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Psychosocial Determinants of Risky Sexual Behaviour by Gender in Spain

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Abstract

Objectives: This study examines the determinants of risky sexual behaviour by gender in Spain.

Methods: Data was taken from the Spanish Health and Sexual Behaviour Survey (2003). Controlled regression results for a wide set of variables (socio-demographic characteristics, behaviour, knowledge and attitudes) were calculated and a factor analysis to group and to rank variables by explanatory power was carried out. Gender differences were analysed by means of repeated estimations by sub-samples of men and women. Differences based on age and sexual orientations were also taken into account.

Results: HIV risk perceptions and opinions on the use of condoms are important predictors of unsafe sex for both genders. Men not only have more negative opinions of male condoms than women but these opinions are more likely to result in risky sexual behaviours. The consumption of alcohol appears to be linked to unsafe sex among young people, especially young heterosexual men.

Conclusions: As perceptions and opinions are susceptible to change, the authors suggest the implementation of gender-oriented educational campaigns and policies on sexual and reproductive health. Effective education on alcohol consumption could reduce the negative outcomes associated with unsafe sex.

Keywords: Unsafe sex; Alcohol; Gender; Heterogeneity; JEL Classification: C3, D1, H3, I1.

Introduction

Risky sexual behaviour can have a diverse range of negative results. Unwanted pregnancies and sexually transmitted diseases (STDs) are just two examples which may culminate in social exclusion or lower life expectancy. The cost of treatment of HIV infected patients is now so high that HIV prevention strategies have become basic policy requirements for governments around the world [1,2].

Although there is evidence of increased use of male condoms among young people [3,4] many sexually active individuals do not use condoms consistently [5]. There is some empirical evidence that the use of a condom in a person's first experience of sexual intercourse is a good predictor of continued use [6,7]. The possibility that condom use is habit-forming justifies the importance of targeting young people with health education campaigns.

Nevertheless, campaigns aimed at changing perceptions and opinions carry no guarantees of success and health messages may not reach the most vulnerable population groups, such as young people who are neither in full time education or employment. Research on unsafe sex has identified alcohol consumption as an important trigger of risky sexual behaviours [7] and policies aimed at reducing the consumption of alcohol (higher taxes, a higher minimum legal drinking age or anti-alcohol education campaigns) might help limit the spread of STDs and reduce unwanted pregnancies. However, this causal link should not be taken for granted: alcohol

abuse might lead individuals to promiscuous sexual activities but it may be equally true that individuals who are prone to promiscuous sexual activities are more likely to abuse alcohol; if there are other factors that result in risky sexual behaviour, adopting measures to limit alcohol abuse will not resolve the problem.

Most published research on risky sexual behaviour has focused on American adolescents. Very few studies have involved adults or people from other countries. This work is based on the Spanish population aged between 18-49 years. The analysis considers several determinants of unsafe sex (socio-demographic characteristics, health knowledge, attitudes, beliefs and alcohol consumption) and aims to identify any relevant differences with regards to gender, age and sexual orientation.

Materials and Methods

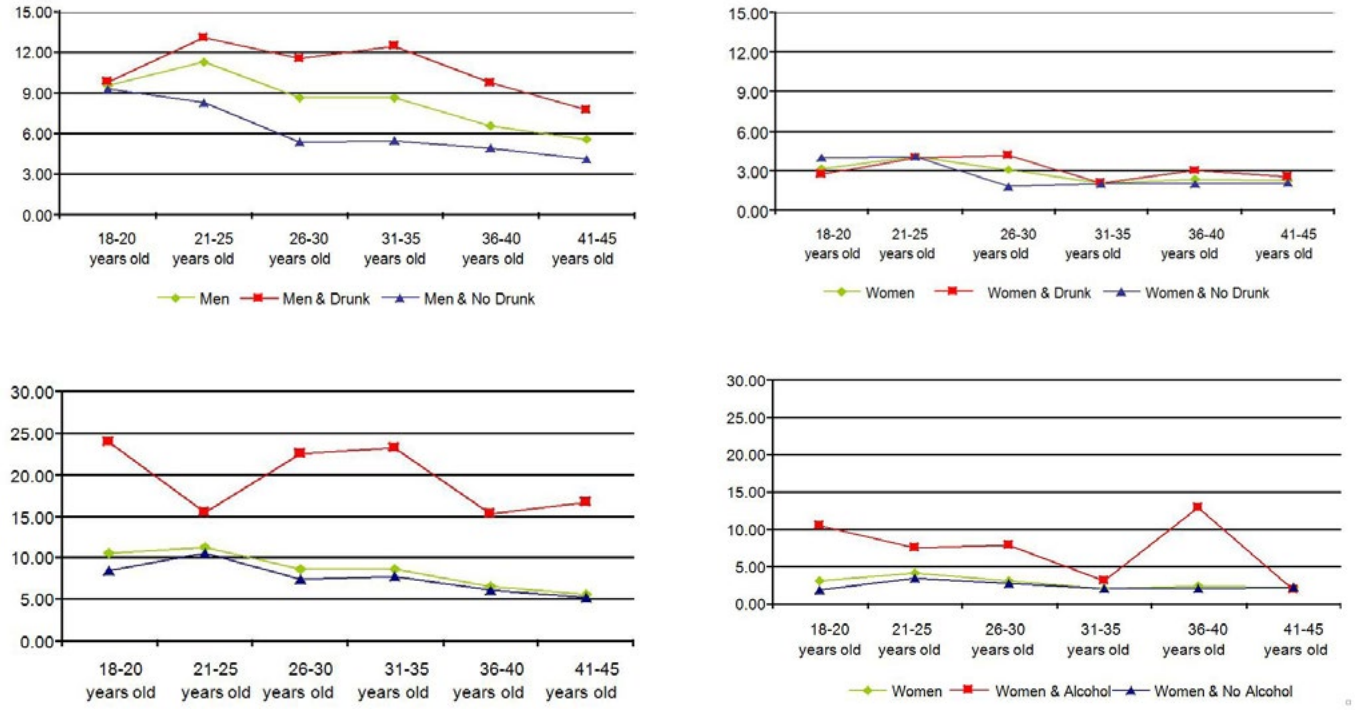
Data was taken from the Spanish Health and Sexual Behaviour Survey (Spanish Ministry of Health and Consumption, 2003). The survey was conducted by the Spanish Ministry of Health and Consumer Affairs between October and December 2003. Its sample population was people between the ages of 18 and 49 years old living in single family dwellings in Spain. To obtain a specific level of reliability (at both national and regional levels), the survey was given to a group of 13,600 individuals distributed among 1,700 census sections.

The HSBS survey comprised the following sections: (A) Socio-demographic characteristics, including variables such as age, gender, educational level, marital status, economic activity and employment; (B) Lifestyles, including questions related to the frequency of going out at night, alcohol consumption and injected drug use; (C) Information on sexual experience, including questions related to the first sexual relationship, partners, current and past sexual relationships; (D) Sexual Health, (E) HIV tests; (F) Attitudes and Perceptions.

The questions related to lifestyles are especially important for determining patterns of risky behaviours but the consideration of lifestyles in empirical models is of limited use because the variables can lead to serious problems of endogeneity. For example, people who enjoy going out at night might drink more, but it may also be the case that people who like drinking go out more.

The section on alcohol deals with frequency and quantity of consumption: drinking a total of 5 alcoholic beverages per week, spread over a number of days, is not the same as drinking 5 alcoholic beverages on one occasion per week. 'Binge drinking' - the consumption of a large quantity of alcohol in one session, (for example, on a Saturday night) has a worse effect on a person's health than drinking the same quantity but over several days during the week.

Graph 1: Unsafe sex (Data expressed in percentages).



Drunk = Heavy drinking at least once in the last month.
Alcohol = Drinking 5 or more alcoholic beverages per session at least once per week.
Unsafe sex = Engaging in sexual relations with occasional partners without using male condoms. Source: Health and Sexual Habits Survey, 2003.

According to the HSBS, 24% of men consume 3 or more alcoholic beverages in one session, at least once a week, as compared to 7% of women, as the percentage for men was so high, an age distribution analysis was undertaken. As might have been expected, results showed that young people drink much more than adults. The figures for women showed only slight variation with age whilst male consumption sharply decreases as men get older.

Risky sexual behaviours were categorised by identifying individuals who had sexual intercourse with occasional partners, without using a male condom, in the last 12 months. The use of a male condom is the only effective preventative method against HIV and other STDs. Unsafe sex is more frequent among men than among women, although for men there are important age differences. Whereas 13% of men aged between 21 and 25 have had unsafe sexual relations this figure falls to 8% for men between the ages of 41 and 45. Around 3% of women have had unsafe sexual relations. For women age differences are less significant (see Graph 1).

Table1 shows that alcohol consumption is correlated with unsafe sex for men and women. The magnitude and direction of the correlation depends on quantities and frequencies. The differences are statistically significant to 5%. Graph 1 also shows that alcohol consumption is linked to unsafe sex for men throughout their life cycle; for women, this link is positive for specific age groups (26-30 years old and 36-40 years old). Gender and age differences may correspond to decisions related to marriage and/or family planning.

The results do not significantly change when only those individuals that are sexually active are considered: 95% of respondents had already had intercourse. The selection of sexually active individuals might be more meaningful for studies of adolescents and young people. In this sample, for example, 65% of 18 year-old women were sexually active, but this percentage was close to 100% for women over 30.

The empirical framework falls within the canonical econometric approach for studies using observational cross-sectional

Explanatory variables	Men (N. observations = 2720)		Women (N. observations = 3300)	
	Unprotected sex with occasional partners		Unprotected sex with occasional partners	
	No 91.80%	Yes 8.20%	No 97.30%	Yes 2.70%
Sexual Orientation				
Heterosexual	97.4*	92.8	98.2	94.6
Homosexual/Bisexual	2.6*	7.1	1.8	5.4
Alcohol Consumption				
None	12.7*	8.3	32.6*	16
1-2 drinks consumed per session	59.7*	45.6	57.9*	59.3
3-4 drinks consumed per session	19.8*	25.3	8.0*	20
5 or more drinks consumed per session	7.8*	20.8	1.5*	4.7
Alcohol Weekly	69.2*	78.7	38.5*	60
Drinks Weekly (0:None-3:Drinks5-MoreSession)	1.0*	1.4	0.5*	0.8
Sociodemographic characteristics				
Age18-29	39.3*	49.3	35.9*	49
Age30-39	32.2	32.2	33.3*	27.7
Age40-49	28.4*	18.5	30.8*	23.2
Immigrant	6.3*	11.7	7.5*	11.6
Spaniard	93.7*	88.3	92.5*	88.4
Married	47.3*	20	54.5*	31
Single	50.0*	73.4	39.8*	54.2
Divorced/Separated	2.4*	5.4	4.6*	14.8
Widow	0.3*	1.2	1.1*	0
Live with partner	55.2*	30.5	61.5*	38.7
Live with parents	38.5*	50	33.9*	38.1
Live with children	30.6*	16.3	46.1*	35.5
Live with friends	4.0*	7.8	2.8*	8.4
Primary Education	23.8*	26.6	24.1*	21.9
Secondary Education	35.7*	32.4	31.4*	33.5
Professional Training	22.3	22	20.5*	26.5
University	18.2	19.1	24.0*	18.1
Employed	81.3*	79	60.7*	67.7
Unemployed	5.1*	7.2	10.9*	9
Student	11.2*	11.4	11.2*	10.3
Housewife/house-husband	0.1*	0.2	15.4*	12.3
Religious attitudes				
Religion1: Religious services at least once a week	13.9*	10.1	18.9*	20
Religion2: No religious services or less than once a week	86.1*	89.9	81.1*	80
HIV Risk perception by sexual intercourse				
Risk1: With a stable partner of the opposite sex	5.8*	8.2	6.4	7.1
Risk2: With occasional partner of the opposite sex	75.2	70.2	82.2*	68.2
Risk3: With different partners	91.9*	87	96.2*	94.1
Risk4: With a stable partner of the same sex (men)	31.8*	38.5	26.5*	31.8
Risk5: With occasional partner of the same sex (men)	85.1*	88	88	87.1
Risk6: With different partners of the same sex (men)	92.3	91.8	92.7	92.9
Risk7: With partner of the same sex (women)	49.7	49.5	56	56.5
Condom opinions				
Opinion1: Reduce pleasure	42.6*	59.5	32.4*	50.5
Opinion2: Provide pleasure because of safety	47.3*	27.4	57.7*	49.4
Opinion3: Are safe	85.1*	75.5	82.3*	69.4

Table 1: Mean analysis by gender and risky sexual behaviours (Data in percentages).
* indicates that the differences between drinkers and non drinkers is statistically significant (95%)
We have also included regional dummy variables (North, South, Centre, East and Madrid)

data:

$$H_{fi} = X_{fi}\beta_f + u_{fi} \quad (1)$$
$$H_{mi} = X_{mi}\beta_m + u_{mi} \quad (2)$$

i indexes individuals, f identifies estimations for women, and m for men. Hi is the measure of unsafe sex, Xi is a vector of individual characteristics (for example: gender, age, level of education, working status or alcohol consumption) and ui is a zero-mean disturbance term.

The key parameters of interest are β because they provide information on the causal effect of, for example, alcohol consumption and risky sexual behaviour. In the case of alcohol, the fundamental challenge in using observational data

is the possibility that even after controlling for other observed characteristics, the unobserved determinants of unsafe sex may vary with consumption.

To control for unobserved heterogeneity, our initial response to this challenge was to include a set of observed characteristics (Xi). The attitude variables included in the HSBS are essential for defining the set of control variables. It is supposed that individual attitudes or preferences are important determinants of both unsafe sex and alcohol consumption. For example, individuals with conservative attitudes may be less likely to engage in unsafe sex or to drink excessively. Controlling for the range of attitudes and perceived risks reduces unobserved heterogeneity and improves the β estimates. The authors are aware that the inclusion of attitude variables in the estimations introduces a problem of endogeneity. The importance of the strategy is based on the fact that if the estimation of β is robust, its value will not vary significantly throughout the different models.

The first statistics indicate that men indulge in risky behaviour to a greater extent than women (mean of Hf <mean of Hm), however, even if they had adopted similar behaviour patterns, the subjacent determinants might have been completely diverse. If this is correct, health policies should be gender-oriented. Repeating the statistics and estimations independently for men and women permitted the identification of sex differences on the observable characteristics (comparison of X f with X m), the effects of the determinants (comparison of βf with βm) and/or the unobservable characteristics (comparison of u f with um).

As different life stages and sexual orientation might condition individual decisions, the gender estimations for sub-samples of age groups (19-29, 30-39 and 40-49 years old) and sexual orientation (heterosexual and homosexual/bisexual) were repeated.

Five independent models for men and women were drawn up: Model 1 considers age and nationality as explanatory variables; Model 2 includes marital status, household composition, employment, and educational level; Model 3 includes alcohol consumption; Model 4 considers religious attitudes, HIV risk perceptions and opinions on the use of condoms (this model integrates these variables because the sample background is from Spain, a catholic country; religious attitudes could affect the HIV risk perception and the use of condoms) and Model 5 excludes variables related to alcohol consumption. Therefore, Model 1 is the simplest model whilst Model 4 offers the most information. In addition, Models 3 and 4 were repeated for sub-samples of age groups and sexual orientation; these two models were chosen as they consider the role of alcohol consumption on unsafe sex.

Finally, the regression analysis was completed with a factor analysis. The factor analysis was undertaken for two main reasons: first, the wide range of explanatory variables meant that it was more convenient to group them into categories; second, factor analysis allows the ordering of the determinants by explanatory power. Exploratory factor analysis is used to uncover the underlying structure of a relatively large set of variables. The basic assumption is that any indicator may be associated with any factor, so this technique is used to intuit the factor structure of the data. Factor analysis provides the total variance accounted for by each factor and the variance proportion indicates the relative weight of each factor in the total variance.

Results

Estimations of Model 1 and Model 2 are included in Table 2 estimations of Model 3, Model 4 and Model 5 are in Table 3. Estimations of Model 3 and Model 4 by sub-samples of age and sexual orientation are included in Table 4 and in Table 5. Table 6 is devoted to the factor analysis.

The results show that young people are more likely to engage in unsafe sex. Although this effect is stronger for men, when socio-economic characteristics such as marital status or educational level are taken into account, the gender gap closes. Foreign men are more likely to engage in unsafe sex than Spanish men; results for foreign women were neither meaningful nor statistically significant. Marital status and household composition are important predictors: for example, not being involved in a relationship is positively correlated with engaging in unsafe sex whereas being a student and/or living with parents are factors that are negatively correlated with unsafe sex, probably due to expectations concerning education and work (these individuals are less prone to take risks that might prejudice their educational and career prospects) or parental control. Parental control may be stronger for women than for men, so, for example, the positive effect of living with friends on unsafe sex is meaningful and statistically significant for women but not for men. Having a secondary level of education (compared with primary education) reduces unsafe sex among men. The significant effects of the above-mentioned variables are, in most cases, stronger for men than for women.
abilities of unsafe sex.

With regards to variables related to alcohol consumption, only drinking 5 or more alcoholic beverages per session and the frequency of alcohol consumption are positively correlated with

	Men		Women	
	Model 1	Model 2	Model 1	Model 2
Age18-29	--	--	--	--
Age30-39	-0.02**	0.02	-0.01***	-0.01**
Age40-49	-0.04***	0.01	-0.01***	-0.01**
Immigrant	--	--	--	--
Spaniard	-0.06***	-0.06***	-0.01	-0.01
Married	--	--	--	--
Single	--	0.07***	--	0.01
Divorced	--	0.14***	--	0.05***
Widow	--	0.23**	--	--
Live with partner	--	-0.03***	--	-0.02**
Live with parents	--	-0.01	--	-0.01**
Live with children	--	0.01	--	0
Live with friends	--	0.02	--	0.03*
Employed	--	--	--	--
Unemployed	--	0.01	--	-0.01
Student	--	-0.02*	--	-0.01***
Housewife	--	0.34	--	0.01
Primary Education	--	--	--	--
Secondary Education	--	-0.02***	--	0
Professional Formation	--	-0.01	--	0.01
Tertiary Education	--	-0.01	--	-0.01
Pseudo-R2 (%)	1.42	6.17	1.48	5.8
Estimated probability (%)	8.09	10.01	2.76	2.88

Table 2: Estimation of unsafe sex (probit: dy/dx)
***, ** and * indicate significance level of 1%, 5% and 10%.
We have also included regional dummy variables.

unsafe sex among men. When religious attitudes, HIV risk perceptions and opinions on condoms are considered, only alcohol consumption conditioned by frequency of consumption is relevant. For women, there is no perceptible sign of correlation. Attending religious services reduces the prevalence of unsafe sex. HIV risk perception by sexual intercourse with an occasional partner of the opposite sex reduces the prevalence of unsafe sex among women, whereas HIV risk perception by sexual intercourse with an occasional partner of the same sex reduces the prevalence of unsafe sex among men. If men and women believe that male condom use reduces sexual pleasure they are more likely to engage in unsafe sex. On the contrary, if they believe that the use of a condom results in a more pleasurable experience (as there is no risk of pregnancy or STD's) they are more likely to use them. In general, the effects of opinions on condoms are stronger for men than for women.

Goodness of fit was tested by analysing the Pseudo-R2 and the estimated probabilities. The Pseudo-R2 models derive more information and better explain the dependent variable. Nevertheless, the simplest model is the best for predicting the probabilities of unsafe sex.

Repeating estimations by sub-samples of age and sexual orientation provided additional results. Alcohol consumption is a stronger determinant of unsafe sex for younger men, both in terms of quantity and frequency. Frequency of consumption is relevant for men aged between 30 and 39 and, rather surprisingly, moderate alcohol consumption plays an inverse role for men aged between 40 and 49. In contrast, moderate alcohol

	Men			Women		
	Model 3	Model 4	Model 5	Model 3	Model 4	Model 5
No alcoholic drinks	--	--	--	--	--	--
Drinks 1-2	0.01	-0.01	--	0.01	0.01	--
Drinks 3-4	0.02	-0.01	--	0.03	0.03	--
Drinks 5 or More	0.06*	0.02	--	0.04	0.04	--
Drinks Weekly	0.02***	0.01*	--	0.01	0	--
Age18-29	--	--	--	--	--	--
Age30-39	0.01	0	0	-0.01	0	-0.01
Age40-49	0.01	0	0	-0.01	0	-0.01
Immigrant	--	--	--	--	--	--
Spaniard	-0.06***	-0.05**	-0.05**	-0.01	0.01	0
Primary Education	--	--	--	--	--	--
Secondary Education	-0.02***	-0.02**	-0.02**	0	0	0
Professional Training	-0.01	-0.01	-0.01	0	0	0
Tertiary Education	0	0	0	-0.01	-0.01	-0.01
Employed	--	--	--	--	--	--
Unemployed	0.01	-0.01	0	0	0	0
Student	-0.02*	0	0	-0.01	-0.01**	-0.01**
Housewife	0.33	0.41	0.45	0.01	0	0
Married	--	--	--	--	--	--
Single	0.07***	0.05***	0.06***	0.01	0	0
Divorced	0.14***	0.10**	0.10**	0.04	0.04*	0.05**
Widow	0.25**	0.17	0.14	--	--	--
Live with partner	-0.03**	-0.02	-0.03*	-0.02	-0.01	-0.01
Live with parents	-0.01	-0.01	-0.01	-0.01	0	0
Live with children	0	0.01	0.01	0	-0.01	-0.01
Live with friends	0.02	0.02	0.03	0.03	0.05*	0.04
Religion1	--	-0.02*	-0.02*	--	0.01	0.01
Religion2	--	--	--	--	--	--
Risk1	--	0.01	0.01	--	0	0
Risk2	--	-0.01	-0.02	--	-0.02***	-0.02***
Risk3	--	-0.01	-0.01	--	0	0
Risk4	--	0.01	0.01	--	0	0
Risk5	--	0.02**	0.02**	--	0	0
Risk6	--	0	0	--	0	0.01
Risk7	--	0	0	--	0	0
Opinion1	--	0.02***	0.03***	--	0.01***	0.01***
Opinion2	--	-0.04***	-0.04***	--	0	0
Opinion3	--	-0.03**	-0.03*	--	-0.01*	-0.01
Pseudo-R2 (%)	8.32	11.96	10.27	8.75	13.45	10.42
Estimated probability (%)	8.98	8.88	9.7	3.64	3.74	3.03

Table 3: Estimation of unsafe sex (probit: dy/dx)
***, ** and * indicate significance level of 1%, 5% and 10%.
We have also included regional dummy variables.

Age	Model 3			Model 4		
	Age 19-29	Age 30-39	Age 40-49	Age 19-29	Age 30-39	Age 40-49
Men						
No alcoholic drinks	--	--	--	--	--	--
Drinks1-2	0.08***	0	-0.03	0.06*	-0.02	-0.07**
Drinks3-4	0.08**	0.01	-0.01	0.04	-0.01	-0.03*
Drinks5 or more	0.18***	0.02	0.01	0.15	-0.01	-0.02
Drinks Weekly	0.01	0.03***	0.01	0.01	0.02**	0.01
Pseudo-R^2 (%)	5.89	10.63	15.04	12.67	18.92	19.21
Estimated probability (%)	6.84	8.94	13.07	7.48	6.99	15.82
Sample probability (%)	9.99	8.21	5.42	9.99	8.21	5.42
Women						
No alcoholic drinks	--	--	--	--	--	--
Drinks1-2	0.02*	0.01***	0	0	0.01**	-0.01
Drinks3-4	0.04	0.05	-0.01	0.01	0.1	0
Drinks5 or more	0.03	0.05	0.14	-0.01	0.11	0.24
Drinks Weekly	0.02***	0	0.01	0.01	0	0
Pseudo-R^2 (%)	10.73	16.42	9.71	10.89	32.42	24.35
Estimated probability (%)	4.98	3.54	2.59	3.88	4.44	4.44
Sample probability (%)	3.69	2.29	2.08	3.69	2.29	2.08

Table 4: Estimation of unsafe sex by age population groups (probit: dy/dx)
***, ** and * indicate significance level of 1%, 5% and 10%.
We have included explanatory variables of Model 3 and Model 4.

consumption seems to reinforce decisions of unsafe sex among women under 50. Frequency of consumption is relevant for women under 30. Alcohol consumption loses statistical significance when estimations are controlled by religious attitudes, HIV risk perceptions and opinions on condoms.

Estimations by sexual orientation revealed that alcohol consumption is more relevant to heterosexuals. Once again, alcohol consumption loses statistical significance when estimations are controlled by religious attitudes, HIV risk perceptions and condom opinions.

The factor analysis showed that for both men and women there are 6 key groups of factors. For men, civil status and household composition are the most important factors, these variables account for 72% of the total variance. The number of

Sexual Orientation	Model 3		Model 4	
	Hetero-sexual	Homo/ Bisexual	Hetero-sexual	Homo/ Bisexual
Women	--	--	--	--
Men	0.03***	0.07*	0.02***	0
No alcoholic drinks	--	--	--	--
Drinks1-2	0.01	0.02	0	0
Drinks3-4	0.02*	-0.01	0.01	0
Drinks5 or more	0.04**	0.22	0.03	0.14
Drinks Weekly	0.01***	0	0.01*	0
Pseudo-R^2 (%)	11.04	13.22	14.02	39.76
Estimated probability (%)	5.68	11.39	4.94	32.31
Sample probability (%)	5.43	13.11	5.43	13.11

Table 5: Estimation of unsafe sex by sexual orientation groups (probit: dy/dx)
***, ** and * indicate significance level of 1%, 5% and 10%.
We have included explanatory variables of Model 3 and Model 4. We have not repeated estimations for men and women because there are few observations of people with homosexual and bisexual orientations.

drinks consumed per session is more relevant than frequency of consumption; both variables account for 12% of the total variance. Opinions on condom use, HIV risk perceptions and age are other significant factors for unsafe sex. For women, the number of alcoholic beverages drunk per session is the most important determinant, it accounts for 52% of the total variance. Frequency of alcohol consumption is not one of the most important factors for unsafe sex among women. The most relevant determinants are educational level, civil status, opinions on condoms, HIV risk perceptions and age.

Sexual Orientation	Model 3		Model 4	
	Hetero-sexual	Homo/ Bisexual	Hetero-sexual	Homo/ Bisexual
Women	--	--	--	--
Men	0.03***	0.07*	0.02***	0
No alcoholic drinks	--	--	--	--
Drinks1-2	0.01	0.02	0	0
Drinks3-4	0.02*	-0.01	0.01	0
Drinks5 or more	0.04**	0.22	0.03	0.14
Drinks Weekly	0.01***	0	0.01*	0
Pseudo-R^2 (%)	11.04	13.22	14.02	39.76
Estimated probability (%)	5.68	11.39	4.94	32.31
Sample probability (%)	5.43	13.11	5.43	13.11

Table 6: Factor analysis
***, ** and * indicate significance level of 1%, 5% and 10%.
We have included explanatory variables of Model 4.

Discussion

People that are not in relationships and those with fewer numbers of sexual partners are more likely to use condoms [7]. Numerous studies have shown a positive association between alcohol use and risky sexual behaviour [8].

In recent years, the literature on the relationship between substance abuse and sexual behaviour (in adolescents and youth) has grown extensively. Almost all studies have found that abuse of alcohol and other drugs is positively associated with adolescent sexual behaviours such having sexual intercourse at a young age, having multiple sexual partners and intercourse without contraception. However, the causal nature of this relationship is difficult to establish: sexual behaviour and substance abuse are likely to depend on a set of personal and social variables, many of which are not observed and not measured [9].

Perhaps it is because of these research limitations that empirical studies on the relationship between alcohol and risky sex have reached disparate conclusions. In an attempt to overcome the technical problems, some econometric studies have estimated the reduced-form model or direct relationship between alcohol control policies and adverse outcomes related to risky sex (adolescent childbearing [10] gonorrhoea and syphilis [11-14] Other works have found that zero tolerance policies have greater impact on men than on women and on young people rather than adults [11,12]. The results of this present work confirm previous empirical evidence; they indicate that alcohol consumption may be linked to unsafe sex among young people, especially young heterosexual men. The results were more robust for men than for women, and, in general, the inclusion of attitudes as explanatory variables of risky sex reduced the relevance and significance of the estimated parameters. This suggests that people who take risks (such as excessive alcohol consumption or risky sex) might share certain common characteristics (such as attitudes), that condition their decisions.

Repeating estimations by gender provided data on gender differences and repeating estimations by age population groups confirmed that the effect of many explanatory variables loses intensity with older cohorts. This result implies that gender and age differences correspond to periods of important life decisions, for example, marriage and/or family planning.

Gender based studies of behaviours such as alcohol consumption [15] could be a starting point for the gender analysis of sexual relations, and this could be of use for policy makers who are increasingly concerned with offering women specific health goods and services that go beyond questions related to reproduction [16].

Empirical research can provide international and national policy makers with data for evaluating the effectiveness of their actions.
Mistaken beliefs about sex (for example, the belief that good personal hygiene prevents STDs) and difficulties in access to contraceptives can lead to risky sexual behaviour. Making contraceptives easily available and the introduction of more educational programmes might therefore encourage more appropriate attitudes and behaviour [17].

However, the failure to use contraceptives is not always linked to a lack of knowledge or problems of availability: immediate gratification, desire, beliefs and opinions on contraception are other significant factors. This study found that opinions on condoms and sexual pleasure are important predictors of condom use; polices addressing access to contraception or contraception knowledge that do not take into account people's opinions on condoms will not have a great impact on pregnancy or birth outcomes [18]. In contemporary societies, there is less stigma surrounding premarital sex and single motherhood [19]. Motivation for avoiding pregnancy may be changed by cultural norms, and well-designed mass-media campaigns could persuade some young people to avoid unprotected sex. Published literature suggests that such campaigns might change the behaviour of between 3 and 6 percent of the targeted population groups [19].

As with most papers that deal with STD risk reduction, a limitation of this paper is the sample age. Adolescence is related with the sexual initiation and our data set is 18 years old. Youngest experience and perceptions should be considered. The sample also excluded homeless, group homes and multigenerational homes. The instrument: Spanish Health and Sexual Behaviour Survey assumed a gender binary, but not gender identity. Further research is also request in a multicultural level in order to understand these behaviours and attitudes.

This study is focused on the individual rather than the wider society. If young people do not recognise that their behaviours are risky, they will have no motivation to change them [20]. It would therefore be useful if the study of risky sexual behaviours were linked to the study of social spaces and areas such as neighbourhoods, where social interactions take place. For example, the absence of leisure and recreational activities for young people and/or the lack of adequate parental supervision and education might well result in multiple risk behaviours among adolescents [21].

With regards to social structures and social networks, another area for research could be the intergenerational effects on sexual activities of habits, the means of transmission of information and social networks. Knowledge on individual and social dimensions will encourage discussion and debate on equity in policy making [22].

Conclusions

The majority of studies published on the issues discussed in this paper focus on American adolescents. Very few studies have been performed on adults of other countries. This study is based on the Spanish population between 18-49 years. Empirical evidence has been obtained that allows the conclusion that alcohol consumption might lead to unsafe sex among young people, especially among young heterosexual men. Consequently, effective alcohol policies might reduce the negative outcomes associated with unsafe sex and young people.

Most surveys designed for similar purposes, such as the National Survey of Family Growth (U.S. Department of Health and Human Services, 2012), include standardized questions (sexual experience; sex in last 12 months; the use of contraceptives; HIV tests; etc.). The Spanish survey also includes variables relating to attitudes. The set of variables on attitudes allowed us to check whether the estimated parameters remain

robust after controlling for individual perceptions and opinions. Results showed that unobserved heterogeneity might be important and alcohol consumption is certainly not the only determinant of unsafe sex. In fact, HIV risk perceptions and opinions on condoms were leading factors for both men and women. Given that it can be assumed that the decision to use, or not use, a male condom is usually taken by the people that are contemplating sexual intercourse (in a heterosexual relationship this implies a man and a woman), this work has reached two further conclusions of particular relevance: 1) men have a worse opinion of male condoms than women; 2) the effects of opinions on condoms have a stronger influence on men than women. Perceptions and opinions are susceptible to change, so the use of male condoms should be encouraged through educational campaigns and other similar health strategies.

In addition, there appear to be significant age differences regarding risky sex, so the promotion of gender policies on sexual and reproductive health that are specific to each life stage should also be considered.

Effective policies on sexual and reproductive health require the mobilisation of resources at local, national and international levels. Studies that provide international evidence on policies and prevalence rates of negative health outcomes are important tools for determining which actions are the most cost-effective [23]. Access to rich data sets helps to identify vulnerable population groups, spread routes of STDs and other key issues. Previous experiences of successful policies have demonstrated that it is important that the policies are supported by socio-economic analysis. Furthermore, health policies need to be multisectoral, addressing a range of fields (for example, education and employment) they must not be restricted to the health care system [24].

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