (18.2)	<0.001
No	160 (13.7)	329 (28.3)	389 (33.4)	184 (15.8)	102 (8.8)	

* χ^2 Test.

Table 4 Number of standard drinking units (SD) of alcohol consumed by primary healthcare providers on a typical day

Variable	None	1–2 SDs	3–4 SDs	5–6 SDs	7–9 SDs	≥10 SDs	P value*
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	
Age (years)							
<35	230 (48.4)	203 (42.7)	35 (7.4)	7 (1.5)	0 (0.0)	0 (0.0)	<0.001
36–45	240 (55.6)	168 (38.9)	20 (4.6)	1 (0.2)	1 (0.2)	2 (0.5)	
46–55	196 (46.0)	203 (47.7)	26 (6.1)	1 (0.2)	0 (0.0)	0 (0.0)	
>55	131 (31.6)	253 (61.0)	31 (7.5)	0 (0)	0 (0.0)	0 (0.0)	
Sex							
Male	206 (31.7)	374 (57.3)	63 (9.7)	6 (0.9)	0 (0.0)	0 (0.0)	<0.001
Female	591 (53.8)	453 (41.2)	49 (4.3)	3 (0.3)	1 (0.2)	2 (0.2)	
Type of provider							
Primary care physician	574 (43.4)	655 (49.5)	85 (6.4)	6 (0.5)	0 (0.0)	2 (0.2)	0.086
Medical resident	104 (50.0)	87 (41.8)	14 (7.0)	2 (1.0)	1 (0.2)	0 (0.0)	
Nurse	119 (54.6)	85 (39.0)	13 (6.0)	1 (0.2)	0 (0.0)	0 (0.0)	
Resident trainer							
Yes	224 (38.4)	322 (55.0)	36 (6.0)	1 (0.2)	1 (0.2)	1 (0.2)	0.001
No	573 (49.2)	505 (43.4)	77 (6.6)	8 (0.7)	0 (0.0)	1 (0.1)	

*X² test.

a value which is clearly below the one obtained in this study (32%). Whereas, Antoni Gual²⁷ stated, in a study conducted on a sample of 4250 individuals, that 22% of the Spanish adult general population asserted they consumed alcohol above hazard threshold.

The high percentage of hazardous drinking among PHC providers,²⁸ in comparison with the general

population, can be explained by the presence of several factors analysed in our study: age, sex, type of PHC provider, time worked or to be trainer. With respect to gender differences, the results of the present study agree with the previous surveys carried out in Spain^{15–17} which also emphasised a higher incidence of consumption among men. Furthermore, the results of our study

Table 5 Binge drinking frequency of primary healthcare providers

Variable	Never	Less than once per month	Monthly	Weekly	Daily	P value*
	n (%)	n (%)	n (%)	n (%)	n (%)	
Age (years)						
<35	299 (62.9)	137 (28.8)	32 (6.7)	6 (1.3)	1 (0.2)	<0.001
36–45	344 (79.6)	75 (17.4)	9 (2.1)	3 (0.7)	1 (0.2)	
46–55	350 (82.2)	69 (16.2)	5 (1.2)	2 (0.5)	0 (0.0)	
>55	332 (80.0)	60 (14.5)	13 (3.1)	10 (2.4)	0 (0.0)	
Sex						
Male	418 (64.4)	183 (28.2)	33 (5.1)	15 (2.3)	0 (0.0)	<0.001
Female	907 (82.5)	158 (14.4)	26 (2.4)	6 (0.5)	0 (0.0)	
Type of provider						
Primary care physician	1007 (76.2)	258 (19.5)	42 (3.2)	3 (1)	2 (0.2)	<0.001
Medical resident	132 (76.2)	61 (29.3)	12 (5.8)	3 (1.4)	0 (0.0)	
Nurse	186 (85.3)	22 (10.1)	5 (2.3)	5 (2.3)	0 (0.0)	
Resident trainer						
Yes	462 (79.1)	107 (18.3)	8 (1.4)	6 (1)	1 (0.2)	0.012
No	863 (74.1)	234 (20.1)	51 (4.4)	15 (1.3)	1 (0.1)	

*X² test.

Table 6 Variables associated with alcohol consumption, Multivariate analysis

Variable	OR	95% CI	P value
Age	1.02	1.01 to 1.03	<0.001
Sex (male vs female)	2.26	1.83 to 2.79	<0.001
Type of provider	–	–	0.028
Primary care physician vs nurse	1.44	1.07 to 1.93	0.016
Medical resident vs nurse	1.67	1.09 to 2.54	0.017

Dependent variable: alcohol consumption (yes vs not); Hosmer-Lemeshow test: 18 266; p=0.019.

are consistent with those obtained from EDADES and the European Health Survey,²⁹ referring to the Spanish population. Both observed a male predominance with respect to binge drinking, as well as higher levels of this intensive consumption pattern among younger participants.

Similarly to the Spanish population, alcohol intake detected in PHC professionals increased with age, although it was remarkable that younger participants drank a greater number of drinks on a typical day. This higher number of drinks consumed by the younger population correlates with the increasing prevalence of binge drinking observed among youth in recent years. Thus, the Spanish National Health Survey (ENS)³⁰ 2011–2012 already indicated this finding, identifying that the number of drinks on a typical day was higher in the younger population (11% of men and 5.5% of women aged between 15 and 24 years).

One of the striking results of the study is alcohol drinking pattern that PHC professionals show; thus, a third of the providers presented a frequency of consumption of 2–4 times a month, followed by 26% consuming one or less times a month. In regional studies, such as the one by Rodríguez *et al*,¹⁵ the predominant pattern was occasional intake (32%). These data obtained for PHC professional contrast with those from the ENS 2011–2012 survey in which 38.3% of respondents drunk alcohol at least once per week.

Our data reveal differences between different type of professionals; primary care physicians drink more frequently, while resident doctors consume a higher number of drinks on a typical day and nurses show the highest level of abstinence. There are no studies available that allow us to compare these data in the context of PHC. Hence, future research is needed to evaluate differences in alcohol consumption among PHC professionals.

Additionally, alcohol intake can be influenced by other factors: occupational conditions³¹ (number of shifts, occupational burnout syndrome or the number of hours worked per week), degree of job satisfaction, organisational climate, personal situation (marital status, number of children) and area of medical

specialisation.³² Rosta evaluated these factors in a sample of 1917 German doctors working in different specialties within a hospital context, finding approximately 20% of hazardous drinkers. In the study conducted by Oreskovich *et al*,²³ with a sample of 7197 surgeons, 15.4% of hazardous drinkers were found, identifying as predisposing factors for high consumption: burnout (OR 1.25, 95% CI 1.06 to 1.48), depression (OR 1.48, 95% CI 1.26 to 1.73) or medical malpractice (OR 1.45, 95% CI 1.17 to 1.78). Therefore, integral care programmes for PHC professionals should be encouraged to ensure the quality of healthcare interventions. Nationwide, the Comprehensive Program for the Sick Doctor³³ promotes specialised assistance for sick professionals, including those with risky alcohol consumption.

This study includes some limitations that must be considered. One of the difficulties encountered in the measurement of alcohol consumption lies in the validity and comparability of the data, given the wide disparity in the volume of alcohol intake registered in the literature and the self-reported providers' alcohol use which could have underestimated the prevalence of the alcohol consumption.³⁴ On the other hand, another limitation of this study, derived from its design, lies in the impossibility of establishing the trend of alcohol consumption among PHC providers. This would require a non-cross-sectional and long-term study. Likewise, it is necessary to bear in mind the selection bias, given the willingness to respond to the questionnaire, with the most motivated professionals in the subject being the most likely to answer it which could distort the true prevalence of alcohol consumption. In addition, the impact of social desirability bias should be considered, particularly due to the fact that PHC providers work in a safety-sensitive environment, where hazardous alcohol use might be concerning, and many of the professionals were individuals in training who may fear how their responses would impact their evaluations.

To analyse the representativeness of the sample with respect to the study population, we compared our data according to age and sex, against 2015 data published by the Spanish Organisation of Medical Colleges.³⁴ The proportion of female primary care physicians in Spain was 54.2%, and this percentage rises to 62.9% in our study, therefore, an over-representation of female doctors may be deemed. Besides, given that the prevalence of alcohol consumption in women is known to be less than in men, an underestimation of the overall alcohol intake should be estimated. Regarding age, a greater proportion of young professionals has been observed among the providers in the present study. In this setting, considering a higher level of consumption has been observed among younger professionals, it is possible to suspect that this could have caused an overestimation of the overall prevalence of alcohol consumption. On the other hand, the sample size of the present study is considered representative of PHC professionals, since more than 95% worked for the SNHS.

One of the strengths of our study, in comparison with others published in this area, lies in its sample size, due to the fact that it is a nationwide study with one of the broadest samples to date. However, there are international studies with a greater sample size, highlighting publications by Hughes *et al*⁸⁵ with 9600 professionals and Juntunen *et al*⁸⁶ with 3476.

In conclusion, our study highlights the current situation of alcohol consumption among Spanish PHC providers, showing a higher prevalence than general population and being consistent with other international studies. This problem constitutes an issue in which preventive strategies and awareness-raising and training interventions must be developed. Those responsible for occupational health of the SNHS should become conscious of the magnitude of the problem, offering the necessary advice and help to providers with hazardous drinking through occupational healthcare units or services.³³

Author affiliations

¹Maimonides Biomedical Research Institute of Cordoba (IMIBIC), Reina Sofia University Hospital, University of Cordoba, Cordoba, Spain

²Teaching Unit of Family and Community Medicine, Health District of Cordoba and Guadalquivir, Cordoba, Spain

³Program of Preventive Activities and Health Promotion -PAPPS- (semFYC), Barcelona, Spain

⁴PAPPS Evaluation and Improvement Group (semFYC), Barcelona, Spain

⁵Infanta Mercedes Health Center. Madrid Health Service, Madrid, Spain

⁶Villanueva del Rey Health Center. Andalusian Health Service, Cordoba, Spain

⁷Carlos Castilla Del Pino Health Center. Andalusian Health Service, Cordoba, Spain

⁸Infanta Mercedes Health Center. Madrid Health Service, Madrid, Spain

Acknowledgements The authors would like to acknowledge support from the Primary Health Care professionals of the Spanish National Health System.

Collaborators Sara Fernández López, Rodrigo Fernández Márquez, Roger Ruiz Moral, Margarita Criado Larumbe

Contributors ER-R, LÁPdT, JÁFG, JMPR, ARV, FCG conceived of the study, participated in its design and implementation, and wrote the manuscript. LÁPdT and ER-R analysed the data. All authors read and approved the final manuscript.

Funding This research received the Spanish funding Isabel Fernandez Doctoral Thesis Scholarship from the Andalusian Society of Family and Community Medicine (SAMFyC) 2015 (Ref. 130/15).

Competing interests None declared.

Patient consent Obtained.

Ethics approval The project was approved by the Ethics Committee at the Reina Sofia University Hospital, Córdoba.

Provenance and peer review Not commissioned; externally peer reviewed.

Data sharing statement No additional data available.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

REFERENCES

- World Health Organization. Global status report on alcohol and health. 2014. http://apps.who.int/iris/bitstream/10665/112736/1/9789240692763_eng.pdf
- Room R, Babor T, Rehm J. Alcohol and public health. *Lancet* 2005;365:519–30.
- World Health Organization. Global strategy to reduce the harmful use of alcohol. 2010. http://www.who.int/substance_abuse/activities/gsrhua/en/
- Ministry of Health, Social Services and Equality, Secretary of State for Social Services and Equality. Survey on alcohol and drugs in Spain AGES 2013/2014. Government Delegation for the National Plan on Drugs. 2015. http://www.pnsd.msssi.gob.es/profesionales/sistemasInformacion/sistemaInformacion/encuestas_EDADES.htm
- World Health Organization. Alcohol and Primary Health Care. Basic clinical information for the identification and management of risks and problems. http://www.who.int/substance_abuse/publications/alcohol_atencion_primaria.pdf
- Fernández JA, Ruiz R, PÉrula LA, *et al*. Effectiveness of medical advice to alcoholic patients and excessive drinkers treated in primary care consultations. *Aten Primaria* 2003;31:146–53.
- Ministry of Health, Social Services and Equality, Secretary of State for Social Services and Equality. Prevention of alcohol-related problems 1st Conference on prevention and promotion of health in clinical practice in Spain. 2014. <https://www.msssi.gob.es/alcoholJovenes/docs/prevenccionProblemasAlcohol.pdf>
- National Institute on Alcohol Abuse and Alcoholism. Helping patients who drink excessively: guide for health professionals: updated edition of 2005. https://pubs.niaaa.nih.gov/publications/practitioner/cliniciansguide2005/spanish/Guide_2009_span.pdf
- Ministry of Health, Social Services and Equality, Secretary of State for Social Services and Equality. Program to address alcohol risk consumption from primary care. 2017. <https://www.msssi.gob.es/profesionales/saludPublica/prevPromocion/alcohol/mojateAlcohol.htm>
- Bakhshi S, While AE. Health professionals' alcohol-related professional practices and the relationship between their personal alcohol attitudes and behavior and professional practices: a systematic review. *Int J Environ Res Public Health* 2013;11:218–48.
- Frank E, Rothenberg R, Lewis C, *et al*. Correlates of physicians' prevention-related practices. Findings from the women physicians' health study. *Arch Fam Med* 2000;9:359–67.
- Trinkoff AM, Storr CL. Substance use among nurses: differences between specialties. *Am J Public Health* 1998;88:581–5.
- McAuliffe WE, Rohman M, Breer P, *et al*. Alcohol use and abuse in random samples of physicians and medical students. *Am J Public Health* 1991;81:177–82.
- Brooke D, Edwards G, Andrews T. Doctors and substance misuse: types of doctors, types of problems. *Addiction* 1993;88:655–63.
- Rodríguez E, Espí F, Canteras M, *et al*. Alcohol consumption among primary care medical professionals. *Aten Primaria* 2001;28:259–62.
- Aubà J, Freixedas R, Ruiz D, *et al*. Alcohol consumption by primary care physicians. *Aten Primaria* 1994;14:726–9.
- Health, lifestyles and working conditions of male and female doctors in Catalonia. Galatea foundation. http://www.fgalatea.org/pdf/salut_eng.pdf
- PÉrula-de-Torres LÁ, Marzo-Castillejo M, Ranchal-Sánchez A, *et al*. European code against cancer: what does the Spanish population know and think about its recommendations? *Eur J Cancer Prev* 2015;24:69–75.
- Ministry of Health, Social Services and Equality, Secretary of State for Social Services and Equality. Primary Care Information System. 2017. <http://www.msssi.gob.es/estadEstudios/estadisticas/estadisticas/estMinisterio/siap.htm>
- World Health Organization. The alcohol use disorders identification test. Guidelines for use in primary care. 2001. <http://apps.who.int/iris/handle/10665/67205?locale=es>
- Sebo P, Bouvier Gallacchi M, Goehring C, *et al*. Use of tobacco and alcohol by Swiss primary care physicians: a cross-sectional survey. *BMC Public Health* 2007;7:5.
- Rosta J. Hazardous alcohol use among hospital doctors in Germany. *Alcohol Alcohol* 2008;43:198–203.
- Oreskovich MR, Kaups KL, Balch CM, *et al*. Prevalence of alcohol use disorders among American surgeons. *Arch Surg* 2012;147:168–74.
- Saeys F, Cammu H. GPs' attitudes on a healthy lifestyle: a survey of GPs in Flanders. *Br J Gen Pract* 2014;64:e664–9.
- Rosta J, Aasland OG. Female surgeons' alcohol use: a study of a national sample of norwegian doctors. *Alcohol Alcohol* 2005;40:436–40.
- Rosta J. Prevalence of problem-related drinking among doctors: a review on representative samples. *Ger Med Sci* 2005;3:1–5.
- Gual A. Alcohol in Spain: is it different? *Addiction* 2006;101:1073–7.
- Ministry of Health, Social Services and Equality, Secretary of State for Social Services and Equality. National Health Survey of Spain. 2012. <http://www.msssi.gob.es/estadEstudios/estadisticas/encuestaNacional/encuesta2011.htm>



29. Rosta J. Physicians' interest in preventive work in relation to their attitude and own drinking patterns. A comparison between Aarhus in Denmark and Mainz in Germany. *Addict Biol* 2002;7:343.
30. Joos L, Glazemakers I, Dom G. Alcohol use and hazardous drinking among medical specialists. *Eur Addict Res* 2013;19:89–97.
31. Ministry of Health, Social Services and Equality, Secretary of State for Social Services and Equality. European Health Survey. 2014. https://www.msssi.gob.es/estadEstudios/estadisticas/EncuestaEuropea/Enc_Eur_Salud_en_Esp_2014.htm
32. Midanik LT. Validity of self-reported alcohol use: a literature review and assessment. *Br J Addict* 1988;83:1019–29.
33. Comprehensive Program for the Sick Doctor (PAIME). Organisation of Medical Colleges (OMC). https://www.fpsomc.es/paime_fott
34. College Medical Organization (OMC). Survey on the situation of the Primary Care Physician in Spain in 2015 and the consequences of the cuts. Medical Association of Spain. 2015. http://opem.fphomc.es/sites/default/files/resultados_estudio_medicos_ap_consecuencias_recortes.pdf
35. Hughes PH, Brandenburg N, Baldwin DC, *et al*. Prevalence of substance use among US physicians. *JAMA* 1992;267:2333–9.
36. Juntunen J, Asp S, Olkinuora M, *et al*. Doctors' drinking habits and consumption of alcohol. *BMJ* 1988;297:951–4.