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## **Revista de cercetare și intervenție socială**

ISSN: 1583-3410 (print), ISSN: 1584-5397 (electronic)

Selected by coverage in Social Sciences Citation Index, ISI databases

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Revista de cercetare și intervenție socială, 2014, vol. 44, pp. 132-146

The online version of this article can be found at:

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Published by:

Expert Projects Publishing House



On behalf of:

„Alexandru Ioan Cuza” University,

Department of Sociology and Social Work

and

Holt Romania Foundation

REVISTA DE CERCETARE SI INTERVENTIE SOCIALA

is indexed by ISI Thomson Reuters - Social Sciences Citation Index

(Sociology and Social Work Domains)



# Daily Tobacco Consumption and Binge Drinking in Roma Adolescents in Three Spanish Areas

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## Abstracts

The objective of the study is to explore tobacco and alcohol consumption amongst Roma adolescents, indicating any differences according to gender and geographical area (Andalusia, Madrid and the Basque Country). It was made a transversal study via a school survey comprising 569 Roma adolescents, registered in Secondary Education and ranging from 12 to 18 years of age. The data was collected between January and June 2011. The variables were: socio-demographic, religious beliefs, practice of sports, tobacco and alcohol consumption, and consumption context (peers, partner, and parents). The main results were that 16.2% of Roma adolescents smoked daily and drunk five or more alcoholic drinks (binge drinking) on the last occasion. Smoking on a daily basis was associated to being a boy, a parent that smokes, a partner that smokes and friends that smoke. Being a boy, getting drunk and having been to a botellón (social drinking in the street) increase the likelihood of binge drinking. Sports and religious factors were not associated to daily smoking or binge drinking. Therefore the Roma adolescent boys are at greater risk than girls of smoking daily and binge drinking, there being gender differences in intensive tobacco and alcohol consumption, but not in the general use of these substances. A smoking parent is associated to a greater risk of Roma boys smoking, and going to a botellón or getting drunk is associated to a greater risk of binge drinking. It is necessary to bear in mind the ethnic variable in educative socio-sanitary interventions.

*Keywords:* Roma; ethnicity; adolescents; alcohol; tobacco; Spain.

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## Introduction

It is thought that the population pertaining to the Roma ethnic minority in Spain is close to 600,000 people (Fundación Secretariado Gitano, 2007), around 1.3% of the total Spanish population, distributed very heterogeneously in the Spanish territory. Amongst them we can identify two different collectives: those who have been settled in Spain for a long time, or in other words, their origin goes back to the first migratory movements that date from the 16<sup>th</sup> century, and are therefore indigenous Roma (Gamella, 1999), and those coming from recent migratory movements from Eastern Europe. In general, it is an ethnic group with living and health conditions that are different to the majority population with which it coexists, with unequal access to health services and sanitary assistance (Fundación Secretariado Gitano, 2009).

There are few investigations concerning the health conditions of the Roma population in the European context. The data indicates that it is a population that lives in precarious living conditions, that has unhealthy alimentary habits and that underutilizes the primary assistance services (Hajioff & McKee 2000, Cabedo 2000, Zeman *et al.* 2003, Ferrer, 2003). Too frequently, their homes lack sewer systems and running water and they are located in impoverished areas. They have poorly balanced diets and exercise rarely compared to the majority population. They have a greater alcohol and tobacco consumption and a lower use of contraception methods. A lack in preventive activities related to accessing health services can also be noted. This all favors a greater infant mortality rate and a decrease in life expectancy which is 10 years less than that of the society with which they coexist (Hajioff & McKee, 2000).

Many authors consider this group to be culturally different to the rest of the population. This group is characterized as being younger, having a lower level of education and high levels of school failure and unemployment, a high fertility and birth rate and a greater gender gap than that of the majority group (Calvo, 1990; San Roman, 1997; Gamella, 2000; Ferrer 2003).

Despite the population being eminently young, there are few studies concerning Roma youths and adolescents. Numerous investigations show that, amongst the general population, adolescence is the time when the consumption of drugs, especially alcohol and tobacco is commonplace (Díez, 1998; Ariza, 2003; Observatorio Español de Drogodependencias, 2009). However, we do not know how the consumption of psychoactive substances is distributed amongst Roma adolescents since the investigations carried out do not consider the cultural differentiation, and this is despite the acculturation and intercultural processes indicating that drug consumption and the circumstances associated to it vary according to ethnic groups (Blum *et al.* 2000, Best *et al.* 2001, Meneses *et al.* 2009). It has been considered that Roma adolescents smoke more than their non Roma counterparts

(Gerevich *et al.* 2010) and that this could be explained by the values associated to tobacco consumption amongst males (Petek *et al.* 2006). On the other hand, it has been shown that religious beliefs can be a protective factor in drug consumption (Engs & Mullen 1999), as are sports activities (Werch *et al.* 2003, Delisle *et al.* 2010). However, we do not know if these factors could offer protection or not to this ethnic group, who has a large religious affiliation to the evangelical church (Gamella, 1999).

According to the latest School Population Survey (OED 2009), 38.1% have smoked during the last year, 72.9% have drunk alcohol; 30.5% have smoked hashish and 47% have gotten drunk in the last year. Is this data applicable to Roma youths and adolescents? Does ethnic identification influence in intensive drug consumption? Is it necessary to bear cultural differences in mind when designing prevention programmes against drug consumption? These and other questions have guided our objectives in this investigation.

The objective of this study is to explore those factors associated to daily tobacco consumption and binge drinking amongst Roma adolescent boys and girls, which will enable the formulation of preventive interventions adapted to their culture.

## Methods

### *Study design*

Transversal study via school survey carried out between the January and July 2011 on students of Compulsory Secondary Education in Andalusia, Madrid and the Basque Country. The survey was authorized by the selected education centers.

### *Participants and data collection*

Initially the idea was to use simple random sampling as a model. Based on the Mapa de viviendas de la Comunidad gitana (Map of Roma Community homes) in Spain in 2007 (Fundación Secretariado Gitano 2007), we estimate that there are about 48,000 Roma children registered in ESO (Compulsory Secondary Education) throughout Spain, with about 22080 in Andalusia, 4800 in Madrid and 1056 in the Basque Country, given the population in each Autonomous Community. Considering a sample size of 500 Roma adolescents, estimating the sample sizes for  $p=q=0.5$  we would get a sampling error of 4.4% with a 95% confidence interval. If we were to carry out a sample proportional to the size of each community, calculated proportionally, the corresponding quotas in each community would be: in Andalusia  $n=395$ , in Madrid  $n=86$  and in the Basque Country  $n=19$ . This size was used as a minimum reference for obtaining the sample, although the

sample obtained was from 580 Roma adolescents distributed in the following way: 319 in Andalusia, 164 in Madrid and 97 in the Basque Country, which globally in the three communities reduces the sampling error to 4%, with a 95% confidence interval.

The final sample comprised 569 Roma adolescents, since 11 questionnaires were discarded for not fulfilling the criteria established. The type of sample carried out in the end was intentional, as it was not possible to find a census which could be used to perform the random selection. We found those education centers with a greater concentration of Roma adolescents with the help of the Fundación Secretariado Gitano. To collect the greatest number of questionnaires we contacted the directors and education advisors in the centers of each geographical area and they confirmed the high percentage of registered students. The questionnaire was completed by all students in the selected classes and later the team selected those students who self-identified themselves as Roma for the sample, that is to say, the students themselves placed themselves in one of the ethnic groups offered to them (Asian, Black, Mixed, White, Roma, Other). The instrument for collecting the information was a confidential questionnaire filled out individually which was validated in a previous investigation. However, some modifications were made to it and before using it two discussion groups were held with adolescents and a pre-test trial was performed in an education center that was not included in the sample and which served to assess these modifications. Education centers informed parents of the investigation and were entrusted with gathering permission forms. The data was collected in the classes by the researchers themselves, helped by the survey takers. Filling out of the questionnaire was supposed to take 40 to 45 minutes, but many Roma adolescents showed reading-writing problems, needing to be helped personally by the researchers or survey takers.

### ***Study variables***

The questionnaire covered different risk behaviors, but in this article we will only set out those related to tobacco and alcohol consumption. The variables of the study were collected for the previous year, except in the case of tobacco where they were also asked if they smoked at that moment. A religious factor was included with six variables to describe their situation with regards to religious beliefs (*My religion is very important to me, I consider myself a believer, My religious beliefs influence my actions, I obey the commandments of my religion, I pray every day, I enjoy being with other people who are as religious as I am*) with four possible answers (Strongly agree, agree, disagree, strongly disagree), with a Cronbach's alpha of 0.906. The dependent variables were dichotomized for analysis. Information was gathered regarding the number of alcoholic drinks (glasses, mixed drinks, and alcoholic drinks) consumed on the last occasion and this was divided into two intervals: less than 5 alcoholic drinks and 5 or more alcoholic

drinks (binge drinking). The frequency of tobacco consumption was recorded (Never, A few times a year, Two or three times a week, At weekends, and Daily) and from this variable a dichotomous variable was derived (smokes daily or doesn't smoke daily).

### **Data analysis**

In order to test the independence of variables, a Chi-Square test or t-test was used in bivariate analysis. Logistic regression models were constructed separately for each type of consumption studied (daily smoking and binge drinking). Prevalence odds ratios (OR) were calculated with their corresponding 95% confidence intervals (95%CI). For all analysis, a level of significance of 5% was considered. These analyses were conducted with SPSS statistical package version 17.

## **Results**

The age range of the students was from 12 to 18 years old, with a median and modal average of 15 years old. *Table 1* shows socio-demographic data from the sample of boys and girls, which is similar in the three autonomous communities. It is noteworthy that 52.7% have repeated the school year and 59.6% planned to continue studying. Tobacco and alcohol consumption found in the sample is displayed in *Table 2*, showing the differences in each Autonomous Community where data was collected. There were no statistically significant differences between boys and girls in tobacco consumption at the time of the survey ( $p=0.140$ ), nor in alcohol consumption during the past year ( $p=0.679$ ).

We found statistically significant differences between boys and girls in couples that smoked ( $p=0.000$ ), with that of girls being greater (48%) than that of boys (19.6%); and in the option of a group of friends in which all smoke ( $p=0.004$ ), since it was less common for girls to have an all-smoking group of friends (7.3%) whereas it was more common for boys to have an all-smoking group of friends (14.1%).

Table 1. Roma adolescents socio-demographic data

	<b>Total (n=569)</b>	<b>Andalusia (n=314) n(%)</b>	<b>Madrid (n=164) n(%)</b>	<b>Basque Country (n=91) n(%)</b>
Boys	294 (51.9)	159 (50.6)	94 (58.0)	41 (45.6)
Girls	272 (49.4)	155 (49.4)	68 (42.0)	49 (54.4)
Age (X and SD) <sup>a</sup>	14.84 (1.30)	14.96 (1.39)	14.68 (1.14)	14.79 (1.25)
1 <sup>st</sup> ESO	269 (47.7)	134 (42.7)	98 (59.8)	37 (43.0)
2 <sup>nd</sup> ESO	167 (29.6)	91 (29.0)	48(29.3)	28 (32.6)
3 <sup>rd</sup> ESO	70 (12.4)	52 (16.6)	5 (3.0)	13 (15.1)
4 <sup>th</sup> ESO	50 (8.9)	32 (10.2)	10 (6.1)	8 (9.3)
Vocational Qualification Programmes	8 (1.4)	5 (1.6)	3 (1.8)	-
<b>Financial situation</b>				
-Very comfortable financially	146(27.1)	85(28.5)	43(27.9)	18(20.9)
-We do not have financial problems	278(51.7)	155(52.0)	81(52.6)	42(48.8)
-Lots of financial problems	114(21.2)	58(19.5)	30(19.5)	26(30.2)
<b>Type of dwelling</b>				
-Flat	393 (69.2)	193 (61.7)	119 (72.6)	81 (89.0)
-House	128 (22.5)	97 (31.0)	27 (16.5)	4 (4.4)
-Shack	16 (2.8)	5 (1.6)	9 (5.5)	2 (2.2)
-Chalet	27 (4.8)	16 (5.1)	9 (5.5)	2 (2.2)
-Other	4 (0.7)	2 (0.6)		2 (2.2)
Average no. of people living with him/her (X and DS) <sup>a</sup>	4.48 (1.82)	4.18 (1.82)	5.03 (2.08)	4.55(1.90)
Has repeated a school year	303 (54.7)	164 (53.4)	95 (60.5)	44 (48.9)
Wants to continue studying	328 (59.6)	193 (63.9)	72 (45.6)	63 (70.0)
Religious factor (X and SD) <sup>a</sup>	0.256 (1.14)	- 0.048(1.15 )	0.595(1.04)	0.777(0.89 )
Usually lives with father	445 (78.6)	234 (75.0)	138 (84.1)	73 (81.1)
Usually lives with mother	504 (88.9)	276 (88.5)	153 (93.3)	75 (82.4)

a) X= Average, SD= Standard deviation

Table 2. Use of drugs in the last 12 months n(%)

Drugs	Total N%	Andalusi a N%	Madrid N%	Basque Country N%	p
Smokes at the time of the survey	113 (21.1)	61 (20.2)	31 (21.2)	21(23.9)	0.758
No. cigarettes (X and SD) <sup>a</sup>	10.04 (8.95)	7.44(7.23)	12.04(10.54)	12.71(8.51)	0.022
Daily	92 (17.6)	37 (12.6)	32 (22.4)	23 (26.1)	0.013
Parents smoke	335 (62.9)	194 (64.9)	83 (56.8)	58 (65.9)	0.209
Parent that smokes					
Father	278(48.9)	148(47.1)	77(47.0)	53(58.2)	0.148
Mother	127(22.3)	95(30.3)	20(12.2)	12(13.2)	0.000
Partner	108 (32.6)	59 (32.1)	25 (26.6)	24 (45.3)	0.066
All friends	59 (11.1)	20 (6.7)	25 (17.2)	14 (15.9)	0.000
Alcohol	315 (65.2)	177 (63.7)	89 (64.0)	49 (74.2)	0.253
Alcohol consumption context					
With family	246(43.2)	130(41.4)	73(44.5)	43(47.3)	0.566
Outside of family	200(35.1)	124(39.5)	43(26.2)	33(36.3)	0.015
Drinks alone often	72 (14.4)	38 (13.5)	21 (15.6)	13 (15.7)	0.807
No. of drinks on last occasion (X and SD)	2.58 (3.87)	2.26(2.64)	2.81(4.67)	3.70(6.27)	0.035
Has drunk at a <i>botellón</i>	211(43.9)	131(45.5)	44(36.1)	36(50.7)	0.097
Has got drunk	217(42.5)	122(43.0)	56(40.3)	39(44.8)	0.781
Binge drinking on last occasion	92(20.8)	50(18.5)	27(22.5)	15(28.3)	0.237

a) X= Average, SD= Standard deviation.

There were no differences in drinking alone several times in the last year ( $p=0.064$ ), nor in the family context of consumption ( $p=0.235$ ), nor in getting drunk ( $p=0.470$ ). 16.2% ( $n=92$ ) smoked daily and this same percentage admitted to binge drinking at the last occasion they had. In both behaviors we found significant differences between genders. Firstly, in binge drinking at the last occasion ( $p=0.000$ ), 12.5% ( $n=26$ ) of girls compared to 28.3% ( $n=66$ ) of boys. Secondly, there was a significant correlation ( $p=0.011$ ) found in daily smoking, with 21.7% ( $n=59$ ) of boys smoking daily in comparison to 13.2% ( $n=33$ ) of girls. Table 3 shows the results obtained from the bivariate analyses of the two behaviors analyzed (smoking daily and binge drinking), broken down for boys and girls. Table 4 shows the results obtained from the binary logistic regression analysis for each behavior studied. Being a boy or having a partner, parent or friends who smoke are all significant risk factors for smoking daily. It is worth nothing that having friends who smoke can make it fourteen times more likely to smoke daily, whilst other variables make it nearly three times more likely. Practicing sport and

the religious factor were not significant, although they did represent a negative coefficient. With regards to binge drinking, established as consuming five or more drinks, once again being a boy and going to a *botellón*<sup>4</sup> to drink and get drunk are significantly related to this type of alcohol consumption, noting particularly that going to a *botellón* entails it being five times more likely to binge drink.

Table 3. Daily tobacco consumption and binge drinking by gender

	BOYS N(%)	N=294 (51.9)		GIRLS N(%)	N=272 (49.4)	
	<b>total</b>	<b>Smokes Daily</b> 59(20.1%)	<b>p</b>	<b>total</b>	<b>Smokes Daily</b> 33(12.1%)	<b>p</b>
No. cigarettes (X and SD) <sup>a</sup>	12.8(9.726)	14.1(9.53)	0.007	6.23(6.05)	8.55(6.54)	0.000
Parents smoke	165(56.1)	45(78.9)	0.001	168(61.8%)	26(81.3)	0.000
Father smokes	136(46.3)	61(22.4)	0.003		23(69.7)	0.041
Mother smokes	64(21.8)	15 (25.4)	0.533		17(51.5)	0.000
Partner	36(12.2)	16 (33.3)	0.007	72(26.5)	20(80)	0.000
Friends			0.000			0.000
None	57(19.4)	1(1.8)		75(27.6)	1(3)	
Some	128(43.5)	15(26.8)		133(48.9)	14(42.4)	
Nearly all	87(29.6)	40(71.4)		51(18.8)	18(54.5)	
Religious factor (X and SD) <sup>a</sup>	0.253(1.08)	0.317(0.99)	0.546	0.25(1.21)	0.24(1.26)	0.020
Practices sport	253(86.1)	49(87.5)	0.736	112(41.2)	16(48.5)	0.430
	<b>Total N</b>	<b>Binge drinking</b> 66(22.4%)	<b>p</b>	<b>Total N</b>	<b>Binge drinking</b> 26(9.6%)	<b>p</b>
Drinks alcohol						
With family	122(41.4)	35(53.0)	0.061	123(45.2)	18(69.2)	0.021
Outside of family	109(37.1)	40(60.6)	0.000	90(33.1)	17(65.4)	0.000
Drinks alone often	44(15)	17(27)	0.002	27(9.9)	6(25)	0.000
Nº of drinks on last occasion (X and SD)	3.32(4.81)	8.86(5.77)	0.000	1.7(2.17)	6.01(1.28)	
Has drunk at a <i>botellón</i>	124(42.2)	49(77.8)	0.000	86(31.6)	20(87)	0.000
Has got drunk	115(39.1)	43(74.1)	0.000	101(37.1)	16(64)	0.005
Religious factor (X and SD) <sup>a</sup>	2.88(0.32)	0.18(1.09)	0.734	0.256(1.21)	0.17(1.21)	0.989
Practices sport	253(86.1)	61(92.4)	0.604	112(41.2)	9(34.6)	0.270

<sup>4</sup> “The *botellón* phenomenon usually starts as a group of adolescents or young people, who are friends, buying alcoholic beverages in a supermarket or outlet and then engaging in the outdoor consumption of alcohol in public places, such as parks, disco parking lots, or isolated areas. The core group is often joined by other friendship groups and grows in size as the party progresses” (Valderrama *et al.* 2006).

Table 4. Factors associated to daily tobacco consumption and binge drinking

Smokes daily <sup>a</sup>	B	error	WALD	gl	p	OR	(CI95%)
Father smokes	1.019	1.019	8.322	1	0.004	<b>2.77</b>	1.38 -5.53
Mother smokes	0.312	0.319	0.678	1	0.410	1.36	0.65 -2.87
Partner smokes	1.191	0.356	11.167	1	0.001	<b>3.28</b>	1.63 -6.61
Friends smoke	2.677	1.032	6.731	1	0.009	<b>14.54</b>	1.92 -109.91
Practices sport	-0.107	0.412	0.067	1	0.795	0.89	0.40 -2.01
Religious factor	-0.024	0.149	0.027	1	0.870	0.97	0.72 -1.30
Gender	1.042	0.409	6.473	1	0.011	<b>2.83</b>	1.27 -6.32
constant	-5.404	1.124	23.131	1	0.000	0.00	
Binge drinking <sup>b</sup>	B	error	WALD	GI	p	OR	(CI95%)
Drinks with family	-0.057	0.334	0.029	1	0.865	0.94	0.49 -1.81
Drinks outside of family	0.469	0.363	1.668	1	0.197	1.59	0.78 -3.25
Has been to <i>botellón</i> to drink	1.716	0.416	17.006	1	0.000	<b>5.56</b>	2.46 - 12.57
Has got drunk	0.849	0.377	5.083	1	0.024	<b>2.33</b>	1.11 - 4.89
Drinks alone often	0.626	0.401	2.435	1	0.119	1.87	0.85-4.10
Practices sport	-0.495	0.454	1.186	1	0.276	0.61	0.25-1.48
Religious factor	0.129	0.157	0.678	1	0.410	1.13	0.83-1.54
Gender	1.302	0.427	9.301	1	0.002	<b>3.67</b>	1.59-8.49
Constant	-3.613	0.488	54.801	1	0.000	0.02	

a)  $R^2$  of Cos and Snell = 0.157;  $R^2$  of Nagelkerke = 0.238, b)  $R^2$  of Cos and Snell = 0.212;  $R^2$  of Nagelkerke = 0.345

## Discussion

This study explores and provides data about tobacco and alcohol consumption amongst Roma adolescents, about which there are few studies, making it difficult to argue the results of the sample obtained in this study. However, if we compare the results obtained about this group's consumption with the surveys of the Plan Nacional sobre Drogas (Observatorio Español de Drogodependencias 2009)<sup>5</sup> we can see that the percentage of Roma adolescents who smoked tobacco (21.1%) is lower than that of the adolescents from the national survey (32.4% in the last 30 days), but the daily consumption of tobacco is higher (16.6% Roma – 14.8% survey). Concerning alcohol consumption, we also see lower percentages than those of the national survey: 72.9% of alcohol according to the ESTUDES survey (Observatorio Español de Drogodependencias 2009). With regards to binge drinking (5 or more drinks) and alcohol abuse, such as getting drunk, the data revealed in this study is also somewhat lower (20.8% and 42% respectively) than that of the ESTUDES survey (41.4% and 47.1% respectively).

<sup>5</sup> To Know the consumption, perceptions and opinions of the Spanish population over drugs, the Spanish Drug Observatory holds two regular surveys, the Household Survey on Alcohol and Drugs in Spain (EDADES), performed in population aged 15-64 living in households, and the National Survey on Drug Use in Secondary Schools (ESTUDES), performed with students of 14-18 year enrolled in Secondary Schools. Both surveys are included in the National Statistical Plan.

The results do not show great differences in the use of tobacco and alcohol in the previous year according to gender, as has been found in other studies of the general population (Ariza, 2003). Other investigations have shown that the consumption of psychoactive substances in Roma girls is lower than that of boys (Kolarcik *et al.* 2010). However, when we focus on intensive consumption the differences do emerge, with Roma boys being those who presented higher percentages of binge drinking and daily smoking. It is surprising that there were no differences concerning having had an episode of intoxication in the last year. It is possible that a greater integration and acculturation with the general population may lead to more comparable results in certain consumption habits between Roma boys and girls. In the future there may be a greater influence of non Roma adolescents over Roma adolescents in the use and abuse of alcohol, and it may be through these consumption habits when Roma adolescents start to show similar results between genders.

It has been mentioned that the Roma population is not homogenous, presenting important inter- and intra-community differences within the State. We did not find significant differences in the consumption habits studied in the three areas where data was collected. It is worth noting that in Andalusia Roma mothers smoke more than in the other two geographical areas, and also that Andalusian Roma adolescents drank more outside the family environment than in the other areas studied.

In the Encuesta de Salud a la Comunidad Gitana (Roma Community Health Survey) 56.2% smoked daily in the age range of 16 to 24 years old (Fundación Secretariado Gitano 2009). The percentages that we obtained from the adolescents surveyed are lower (17.6%) than those from that survey, and this discrepancy may be explained by the difference in the age range of the group. On the other hand, the average number of cigarettes consumed by these youths is once again lower in this study (10 approx.) than in the Encuesta de Salud a Poblacion Gitana (17 cigarettes). With regards to alcohol consumption in the last 12 months, although the mentioned survey found clear differences between the consumption by men (76%) and women (43.3%), in the same age range indicated, the results found in the study at hand did not show significant differences. It is possible that this could be attributed once again to the age range of the participants, or that since the time of doing the survey there may have been a degree of convergence between adolescents, as a result of the processes of acculturation and assimilation of young members of the Roma population. There are diverse programmes and projects being carried out to try to normalize this minority's living conditions to bring them closer to those of the general population in many aspects. Integration may help lead to the acquisition of both the positive and negative life styles of the majority society. In the case of adolescents, the need for integration and the relationships they establish with the group of peers may lead to adopting unhealthy behavior habits, but which are considered positive by the adolescents themselves.

According to the results of the surveys, their fathers smoked more (48.9%) than their mothers (22.3%), and this data coincides with the Encuesta de Salud a Población Gitana (Fundación Secretariado Gitano, 2009), since women smoked less than men and less than the women of the general population. In this sense one of the regression analysis results was the influence, especially on boys, of the father smoking daily, but not the mother. This data is contradictory to that found by Kovacs *et al.* (2008), where no significant relation was found if the father or mother smoked, but it is in line with the work of Petek *et al.* (2006), who suggested that the father smoking was a risk factor for the children smoking. This author indicated that smoking was seen as part of growing up, being a part of family life. In our case this situation can be seen particularly in males, given that it is a patriarchal society in which the education and roles played by men and women are clearly differentiated. The Roma population still presents gender differences in this type of consumption, with smoking being considered and accepted more positively amongst adult men than amongst women. This aspect should be considered in preventive interventions, trying to reduce male tobacco consumption and reinforce female non consumption.

Our results also point to the influence of peers both in groups of friends and in couples being a significant factor in smoking daily, even more so in the case of adolescent boys than in the case of girls. Findings for alcohol consumption were similar. Drinking in the family context did not seem to be a risk factor. It has been highlighted that the adolescents who drank more alcohol came from family contexts with habitual consumption (Pons, 1998; Kovacs *et al.* 2008) but our data does not confirm this. In this sense, given the cohesion and importance of the family for this ethnic group, it is very probable that adolescent consumption is linked to moments of celebration and other events which occur in the family environment and that it is a different type of consumption to that of their peers.

Tobacco and alcohol consumption by parents may influence their children, and leads us to include the family in prevention programmes for drug consumption. Sending preventive messages exclusively to adolescents and young people may not be very effective if a lot of the consumption takes place in the family context or it is the family who does the consuming, it being the model behavior imitation reference, as is the case with tobacco. It is possible that in the case of tobacco the influence is greater than in the case of alcohol which is a product used socially and associated with diverse reasons for celebration in which binge drinking or intoxication is not the objective. However, future studies should explore in greater detail what influence could be more determining in drug consumption, whether it be the parents' tobacco and alcohol consumption, the characteristics of the adolescents, the ethnic variable or the group of peers, in both Roma and non Roma cases.

Like many other studies, our results suggest that the religious factor, as well as practicing sport, may play a role in protecting against consumption, although in the bivariate analysis it did not yield significant results, except for girls and in relation to tobacco consumption. In the regression analysis it was not significant either, although it did represent a negative coefficient, but it was clear that it did not constitute a risk factor in the intensive consumptions studied. These results should be improved upon and dealt with in greater depth in future investigations.

This study has some limitations: firstly the sample does not cover all Roma boys and girls, as there is a great diversity amongst them and it is not representative of Roma adolescents. The sample gathered does not include Roma boys and girls in serious situations of social exclusion, or from the upper social class, amongst other reasons because it was focused on Roma adolescents educated at public centers. Within the group of Roma adolescents registered in the school system, it is possible that due to the absenteeism that exists in some Roma groups, this group of adolescents may not be represented in the sample obtained either. Secondly, the questionnaire is based on self-completion and we do not know if the validity of the answers in this collective is limited or not. Other studies about adolescents of the general population have assumed a high degree of sincerity in the answers of school surveys.

However, despite the limitations mentioned, this investigative project provides data about intensive consumption in a minority about which we lack information regarding many aspects of health habits, especially amongst the juvenile population, since these consumption tendencies which emerge during adolescence may continue and form part of adult life. Adolescent boys are at greater risk of adopting intensive tobacco and alcohol consumption habits and preventive efforts should be coordinated to stop or eradicate this type of consumption and the effects it generates in their adulthood. In the case of Roma girls, abstinence should be reinforced in those girls who have not started and we should keep working on the messages and images related to tobacco and alcohol both within the culture and outside it. In future lines of investigation the results obtained with qualitative methodology could be complemented by gathering the voices of the Roma adolescents themselves, providing knowledge about the motives and circumstances behind their intensive tobacco and alcohol consumption, as well as the role that ethnic identity plays in this behavior.

The results obtained in this study lead us to consider the need to adapt messages to each cultural context, which would enable us to reinforce healthy behavior habits which may not be shared by the general population and counteract other unhealthy behavior habits of the general population. Finally, the public health preventive services should bear in mind the acculturation and integration processes of minority cultures when devising campaigns and health interventions.

## Conclusions

Unlike in other European countries, in Spain the prevalence of daily tobacco consumption and excessive alcohol consumption amongst the adolescent Roma population is lower than that found in the general adolescent population, but their consumption is more intensive. When observing the differences between genders, it can be seen that girls smoke less and binge drink less often than boys. Tobacco and alcohol consumption is associated with cultural contexts and social interactions. The gender socialization norms associated to masculinity increase the probability of smoking and excessive drinking. Social and family interactions establish consumption patterns. Thus, having a father who smokes, and more importantly friends who smoke, increases the probability of tobacco consumption. Taking part in the collective *botellón* party increases the probability of intensive consumption.

In order to promote change in tobacco and alcohol consumption patterns, the preventive health services should design prevention campaigns that bear in mind the following: the gender socialization processes, the cultural contexts of the population to which its messages are being directed and the importance of interaction between peers in episodes of intensive consumption. To adapt messages to each cultural context, would enable us to reinforce healthy behavior habits which may not be shared by the general population and counteract other unhealthy behavior habits of the general population. The public health preventive services should bear in mind the acculturation and integration processes of minority cultures when devising campaigns and health interventions.

## Acknowledgements

This Project is part of the National RDI Project, “*Riesgo, Adolescencia y Etnicidad: comparando tres áreas geográficas de España*”, (Risk, Adolescence and Ethnicity: a comparative study of three geographical areas in Spain), subsidized by the Ministry of Science and Innovation of Spain, Reference: CSO2009-07732. The authors thank all of the education centers in the three Autonomous Communities for their collaboration in this study, and the students and their parents who also made its elaboration possible. They also highlight and appreciate the help and collaboration that this team has been offered by the Fundación Secretariado Gitano, who advised about the Roma population distribution and about the instruments for collecting information.

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