RISKY SEXUAL BEHAVIORS AMONG UNIVERSITY STUDENTS: RELATIONSHIP WITH SEXUAL KNOWLEDGE AND ATTITUDES

COMPORTAMENTOS SEXUAIS DE RISCO ENTRE ESTUDANTES UNIVERSITÁRIOS: RELAÇÃO COM CONHECIMENTOS E ATITUDES

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ABSTRACT: Throughout the years, university students showed a high prevalence of risky sexual behaviors. The beginning of sexual activity at an early age, having multiple sexual partners, alcohol consumption before having sexual relations and the inconsistent use of the condom are some of the most common characteristics and examples of risky sexual behaviors among students belonging to Higher Education. This study aimed to evaluate knowledge, attitudes and risky sexual behaviors among university students attending a University in Northern Portugal. For that purpose, we have used a transversal approach, applying a previously validated questionnaire, to a proportionately stratified sample, constituted by 840 university students. The analysis through questionnaire was divided between three different parts: knowledge about sexually transmissible diseases, attitudes towards sexually transmissible infections and attitudes towards the use of condom and risky sexual behaviors. Results have shown that the majority of university students were sexually active and that risky sexual behavior with higher prevalence refers to the inconsistent or incorrect usage of the condom. The level of knowledge about sexually transmissible infections and the attitudes towards those infections and the use of condom were moderate. We did not detect any correlation between knowledge and attitudes, however, the attitudes towards the use of condom accurately predict the risky sexual behaviors engaged upon by university students. This study has shown that understanding the factors that influence risky sexual behaviors in the context of higher education contributes for the development of educational programs about sexuality.
Keywords: Risky sexual behavior; Sexually transmissible diseases; Use of condom; Perception of risk; Multiple sexual partners; Higher education

RESUMO: Os estudantes universitários ao longo dos anos revelaram uma elevada prevalência de comportamentos sexuais de risco. O início da atividade sexual em idade precoce, os múltiplos parceiros sexuais, o consumo de álcool antes da prática de relações sexuais e o uso inconsistente de preservativo são algumas das características comuns dos comportamentos sexuais de risco em estudantes do Ensino Superior. Este estudo pretendeu avaliar os conhecimentos, as atitudes e os comportamentos sexuais de risco entre estudantes universitários de uma Universidade do Norte de Portugal. Para tal, utilizamos uma abordagem transversal, aplicando um inquérito por questionário previamente validado, a uma amostra, estratificada proporcional, constituída por 840 estudantes

universitários. O inquérito por questionário encontravam-se dividido em três partes: conhecimentos acerca das infeções sexualmente transmissíveis, atitudes face às infeções sexualmente transmissíveis e face ao uso de preservativo e comportamentos sexuais de risco. Os resultados evidenciaram que a maioria dos estudantes universitários eram sexualmente ativos e que o comportamento sexual de risco com maior prevalência refere-se ao uso inconsistente do preservativo. O nível de conhecimentos acerca das infeções sexualmente transmissíveis e as atitudes face a essas infeções e ao uso de preservativo foram moderadas. Não se verificou nenhuma correlação entre os conhecimentos e as atitudes, no entanto, as atitudes face ao uso do preservativo predizem os comportamentos sexuais de risco dos estudantes universitários. Este estudo mostrou que entender os fatores que influenciam os comportamentos sexuais de risco em estudantes do ensino superior contribui para o desenvolvimento de programas de educação em sexualidade.

Palavras-Chave: Comportamento sexual de risco; Infeções sexualmente transmissíveis; Uso de preservativo; Perceção de risco; Múltiplos parceiros sexuais; Ensino superior

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The most recent international data estimates that young people with age ranges between 15 and 24 years are responsible for half of the new sexually transmissible diseases (CDC, 2017) and account for almost or nearly/around 33% of new HIV infections (UNAIDS, 2018). In Portugal, about 10% of all new infections, in 2017, occurred among young people of ages between 20 and 24, with sexual transmission being the most common way of contracting the disease (DGS & INSA, 2019). In this sense, the best way to substantially diminish the prevalence of sexually transmitted infections (STIs) continues to be the reduction of risky sexual behaviors (Gebresllasie et al., 2017; Yang et al., 2019), which is why it is important to fully comprehend or achieve a higher and better understanding of the predictive factors for this type of behavior(s).

In acordance with the findings stemming and arising from scientific investigations, including the most recent ones, and, although it is considered that students attending higher education are fully aware of the risks and preventive mechanisms of/for ITSs, the risky sexual behaviors are highly prevalent (Díaz-Cárdenas et al., 2014; Merki-Feld et al., 2018; Oppong Asante, 2013; Sherab et al., 2019; Yang et al., 2019). These behaviors encompass initiating sexual activity at an early age, having multiple sexual partners, having sexual relations under the influence of alcohol or drugs and unprotected sex due to failure to use the condom.

Early sexual relations appear in the available scientific literature associated to a higher tendency to having multiple sexual partners and thus higher probabilities of contracting STIs, including HIV (Santos et al., 2016). Sexual relations with multiple partners display a high prevalence among students belonging to higher education, especially when combined with sexual relations carried out after the ingestion of alcohol (Castro, 2016; Magalhães et al., 2016). Although the scientific evidence indicate that the consistent use of condom reduces the risk of HIV infection, unprotected sexual relations continue to be at the top in the list of risky sexual behaviors (Castro, 2016; Fairfortune et al., 2020; Folasayo et al., 2017; Golbasi & Kelleci, 2011; Hoffman et al., 2017; Kebede et al., 2018; Magalhães et al., 2016; Makgale & Plattner, 2017; Mavhandu-Mudzusi & Asgedom, 2016; Pastor & Rojas-Murcia, 2019; Perera & Abeysena, 2018; Santos et al., 2016; SaraçoĞlu et al., 2014; Xu et al., 2019).

Risky sexual behaviors may be attributed to various factors, among which a low level of knowledge about sexuality in general or negative attitudes towards STIs, or the use of condom. Although the cognitive factor may provide a basis for action (Abiodun et al., 2014; Oppong Asante, 2013), it will not by itself be enough, which means, a higher level of knowledge cannot necessarily guarantee a responsible and safe sexual behavior. Therefore, along with knowledge, attitudes are among the theoretical constructs that more accuratelly predict sexual behaviors (Fernández Rouco et al., 2018), functioning as facilitators for changes in sexual behavior.

Scientific research has shown that, in many societes, university students do not possess enough knolwedge about sexuality, namely ways of transmitting or preventing STIs (Chen et al., 2016; Dutt & Manjula, 2017; Elias et al., 2017; Evcili & Golbasi, 2017; Fernández Rouco et al., 2018; Mukherjee et al., 2019; Oppong Asante, 2013; Soleymani et al., 2015).

This study aimed to analyze the knowledge about STIs, the attitudes towards STIs and those towards the use of condom and risky sexual behaviors among university students attending a University in Northern Portugal. Moreover, we intended to identify all possible existing correlations depending on the socio-demographic variables.

METHODS

Participants

In the 2018/2019 academic year, 5447 students were enrolled in the 1st and 3rd year of higher education and integrated master's degree. Based on the data of the population, a stratified probabilistic sampling was carried out among univertsity students, in accordance with the year of study and the scientific area of study.

This is a cross-sectional observational study with a representative sample of university students (n = 840) of a univeristy in Portugal. The sample is composed of 464 students attending the 1st year (55,2%) and 302 students (36,0%) are enrolled in enrgineering courses. The majority of enquired students was female (55.4%), was not currently in a romantic affair (58.3%), had changed their residence after entering Higher Education (64.9%), was a full-time student (88.8%) and had an BMI corresponding to the normal weight (73.1%). The average age of the sample is 20.78 (DP = 4.221), varying between 18 and 54, with only 3% of students being 30 years-old or older.

Instruments

Nowadays there are multiple scientific instruments duely validated in order to efficiently monitor the prevalence of risky sexual behaviors in university students and various scales developed to analyze the knowledge and attitudes about sexuality such as those presented in the Handbook of sexuality-related measures (Davis et al., 1998). Therefore, in order to satisfy the purposes of the present study, we developed a questionnaire, in accordance with the procedures defined by Bowling (1998): building on the scale (1st stage); validation of content (2nd stage); psychometric validation (3rd stage).

A preliminary version of the instrument was reviewed by five researchers in the fields of health and science education and 12 university students to validate its content. A pre-test was then performed with a sample of 32 students to test for comprehension and difficulty, which was not included in the final sample.

In the questionnaire we included socio-demographic variables (sex, age, scientific area, academic year, weight and height (to calculate the BMI), romantic status, professional situation and current residence) and specific questions related to:

- Risky sexual behaviors: Having sexual relations; Age of the 1st sexual relation; Number of sexual partners in the last 12 months; Use of condom in the last 12 months; Having sexual relations after the ingestion of alcohol in the last 12 months;

- Knowledge about the STIs: scake of 6 items with the following answering options – True, False, I Don't Know.

- Attitudes related to the knowledge about risky sexual behaviors: scale composed by 5 items (Perception of STIs - 3 items and Perception regarding use of condom – 2 items) in a Likert scale of 5 points (1 – I totally disagree, 5 – I totally agree).

Procedure and statistical analysis

All students belonging to the courses selected for the stratitied sampling were personally invited to take part in the study. At the end of a class, randomly selected, belonging to the respective courses, the objectives of the study were presented and after informed consent the students filled a questionnaire in paper format, in the context of the classroom. The answer rate was of 96.2% (95% CI 94.8-97.6), 33 questionnaires were excluded because they hadn't been answerered or were incorrectly filled. This way, a total of 873 university students were invited.

This study was approved by the Ethics Committee for Research in Social and Human Sciences, of the University of Minho Ethics Council, under the protocol CEICSH 009/2019.

The data was analyzed by means of statistical software, namely IBM SPSS Statistics for Windows, version 25.0 (IBM Corp., Armonk, NY, USA). The results show the analysis of the frequencies and the contingency tables, as well as the execution of tests of statistical inferece, such as Pearson's correlation, the Chi-Square test and independence tests such as *t-student* and single-directional unity (ANOVA). The linear generalized model was developed including only the variables which showed to have a statistically significant effect in the probability of resulting in risky sexual behaviors. A significance level of 0.05 was given.

Risky sexual behaviors were defined as: having had sexual relations at 16 years of age or less; having two or more sexual partners in the last 12 months; failing to always use condom during the sexual relation in the last 12 months; having sexual relations after the ingestion of alcohol in the last 12 months.

For the knowledge scale, the number of correct answers was added in order to provide us with a general figure for knowledge, which means that the higher the number in the scale, the higher the level of knowledge is.

The scale regarding perceptions of STIs made up of 3 items varies between 3 and 15 and the scale of perceptions of condom use is composed of 2 items, varying between 2 and 10, with the highest figure attributed to the sum of the items meaning the more negative the attitudes of university students will be regarding STIs and the use of condom.

RESULTS

Results show that the majority of university students (65.6%) was sexually active, with a higher prevalence of sexually active students frequenting the 3rd year (73.4%) when compared to students in the 1st year (59.3%) ($\chi^2(1)$=18.393,*p*=.000). Moreover, we noted that at the moment of data-gathering the students that had a romantic relationship (91.9%) were more sexually active and students who had no romantic partner (46.3%) ($\chi^2(1)$=186.081,*p*=.000). We also found that students who worked and studied (87.1%) were also more sexually active than full-time students (62.8%) ($\chi^2(1)$=21-603, *p*=.000). (Table 1).

The students who initiated their sexual life at an early age corresponded to 39.5% of the sexually active students. No statistically significant differences were found between an early start of sexual relations and the socio-demographic characteristics of the enquired students.

Sexual relations with multiple partners was the risky sexual behavior with the lesser prevalence among sexually active students, even though 18.7% of university students had 2 or more sexual

partners in the last 12 months. The students who were not in a romantic relationship (31.1%) and those who had changed residence after entering higher education (25.7%) were the ones who presented a higher proportion of multiple partners in comparison with the students who were in a romantic relationship ($\chi^2(1)=38.265$, $p=.000$) and were physically dislocated ($\chi^2(1)=10.623$, $p=.001$), respetively.

Table 1. Prevalence and Chi-Square test of risky sexual behaviors depending on socio-demographic characteristics

		Being sexually active			Early sexual relations			Sexual relations with multiple partners			Unprotected sexual relations			Sexual relations under the effect of alcohol		
		f	%	p	f	%	p	f	%	p	f	%	p	f	%	p
Academic Year	1st year	275	59.3	***	109	41.1	ns	60	21.9	ns	166	60.8	ns	73	26.7	**
	3rd year	276	73.4		104	38.0		43	15.6		163	59.5		104	37.8	
Scientific Area	Engineering Sciences	191	63.2		70	36.6		25	13.0		107	56.0		66	34.7	
	Exact and Natural Sciences	80	58.8		31	40.8		15	18.8		45	56.3		19	23.8	
	Jurisdictional and Economic Sciences	94	71.2	ns	43	46.7	ns	22	23.7	ns	64	68.8	ns	30	32.3	ns
	Social and Human Sciences	186	68.9		69	38.3		41	22.2		113	61.7		62	33.5	
Sex	Male	259	69.1	ns	110	42.8	ns	52	20.2	ns	148	57.6	ns	94	36.7	*
	Female	292	62.8		103	36.5		51	17.5		181	62.4		83	28.4	
Age	< 20	185	52.1	***	77	42.5	ns	36	19.5	ns	102	55.4	ns	46	25.0	**
	>= 20	366	75.5		136	38.0		67	18.4		227	62.5		131	36.0	
Romantic relationship	Yes	319	91.9	***	126	40.5	ns	32	10.1	***	197	61.9	ns	92	28.9	*
	No	225	46.3		86	38.9		70	31.1		128	57.7		83	37.2	
Residence	Dislocated	202	69.4	ns	74	37.4	ns	52	25.7	***	119	59.2	ns	87	43.3	***
	Not dislocated	340	63.3		134	40.4		49	14.5		203	60.2		88	26.0	
BMI	Low weight	33	56.9		13	41.9		6	18.2		20	60.6		8	24.2	
	Normal weight	388	64.8	ns	143	37.7	ns	77	19.8	ns	235	60.7	ns	133	34.4	ns
	Excessive weight	117	72.2		53	45.7		20	17.2		68	59.1		33	28.7	
Professional situation	Full-time student	464	62.8	***	176	38.4	ns	87	18.8	ns	265	57.5	**	151	32.7	ns
	Working-student	81	87.1		35	46.1		16	20.0		61	76.3		25	31.3	
	Total	551	65.6		213	39.5		103	18.7		329	60.1		177	32.3	

Note: $^* p < .05$; $^{**} p < .01$; $^{***} p < .001$; ns – not significant

The unprotected sexual relations were carried out by the majority of sexually active students (60.1%). And about a third of the sexually active students revealed having already had sexual relations after the consumption of alcohol in the last 12 months (32.3%). We can conclude through the observation of table 1 that 3rd year students (37.8%) acknowledged this type of practice more frequently when compared with the 1st year students ($\chi^2(1)=7.689$, $p=.006$). Similarly, statistically significant differences were identified between sexual relations under the effect of alcohol and the variables sex, romantic partnership and residence.

Correlations between the different risky sexual behaviors demonstrated the following: early sexual relations with multiple partners ($r_{sp}=.111$, $p<.01$), unprotected sexual relations ($r_{sp}=.103$, $p<.05$) and sexual relations under the effect of alcohol ($r_{sp}=.124$, $p<.01$). Moreover, sexual relatons with multiple partners are positively correlated with sexual relations under the effect of alcohol ($r_{sp}=.307$, $p<.01$). Generally, university students displayed, on average, 1.50±1.071 risky sexual behaviors, with 57.1% of sexually active students referring 2 or more behaviors of this type and 17.8% of students referring engaging in no risky sexual behavior.

Table 2. Average, pattern deviation and independence tests (ANOVA and t-student) for the socio-demographic characteristiscs and the risky sexual behaviors depending on the knowledge about STIs and the perception of STIs and condom use

		Level of knowledge about STIs			Perception of STIs			Perception of the Use of Condom		
		M	*DP*	*p*	*M*	*DP*	*p*	*M*	*DP*	*p*
Academic Year	1st year	4.03	.056	ns	6.53	2.119	ns	5.28	1.767	**
	3rd year	3.94	.061		6.55	2.216		5.64	1.823	
Scientific Area	Engineering Sciences	3.82	.076		6.59	2.237		5.75	1.672	
	Exact and Natural Sciences	4.18	.089	*	6.27	1.989	ns	5.23	1.710	***
	Jurisdictional and Economic Sciences	4.07	.102		6.57	2.165		5.44	1.930	
	Social and Human Sciences	4.04	.070		6.60	2.159		5.19	1.871	
Sex	Male	3.91	.065	ns	6.72	2.268	*	5.76	1.721	***
	Female	4.05	.053		6.39	2.062		5.18	1.822	
Age	< 20	4.01	.063	ns	6.52	2.063	ns	5.13	1.752	***
	>= 20	3.97	.055		6.56	2.234		5.67	1.802	
Romantic Relationship	Yes	4.09	.062	ns	6.49	2.214	ns	5.72	1.939	***
	No	3.93	.055		6.57	2.138		5.23	1.675	
Residence	Dislocated	3.98	.069	ns	6.43	2.067	ns	5.45	1.770	ns
	Not dislocated	4.01	.052		6.57	2.190		5.42	1.824	
BMI	Low weight	4.10	.147		6.23	1.832		5.53	1.670	
	Normal weight	3.98	.048	ns	6.53	2.112	ns	5.43	1.818	ns
	Excessive weigt	4.01	.099		6.76	2.418		5.56	1.769	
Professional situation	Full/time student	3.96	.045	*	6.54	2.140	ns	5.41	1.781	ns
	Working student	4.23	.105		6.57	2.312		5.73	1.973	
Being sexually active	Yes	4.04	.051	ns	6.53	2.203	ns	5.75	1.892	***
	No	3.89	.071		6.56	2.085		4.84	1.432	
Early sexual relations	No	4.05	.063	ns	6.55	2.084	ns	5.62	1.787	ns
	Yes	4.02	.089		6.55	2.381		5.94	2.000	
Sexual relations with multiple partners	No	4.04	.055	ns	6.44	2.204	ns	5.69	1.871	ns
	Yes	4.08	.124		6.90	2.182		6.04	1.970	
Unprotected sexual relations	No	4.12	.076	ns	6.55	1.997	ns	5.11	1.657	***
	Yes	4.00	.068		6.54	2.329		6.19	1.917	
Sexual relations under the effect of alcohol	No	3.97	.065	*	6.54	2.321	ns	5.63	1.806	*
	Yes	4.21	.079		6.49	1.936		6.01	2.050	
	Total	3.99	1.194		6.54	2.162		5.44	1.800	

Note: $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$; ns – not significant

The level of knowledge about sexuaility was of 3.99±1.194 correct answers, varying between 0 and 6 correct answers, allowing us to conclude that university students display a moderate level of knowledge.

An analysis of table 2 indicated the existence of statistically significant difference between the level of knowledge and the scientific area of study, the professional situation and the practice of sexual relations under the effect of alcohol. In this sense, students attending courses in the area of exact and natural sciences, working-students and students who had sexual relations after ingesting alcohol posess a level of knowledge higher than that of students belonging to engineering sciences courses

(Z(3,824)=3.590, p=.013), full-time students (t(818)=-2.046, p=.041) and those who reported not having engaged in that type of behavior (t(539)=-2.159, p=.031), respectively.

Table 3. Adjusted odds ratio (OR) and confidence intervals of 95 (CI) of the linear generalized model for predicting risky sexual behaviors

		B	Error	χ^2 Wald	df	p	Exp(B)	95% CI	
Intercept		.795	.1592	24.936	1	.000	2.214	1.621	3.024
Romantic relationship	Yes	-.229	.0924	6.135	1	.013	.795	.664	.953
	No	0ª					1		
Current residence	Dislocated	.251	.0941	7.102	1	.008	1.285	1.069	1.545
	Not dislocated	0ª	.	.		.	1	.	.
	Perception of Condom Use	.132	.0239	30.541	1	.000	1.141	1.089	1.196

Note: ª Reference category; OR: odds ratio; 95 CI: 95 confidence interval

The perceptions of university students regarding STIs and the use of condom showed themselves to be moderate, with the average of scales being 6.54±2.162 and 5.44±1.800, respetively.

Regarding the perceptions of STIs, male students displayed a more negative level of perception regarding STIs when compared to female students (t(823)=2.156, p=.031) (Table 2). In what concerns the scale of perceptions towards use of condom, students who were attending the 3rd academic year displayed a higher average when compared to students in the 1st year (t(829)=-2.844, p=.005). This means that the first possess more unfavorable perceptions towards the use of condom. In the same sense, male students and students who were in a romantic partnership, a higher average is shown in the scale of perceptions of when compared to female students (t(829)=4.676, p=.000) and to the students who were not in a romantic partnership (t(822)=3.850, p=.000).

Regarding sexual behaviors, sexually active students who, in the last 12 months, had unprotected sexual relations and engaged in sex after consuming alcoholic beverages displayed more unfavorable perceptions towards the use of condom when compared to students who never had sexual relations (t(829)=7.171, p=.000), those who did not have unprotected sexual relations (t(539)=-6.767, p=.000) nor under the effect of alcohol (t(540)=-2.203, p=.028).

In the model, the variables which had a statistically significant effect in the model were: Perceptions regarding the use of condom (G^2(1)=30.541, p=.000); being in a romantic partnership (G^2(1)=6.135, p=.013) and current residence (G(1)=7.102, p=.008) (Table 3).

The model accurately predicted that university students who had a romantic partnership and hadn't changed their residence after entering higher education had a lesser propensity towards engaging in risky sexual behaviors. Moreover, the more negative the perceptions regarding condom use, the greater the probability will be of students engaging in risky sexual behaviors.

DISCUSSION

This study evaluated the knowledge, perceptions and risky sexual behaviors of students attending a university in Northern Portugal, demonstrating, based on the results and the discussion presented later on, the need for higher education institutions to develop socio-educational programs with education in sexuality content.

The results of this study corroborate the results of the national study done about the same topic (Santos et al., 2016) and, in the same way as in international studies, the majority of university students was sexually active (Fernández-Silva & Sánchez-Martínez, 2018; Kebede et al., 2018; Leon-

Larios & Macías-Seda, 2017; Mavhandu-Mudzusi & Asgedom, 2016; Spindola et al., 2019; Villafañe-Ferrer & González-Navarro, 2017)

Generally, potentially risky sexual behaviors were reported by 82.2% of sexually active university students. This high level of prevalence of risky sexual behaviors is corroborated by the findings of recent studies carried out with students of Higher Education (Sherab et al., 2019; Yang et al., 2019), although a sistematic review of the literature with Ethiopian university students estimates a prevalence of 41.62% (Amare et al., 2019).

The majority of enquired individuals had started their sexual lives at 17 years of age or less, as in other investigations (Spindola et al., 2019; Villafañe-Ferrer & González-Navarro, 2017), showing that entering higher education tends to co-occur with the age of the first sexual experience or occurs during the academic path (Mavhandu-Mudzusi & Asgedom, 2016). On another note, it is necessary to point out that a minimum of about 40% university students reported already having had sexual relations before enrolling in university (Magalhães et al., 2016).

Although some studies (Mukherjee et al., 2019) demonstrate a tendency for boys to become sexually active at an earlier age than girls, the results obtained did not produce evidence of these differences (Mavhandu-Mudzusi & Asgedom, 2016; SaraçoĞlu et al., 2014).

The inconsistent use of condom during sexual relations was the analyzed risky behavior with the highest prevalence among university students. The ones enquired in this study, just like the univeristy students recently enquired in the context and scope of studies carried out by others, reported an inconsistent use of condom in the majority of sexual relations (Castro, 2016; Fairfortune et al., 2020; Folasayo et al., 2017; Golbasi & Kelleci, 2011; Hoffman et al., 2017; Kebede et al., 2018; Magalhães et al., 2016; Makgale & Plattner, 2017; Mavhandu-Mudzusi & Asgedom, 2016; Pastor & Rojas-Murcia, 2019; Perera & Abeysena, 2018; Santos et al., 2016; SaraçoĞlu et al., 2014; Xu et al., 2019).

Sexual relations under the effect of alcohol in the last year were reported by 32.3% of university students, which, although comprising what can easily be considered a high prevalence, is lower than the majority of analyzed studies (18.9% - Makgale & Plattner, 2017; 25.20% - Mavhandu-Mudzusi & Asgedom, 2016; 27.1% - Gebresllasie et al., 2017; 39.9% - Magalhães et al., 2016; 33.0% - Santos et al., 2016; 55% - Villafañe-Ferrer & González-Navarro, 2017; 56.3% - Á. Castro, 2016; 56.8% - Leon-Larios & Macías-Seda, 2017; 64.2% - Golbasi & Kelleci, 2011).

Sexual relations with multiple partners is one of the most important factors associated to STIs (Chen et al., 2016), however, in the last 12 months, this risky behavior was reported by 18.7% of university students. Analogous results were shown in international studies (Mavhandu-Mudzusi & Asgedom, 2016; Yi et al., 2018), in which, for example, 12.9% of students reported having had more than one sexual partner in the last six months (Magalhães et al., 2016), 26.2% of the enquired ones reported having had two or more sexual partners in the three months prior to the study (Makgale & Plattner, 2017) and the majority had already had more than one sexual partner in their lives (Spindola et al., 2019). Other international studies showed higher percentages of sexual relations with multiple partners (59.3% - Golbasi & Kelleci, 2011; 64.4% - Kebede et al., 2018; 66.7 % - A. T. Folasayo et al., 2017). Although in the present study we did not specifiy the type of sexual partners, a national study showed that a considerable proportion of students reported having had sexual relations with occasional partners (32.0%) (Santos et al., 2016).

Although globally the gender of the enquired individuals does not predict the risky sexual behaviors (Makgale & Plattner, 2017), when they are analyzed separately, boys reported the practice of sexual relations after the ingestion of alcohol more frequently when compared to girls, and we found existing studies which provide similar data and evidence or results (Hoffman et al., 2017). In the same sense, contrary to what was to be expected, due to the fact that it was verified in various studies (Amare et al., 2019; Gebresllasie et al., 2017; Hoffman et al., 2017; Leon-Larios & Macías-Seda, 2017; Magalhães et al., 2016; Mavhandu-Mudzusi & Asgedom, 2016; Perera & Abeysena, 2018; Sherab et

al., 2019; Yi et al., 2018), no statistically significant differences were identified in the use of condom and the number of sexual partners between girls and boys.

The current scientific investigations revealed other correlations, namely between unprotected sexual relations and sexual relations under the effect of alcohol (Castro, 2016; Magalhães et al., 2016) and between unprotected sexual relations and having multiple sexual partners (Makgale & Plattner, 2017; Sherab et al., 2019), although the data arising from the present study does not corroborate these findings (Leon-Larios & Macías-Seda, 2017; Peltzer & Pengpid, 2015).

Students attending Higher Education displayed a moderate level of knowledge of STIs (Folasayo et al., 2017; Santos et al., 2016; Sohbet & Geçici, 2014; Soleymani et al., 2015; Villafañe-Ferrer & González-Navarro, 2017), showing a higher level of knowledge than the one registered in other studies (Chen et al., 2016; Dutt & Manjula, 2017; Elias et al., 2017; Evcili & Golbasi, 2017; Fernández Rouco et al., 2018; Mukherjee et al., 2019; Soleymani et al., 2015). Even so, the results showed that a lot of that knowledge remains superficial and full of myths (Dutt & Manjula, 2017; Spindola et al., 2019; Xu et al., 2019). Mukherjee and colleagues (2019) refer that the fact that the main source of information is the group of peers could in part account for high indexes of wrong information transmitted.

Previous studies had already demonstrated that women had better knowledge (Folasayo et al., 2017; Fonte et al., 2018; Leon-Larios & Macías-Seda, 2017; Oppong Asante, 2013; Santos et al., 2016; SaraçoǦlu et al., 2014; Sohbet & Geçici, 2014), however, in the present study, we did not identify those differences, with the average of correct answers given by boys and girls being identical.

Unlike what was verified in other researches in this area (Evcili & Golbasi, 2017; Folasayo et al., 2017; Fonte et al., 2018; Oppong Asante, 2013; Sohbet & Geçici, 2014; Soleymani et al., 2015), in which it was determined that the level of knowledge increases with age, this associated was not identified (Leon-Larios & Macías-Seda, 2017).

Similarly to what was verified in the study by Santos, Ferreira and Santos (2016), the scientific area of study also influence the knowledge of students. In accordance wity these authors, those who have an education in the areas of life and health sciences displayed a higher level of knowledge. In the presente study, however, the students belonging to exact and natural sciences were the ones who displayed more knowledge about STIs.

The perceptions of STIs were moderate, as is consistently reported in the literature (Santos et al., 2016; Sohbet & Geçici, 2014). In this context, international scientific research and investigations reported that youngsters, in a general way, consider it unlikely to contract STIs or HIV (Amare et al., 2019; Haile et al., 2017), which means that they indicated a low level of perception of the susceptibility to risk. Therefore, the programs for prevention of STIs in the academic context must continue to address STIs and their ways of transmission (Haile et al., 2017).

The average scores attributed to the perception of STIs among smale students was higher than those attributed to female ones (Evcili & Golbasi, 2017; Fernández-Silva & Sánchez-Martínez, 2018; Leon-Larios & Macías-Seda, 2017), showing perceptions considered to be more unfavorable towards these infections.

The perceptions regarding the use of condom, although also moderate, with an obtained average which was only slightly higher than the average point of the scale, implies unfavorable perceptions. As can be verified in more recent investigations report that many university students believed that condoms reduced pleasure during the sexual relation(s) (Mukherjee et al., 2019) and that the trust put on sexual partners and the stability of romantic relationships justified the absence of the use of condom (Pastor & Rojas-Murcia, 2019).

In accordance with a systematic review of the existing literature carried out by Kabwama and Berg-Beckhoff (2015), inconsistent results can be observed regarding the correlation between knowledge about HIV and the perception of risk among university students. And the other studies which explicit a lesser degree of knowledge concluded that this fact was directly associated to a higher prevalence

of risky sexual behaviors (Li et al., 2017; Perera & Abeysena, 2018). This way, although knowledge is obviously essential for young people to make informed and responsible redicions, one cannot ignore their inability to understand the risk even when they possess a good or fair level of knowledge. And for that reason, in a general way, this study demonstrated that the level of knowledge is not directly correlated with the perceptions and risky behaviors (Dutt & Manjula, 2017; Xu et al., 2019).

As happened in previous studies (Santos et al., 2016; Yang et al., 2019), the perceptions regarding the use of condom were a prominent predictor of risky sexual behaviors. Moreover, it is necessary to consider and take into serious account the students who changed their residence at the time of enrolling in higher education and the students who are not in a romantic partnership or relationship, due to the fact that these groups of students have a higher probability of engaging in risky sexual behaviors.

Two limitations should be taken into account. Firstly, it should be noted that the data-gethering was carried out in only one university, and for that reason transversal data make it more difficult to generalize the data provided by other Portuguese universities. And, secondly, the data-gathering was carried out by resorting to the appliance of a self-report questionnaire and taking into account the sensible character of the topic, students may have over or under-reported their sexual behaviors in their accounts or answers.

Ther present study evaluated the knowledge and the perceptions of STIs and the risky sexual behaviors in the context of Higher Education. University students displayed a high prevalence of risky behaviors, such as unprotected sexual relations, those engaged upon under the effect of alcohol or with multiple sexual partners. The level of knowledge and the perceptions about STIs and the use of condom was moedrate, although we did not detect any correlation between these variables.

Among the predictors, or predictive factors, variables such as the perceptions regarding the use of condom, having a romantic relationship or the current residence were statistically significant and directly correlated with the inconsistency of condom use, multiple sexual partners, practicing sexual relations after the ingestion of alcohol and early sexual relations.

This study made it possible to further undertstand the factors that constitute an influence towards risky sexual behaviors among higher education students, and to conclude that understanding those factors is indeed of invaluable importance, not only for their predictive character, but also because the development of educational programs on sexuality may significantly improve when these interactions are subject to scientific study and known. In this sense, the data gathered in this investigation reinforces the need for higher education institutions – also due to the fact that the beginning of sexual activity usually occurs during the academic period – to incorporate debates on sexuality, to inluce in their curricular componente actual educational content dealing specifically with the subject of sexuality and the prevention of STIs, in order to enable youngsters and young university students in general to make conscious and responsible decisions.

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