Original Article

Health Literacy and Social Behaviors: What Relationship to Sexually Transmitted Diseases among Students?

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An adequate level of health literacy (LHL) can help young people/students make better decisions about their own health, based on the capacity to obtain, process and understand basic health information and act appropriately. Furthermore, social behaviors influence the prevalence of sexually transmitted diseases (STDs) which are reflecting an increasing trend worldwide, especially in young people. The aim of this study was to analyze the relationship between the LHL, sexual behaviors and STDs, among first-year students of higher education studies. Participants filled out a questionnaire to assess social behaviors and LHL and a blood sample was collected for the screening of STDs. Students of health sciences tend to have a higher LHL, use more condoms and consume less alcohol before a sexual encounter comparatively to non-health sciences' students. Our results also show that the use of pill contraception leads to a diminished use of condoms in a relationship with a stable sexual partner. Herpes Simplex Virus type 2 (HSV-2) prevalence was 2.4 %. The positive cases of HSV-2 were associated with lower LHL, lower use of condoms and higher alcohol intake before a sexual encounter. The observed trend indicates that a higher LHL is associated with lower behavior risk and lower STDs prevalence.

Key words: Sexually Transmitted Diseases, Health literacy, Social behavior, Students

Introduction

Sexually transmitted diseases (STDs) are a global public health problem and a major cause of acute infection, infertility, long-term disability and death, with severe medical and psychological consequences for people of all ages (1). While anyone can become infected with an STD, certain groups, including young people and homosexual and bisexual men are at greatest risk (2). Estimates from the Center for Disease Prevention and Control (CDC) depict that nearly 20 million new STDs occur every year; half among young people aged 15-24 in the United States of America (USA) (2). Evidence from the European CDC (ECDC) reflect a high percentage of curable STDs (syphilis, gonorrhea and Chlamydia trachomatis infection) in the European Union (EU), in young people of 15-24 years, respectively 66%, 39% and 14%, with a male-to-female ratio of 0.7:1; 2.9:1 and 5.3:1 (3).

Syphilis, a highly contagious STD (oral, vaginal and anal transmission) caused by the bacterium *Treponema pallidum,* is associated with significant complications if left untreated and can facilitate the transmission and acquisition of the human immunodeficiency virus (HIV) infection (4, 5). In the USA, the highest rates of syphilis were observed among young adults aged 20-29, men and women (2), while in Portugal its prevalence is lower than in the EU, according to the ECDC estimates (3).

Gonococcal infections, due to *Neisseria gonorrhea*, are a major cause of pelvic inflammatory disease and can lead to serious outcomes in women. Together sexual behavior and community prevalence can increase the

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risk of acquiring gonorrhea; additionally, epidemiological studies evidence that gonorrhea facilitates the transmission of HIV infection (2). With a higher magnitude among men than in women, and with countries reporting increasing trends, the highest rates of gonorrhea cases were reported among young adults, 93.2% among persons aged 15-44 years, in 2014, in the USA (2) and 39% among the age group 25-34 years in the EU, in 2013 (3).

Chlamydia, caused by infection with *Chlamydia trachomatis*, remains the most frequently reported notifiable disease, and as with other inflammatory STDs might facilitate the transmission of HIV infection (2, 3). Among women, the highest age-specific rates of reported chlamydia in 2014 were among those aged 15-19 years and 20-24 years (67% in the EU, in 2013), and among men, the trends were similar, although substantially lower (2, 3).

In terms of viral diseases, HIV infection is one of the major causes of morbidity and mortality worldwide, since individuals infected are often diagnosed late in the course of the disease (6). This virus belongs to the retroviruses family and is transmitted by sexual contact or vertical transmission, but transmission is influenced by socio-economic and cultural factors (7, 8). HIV prevalence in Portugal (0.5%-0.9%) is similar to the global average estimate (0.8%), according to the second Global Health Policy for the year 2013 (9). Due to the similarity of the infections transmission routes, it is estimated that two thirds of people infected with HIV-1 are co-infected with herpes simplex virus type 2 (HSV-2). The latter virus can infect any exposed mucosa (genital, anus and mouth) but more often causes genital herpes. HSV-1 may also contribute, but less frequently, to the appearance of genital herpes. In Europe it is estimated that the prevalence of HSV-2 is higher in women than in men, 1.3% and 0.5% respectively (10).

Despite the association of these diseases with age, number of sexual partners and no use of condoms, infection by hepatitis C virus (HCV) is often associated with risk behaviors such as the use of injectable drugs (11). HCV virus belongs to the *Flaviviridae* family. While its transmission appears residual when associated to sexual contact, it is facilitated in the case of women with genital lesions and in men concomitantly infected by HSV-2 or having homosexual relations (12). In Portugal, the prevalence of HCV is lower than the estimated 2.4% worldwide (12, 13). STDs are more common in young adults (18-24 years) who display a higher prevalence of risk behaviors such as early sexual initiation, multiple partners, unprotected sex, and alcohol and illicit drug use (14), for a combination of behavioral, biological, and cultural reasons.

For many students, higher education studies represent an important stage in their transition from adolescence to adulthood, during which they experience autonomy, develop new relationships, establish their own identity and make decisions or develop behaviors that may impact their health (15). Any decision regarding health behavior is influenced by knowledge and ability to search for health/disease information and by self-efficacy, both of which are embodied in the definition of health literacy (HL).

HL is defined as the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions (16). In this context, several studies infer that HL may directly affect access to health care and is a predictor of health outcomes, since an inadequate level of HL (LHL) affects people of any age, sex, race and economic status (17).

However, despite the existence of studies addressing the LHL among students, or STDs and social behaviors, no study to date specifically encompassed the association between both. Therefore, the present study aims to estimate the prevalence of STDs, characterize sexual behaviors and analyze the association with LHL among higher education students, in order to contribute to the implementation of new strategies for prevention/control of STDs.

Materials and Methods

Selection and Description of Participants

An observational, analytical cross-sectional level II study was conducted for the analysis of the association between the independent and dependent variables in two schools of higher education studies: school of higher education of human health sciences (SHEHH) and of non-human health sciences (SHENHH). According to the study' inclusion criteria, only first-year students of higher education studies were eligible; the final sample was completed with 83 first-year students who agreed to participate in the study (69.9% women): a SHEHH group of 50 students (45 women and 5 men; median age of 18 [min 18; max 29]) and a SHENHH group of 33 students (13 women and 20 men; median age of 20 [min 18; max 39]).

Technical Information

Questionnaire

All participants were required to complete a questionnaire for the characterization of sociodemographic parameters, sexual history, attitude and intention of condom use, sexual satisfaction, sexual self-esteem, control over sexual events, sexual self-efficacy, communication with parents, heuristics relating to HIV, and alcohol consumption pattern. The validated Portuguese version of the N*ewest Vital Sign* (NVS-PT) was used to assess the LHL (18).The NVS tool includes 6 questions for a quick assessment of functional HL. This instrument distinguishes 3 LHL: level 1 ≥50% probability of limited HL (0-1 correct answers); level 2- possibility of limited HL (2-3 correct answers); level 3-adequate LHL (4-6 correct answers).

Laboratory Tests

A ten milliliters blood sample was collected from each participant by venipuncture into a tube Gel SST II Advance. After centrifugation at 500g for 5 minutes, the serum sample was separated in two aliquots, one stored at -80 °C and the second one at -20 ° C. The samples were analyzed using immunoassays specific for HIV1 and 2: namely for the screening of HIV p24 antigen and antibody, antibodies for HIV-1 (Group M and O) and HIV-2 we used Genscreen® Ultra HIV Ag-Ab (Bio-rad, Marnes-la-Coquette, France). For HCV Ab screening we used the kit Monolisa™ Anti-HCV Plus (Bio-rad, Marnes-la-Coquette, France). For the HSV 1 and 2 screening the kit HSV 1+2 IgM, Platelia™; (Bio-rad, Marnes-la-Coquette, France) was used.

Whenever it was necessary to confirm the presence of antibodies against HIV, we used the HIV testing new Lav I blot, blot new Lav II (Bio-Rad, Marnes-la-Coquette, France) and for HCV we used deciscan HCV PLUS (Bio-Rad, Marnes-la-Coquette, France).

For the screening of syphilis we used the *Syphilis Rapid Plasma Reagin Card Test* (Randox, Crumlin, United Kingdom) which is a macroscopic flocculation test for the detection of non-treponemal. To confirm positive screening results we used the ARCHITECT Syphilis (Abbott, Wiesbaden, Germany) which is a chemiluminescence assay.

All analytical determinations were performed at the Laboratory of Clinical Analysis and Public Health - Coimbra Health School, Portugal.

Tests were performed according to the manufacturer's instructions.

Ethical considerations

All students gave their written informed consent to participate in the study under standard No. 015/2013 of the General Directorate of Health consent (in accordance with the Helsinki Declaration and the Convention of Oviedo).

The study protocol was approved by the board of directors of SHEHH and SHENHH academic institutions.

Statistical Analysis

Data from the questionnaire and from the laboratory tests of blood samples were analyzed using version 21 of the software Statistical Package for Social Sciences (SPSS Inc., New York, United States of America). Data are presented as mean ± standard deviation (SD). For the comparison of proportions, the Chi-square (χ^2) test and the Fischer exact test were used; variables were compared between groups using the *t* independent test or *ANOVA* for parametric variables and the Kruskal-Wallis test for non-parametric variables; to analyze correlations or for the prediction value of variables, the Pearson test was used. A value of $p<0.05$ was considered to indicate statistical significance.

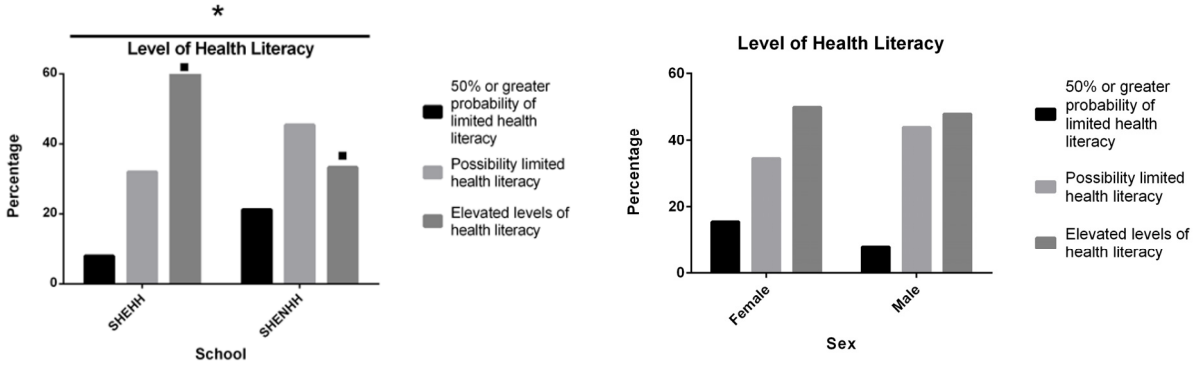
Results

Level of Health Literacy

Our results show that statistically significant differences exist between the type of higher education studies (human health sciences versus non-human health sciences) and the LHL ($p <0.05$), higher in the case of SHEHH, in average (Figure 1A). Regardless of the higher school of origin, in average, women showed a higher LHL (3.36) than men (3.28), although without statistical significance (Figure 1B).

In our study, the association between LHL and age at first sex intercourse (FI) shows a statistically significant difference ($p <0.01$), as well as with the student's

partner age at FI (p <0.05), suggesting that students with limited LHL tend to initiate sexual life later and to look for an older partner (Table 1).



(A) (B)

Fig.1 ***A*** *- Level of health literacy per school (SHEHH- School of Higher Education of Human Health Sciences; SHENHH – School of Higher Education of Non-Human Health Sciences). (*p-value= 0.040); ▪ Residues Adjusted standardized the 2.4 for SHEHH and -2.4 for SHENHH.* ***B*** *- Level of health literacy per sex (p-value= 0.554).*

Table 1 Level of Health Literacy in association with student's age and partner's age of sexual initiation.

Variables	Level of Health Literacy			ANOVA
	Level 1	Level 2	Level 3	p-value
Age of first sexual intercourse	19.56±3.36	16.63±2.06	17.06±1.24	0.001**
Tukey Test (p-value)	Level 1- Level 2 (0.001) ** Level 1- Level 3 (0.002) **			
Age of partner in the first sexual intercourse	22.56±6.15	18.19±4.88	18.03±2.70	0.013*
Tukey Test (p-value)	Level 1- Level 2 (0.020) * Level 1- Level 3 (0.012) *			

Level 1 - 50% or greater probability of limited health literacy | Level 2 - Possibility of limited health literacy | Level 3 - Adequate health literacy. Data expressed as mean ± SD.
* p-value <0.05 | ** p-value <0.01

Social sexual behaviors per schools

In terms of social sexual behaviors, per school, SHENHH' students show to be those with the most negative overall pattern, namely regarding the intention to use condoms (in the last month), scale of attitudes towards condom use, external control over sexual events, heuristics for HIV and alcohol intake before a sexual encounter (Table 2). For variables involving beliefs and expectations, such as beliefs that sexual behaviors are affected by accident, or by fate; and also, "when we love and trust someone, we do not have to worry about HIV", statistically significant differences (p <0.05) between students of SHEHH and SHENHH were observed (Table 2). Furthermore, a negative significant association was found between alcohol consumption before a sexual encounter and the level of religiosity (p <0.05), suggesting that those with a higher level of religiosity are less likely to consider alcohol intake to relax before a sexual encounter.

Social behaviors between sexes

In what concerns the social sexual behavioral pattern per sex, regardless of school, a significant association was found with the partner's age at FI (p<0.01), higher for women (Table 3; for correlations see Table 2A-Supplementary material).

Men showed the lowest level of disagreement in attitudes towards condom use (the excitement of condom use; what to do after using the condom is a real problem) in comparison with women (p<0.05) (Table 3).

When considering how often you use a condom and try to use one, for both sexes, our results indicate that the higher the frequency of use, the greater the probability of future intention to use condoms (*p*<0.05) (Table 3). More, the greater the pressure the partner exerts for the

use of condoms, the higher is the probability that the student will use a condom, as well as in the future (Table 2A-Supplementary material).

Statistically significant differences ($p<0.05$) were found per sex regarding beliefs and trust ("many of the things that affect aspects of sexuality happen by accident"; "sexual aspects are a matter of (good or bad) luck"; and, "when we love and trust someone, we do not have to worry about HIV"): men scored higher in terms of external control over sexual events and in heuristics for HIV (Table 3). With regard to alcohol intake prior to a sexual encounter (and socially), women are those that least refer alcohol use in the aforementioned situations (Table 3).

Data obtained from the questionnaire also shows that in the case of students who use the pill, there's a higher frequency of use of condom, when the partner is not stable (p<0.05).

Table 2 Social sexual behaviors per school.

Variables		Groups		Test t-student
		SHEHH	SHENHH	p-value
Intention to use condom	Estimate based on the number of sexual relations that did not use a condom in the last month □	2.89±4.97	7.23±8.87	0.030*
Scale of attitudes towards condom use	Idea of dislike to use condoms ♦	1.81±1.44	2.91±2.23	0.016*
	Use of condoms makes sex less pleasurable ♦	3.23±1.96	4.12±2.01	0.050*
	Men who use condoms are morons ♦	1.02±0.14	1.82±1.49	0.004**
	The idea of using condoms is not appealing♦	1.79±1.37	2.76±2.14	0.026*
	What to do after using condom is a real problem ♦	1.98±1.78	3.39±2.22	0.003**
External control over sexual events	Many of the things that affect aspects of sexuality in my life happen by accident♦	2.33±1.39	3.09±1.49	0.020*
	The sexual aspects of my life are events of the destiny ♦	2.08±1.37	2.97±1.61	0.009**
Heuristics for HIV	When we love and trust someone, we do not have to worry about HIV♦	1.46±0.994	2.55±1.86	0.004**
Alcohol intake	Consumption of alcohol before a sexual encounter♦	1.83±1.52	2.90±2.01	0.018*

SHEHH - School of Higher Education of Human Health Sciences
SHENHH - School of Higher Education of Non-Human Health Sciences
Data expressed as mean ± standard deviation
□ - Frequency scaling from 1 (never) to 7 (always)
♦ - Opinion scale of 1 (Strongly Disagree) to 7 (Totally agree)| * *p-value*<0.05 | ** *p-value*<0.01

Table 3 Social sexual behaviors per sex.

Variables		Groups		Test t-student
		Women	Men	p-value
Sexual history	Age at first sexual intercourse	17.25±2.29	17.10 ±1.55	0.788
	Age of partner at first intercourse	19.29±4.90	17.00±1.30	0.003**
Intention to use condom	All considerations facing the use of a condom in a sexual relationship □	5.16±1.99	5.92±1.28	0.047*
Scale of attitudes towards condom use	Deprivation level of excitement with use of condom♦	5.12±1.48	4.27±1.75	0.038*
	What to do after using a condom is a real problem ♦	2.23±2.03	3.28±2.03	0.035*
External control over sexual events	Many of the things that affect aspects of sexuality happen by accident ♦	2.39±1.41	3.20±1.43	0.020*
	The sexual aspects of my life are largely a matter of (good or bad) luck♦	2.07±1.29	2.72±1.31	0.040*
Heuristics for HIV	When we love and trust someone. we do not have to worry about HIV♦	1.62±1.30	2.52±1.74	0.026*
Alcohol intake	Consumption of alcohol before a sexual encounter♦	1.83±1.53	3.23±2.02	0.007**
	Consumption of alcohol in social situations ♦	4.45±1.70	5.38±1.93	0.034*

□ - Frequency scaling from 1 (never) to 7 (Always)
♦ - Opinion scale from 1 (Strongly Disagree) to 7 (Totally agree)
* *p-value*<0.05 | ** *p-value*<0.01 Data expressed as mean ± standard deviation.

Table 2A Correlation of sexual behavioral variables and sexes.

Variables	Groups	
	Female	Male
Age at first intercourse	17.25±2.29	17.10±1.55
Age of partner at first sexual contact	19.29±4.90	17.00±1.29
Pearson Correlation (p-value)	0.482 (0.000)***	0.496 (0.026)*
Frequency of condom use in their sexual relationships □	4.31±2.34	4.81±2.14
Intention to believe to try to use a condom in future sexual relations □	5.16±1.99	5.92±1.28
Pearson Correlation (p-value)	0.771 (0.000)***	0.613 (0.003)**
Take into consideration the fact that your partner puts pressure on the use of condoms □	4.00±2.22	4.50±1.99
Frequency of condom use in their sexual relationships □	4.31±2.34	4.81±2.14
Pearson Correlation (p-value)	0.571 (0.000)***	0.836 (0.000)**
Take into consideration the fact that your partner puts pressure on the use of condoms □	4.00±2.22	4.50±1.99
Intention to believe to try to use a condom in future sexual relations □	5.16±1.99	5.92±1.28
Pearson Correlation (p-value)	0.533 (0.000)***	0.531 (0.011)*

□ - Frequency scaling from 1 (never) to 7 (Always) |
Data expressed as mean ± standard deviation.
* p-value<0.05 | ** p-value<0.01 | *** p-value<0.001

Prevalence of Sexually Transmitted Diseases

The analysis of the students' serum samples showed a prevalence of STDs of 2.4% for HSV-2 and 0% for syphilis, HIV and HCV. In terms of HSV-2 infection, negative cases for IgM Ab suggest that those students are not in the acute phase or outbreak. Although lacking statistical significance, the screening of the antibody HSV-2 revealed that 2% of SHEHH and 3.0% of SHENHH students (p=0.768) and 3.45% of women (0% men) (p=0.353) are positive cases.

HSV-2 positive students are those starting their sexual activity earlier and using fewer condoms, although no significant association was found (Table 4). HSV-2 positive students are those that scored higher in the opinion scale (1-Totally disagree to 7-Totally agree) in believing that condoms are too much work (p<0.001), in feeling to be satisfied with the sexual aspects of their lives (p<0.01) and in feeling to have a high sexual self-esteem (p<0.001), plus showing to have a higher consumption pattern of alcohol to relax before a sexual encounter (p<0.01). In terms of HL, positive HSV-2 students have a significant lower LHL (p<0.001).

Table 4 Association between sexual behavior and HSV-2 positive and negative.

	Variables	Groups		Test t-student
		HSV-2 positive	HSV-2 negative	p-value
Sexual history	Age of first sexual intercourse	16.50±2.12	17.23±2.14	0.632
Intention/measures of condom use	Intention to use a condom in sexual relationships □	3.00±1.41	4.49±2.29	0.366
Attitude towards condom use	Condoms are too much work ♦	7.00±0.00	2.57±1.79	0.000***
Sexual satisfaction	I am pleased with how my sexual needs are currently being met ♦	5.00±0.00	5.55±1.79	0.009**
	The sexual aspects of my life are satisfactory when compared to most people ♦	7.00±0.00	5.68±1.48	0.000**
Sexual self-esteem	Proud of the self-conduct in terms of sexual needs and expectations ♦	7.00±0.00	5.13±1.36	0.000***
Alcohol intake	Consumption of alcohol before a sexual encounter ♦	5.50±0.707	2.15±1.73	0.008**
Level of health literacy		2.00±0.00	2.37±0.72	0.000***

□ - Frequency scaling from 1 (never) to 7 (Always) | ♦ - Opinion scale from 1 (Totally disagree) to 7 (Totally agree) |
* p-value<0.05 | ** p-value<0.01 | *** p-value<0.001 Data are expressed as mean ± SD.

Discussion

Sexuality is present throughout the whole human lifespan, but its development is not always accompanied by an affective and cognitive maturation, making adolescence a stage of extreme vulnerability to risks such as STDs and unwanted pregnancies.

HL depends not only on cognitive development, but is also influenced by exposure to health information and the way the information is conveyed, to which adds the individual perception of self-efficacy on behavior change (19). This may explain why SHEHH students possess a higher LHL when compared to SHENHH students, possibly reflecting the fact that they are in constant contact with health contents, and therefore, this may influence the use of condoms due to a higher perception of STDs (20). SHENHH students consume more alcohol before a sexual encounter, which is a predictor of risk behavior, contributing to the failure to use condoms. Santos refers that health beliefs are predictors of behavior, and that health education can transform wrong beliefs in correct beliefs raising the tendency of people having healthy attitudes and behaviors (20). We found that the assessed beliefs (agreeing that sexual life is influenced by accidental happenings and issues of luck, as based on trust and affection for each other regarding HIV) are more present in students from SHENHH. Earlier studies infer that religious practices can influence values and attitudes that affect sexual behaviors, such as alcohol consumption and delay of the first sexual intercourse (21). This same trend was observed in SHENHH'students, in our study.

Regarding differences between sexes, it was found that female students opt for a sex partner closer to their own age at the FI. After all, the beginning of this activity is not yet associated with a consistent sex education. Therefore, the revision of the National Consensus on Contraception 2011 is critical that sexually active teenagers use effective contraception correctly and consistently, always in combination with the preservative, since it is the only means of preventing STDs (22). However, Alves and Lopes claim that university teens already have high knowledge in relation to oral contraception and condoms, but conclude that greater knowledge has not led to a more efficient practice (23).

Although women are more assertive in relation to health issues, it was found that the use of pill leads to a smaller use of condoms, especially among those students with a stable sexual partner. Our results are in accordance with Figueiredo and Neto who stated that girls tend to undervalue the use of condom in a sexual encounter when taking the oral contraceptive pill, suggesting that the same drop out of concern in terms of prevention of STDs may occur, a pattern typical of a trusting stable and loving relationship (24). More, Santos in addition to considering beliefs as predictors of sexual behaviors, also infers that behavioral intention can be associated with a higher behavioral predictive value, being influenced by the same attitudes or feelings about this behavior (19). In this sense, men who have more beliefs demonstrate less intention to use condoms.

As evidenced by earlier literature (20), our study also shows a higher level of alcohol consumption among male adolescents before a sexual encounter.

Our results are in accordance with data described by Looker *et al* (10), with women showing a higher number of HSV-2 positive cases. HL may influence the type of behavior, since the positive cases of HSV-2 correspond to those students who have limited LHL, who take alcohol before a sexual encounter and do not use condoms.

Our results demonstrate that students, who do not use condoms, justify this attitude with the deprivation of sexual arousal; these same students are those who refer having high satisfaction and high sexual self-esteem, which is in accordance with Higgins *et al*. (25).

Conclusion

Differences in LHL, sexual behavioral attitudes and prevalence of STD were found per sex and between higher education students of health sciences and non-human health sciences. An association was also observed for LHL, sexual behaviors and STDs prevalence, *e.g.* the higher the LHL, the less risky behavior and a lower prevalence of STDs.

Future strategic interventions for the promotion of health should address the use of condom in order to maximize its use and demystify one of the main reasons for non-use, the deprivation of sexual pleasure.

Furthermore it would be of interest to follow this same population of students during their last year of higher education studies to re-evaluate the association of LHL with sexual behavior/attitudes and prevalence of STDs.

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Conflict of Interest

The authors declare having no conflict of interest.

References

1. WHO. World Health Organization, 2015. Available from: http://www.euro.who.int/en/health-topics/communicable-diseases/sexually-transmitted-infections
2. CDC, Centers for Disease Prevention and Control, Sexually Transmitted Disease Surveillance 2014. Atlanta: U.S. Department of Health and Human Services; 2015. Available from: http://www.cdc.gov/std/stats14/surv-2014-print.pdf
3. ECDC, European Centre for Disease Prevention and Control. Sexually transmitted infections in Europe 2013. Stockholm: ECDC; 2015.
4. Tampa M, Sarbu I, Matei C, Benea V, Georgescu SR. Brief history of syphilis. J Med Life [Internet]. 2014 Mar 15 [cited 2014 Jun 6];7(1):4–10. Available from: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3956094&tool=pmcentrez&rendertype=abstract
5. Avelleira JCR, Bottino G. Syphilis: diagnosis, treatment and control. An Bras Dermatol [Internet]. 2006 [cited 2014 Jun 6];81(2):111–26. Available from: http://www.scielo.br/pdf/abd/v81n2/v81n02a02.pdf
6. Suthar AB, Ford N, Bachanas PJ, Wong VJ, Rajan JS, Saltzman AK, et al. Towards universal voluntary HIV testing and counselling: a systematic review and meta-analysis of community-based approaches. PLoS Med. 2013 Aug;10(8):e1001496.
7. Aboim S. Risk-taking and HIV/Aids prevention: a biographical. Ciência Saúde Coletiva. 2012;9:99–112.
8. Chentoufi AA, Dervillez X, Rubbo P, Kuo T, Zhang X. Current trends in negative immuno-synergy between two sexually transmitted infectious viruses: HIV-1 and HSV-1/2. Curr Trends Immunol. 2013;13:51–68.
9. The Henry J. Kaiser Family Foundation. Adult HIV / AIDS Prevalence Percent (Aged 15- Adult HIV / AIDS Prevalence Percent (Aged 15-49) [Internet]. http://kff.org/global-indicator/adult-hivaids-prev. 2014. p. 1–7. Available from: http://kff.org/global-indicator/adult-hivaids-prevalence-percent/#map
10. Looker KJ, Garnett GP, Schmid GP. An estimate of the global prevalence and incidence of herpes simplex virus type 2 infection. Bull World Health Organ [Internet]. 2008 Oct [cited 2014 Jul 15];86(10):805–12, A. Available from: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2649511&tool=pmcentrez&rendertype=abstract
11. Dessunti EM, Advincula Reis AO. Psychosocial and behavioral factors associated to STD/AIDS risk among health students. Rev Lat Am Enfermagem [Internet]. 2007 [cited 2014 Jul 15];15(2):267–74. Available from: http://www.ncbi.nlm.nih.gov/pubmed/17546359
12. Mendes F, Santos P, Paiva A. Prevalência de anticorpos anti-vírus da Hepatite C em Profissionais de Saúde. Rev Port Ciências Biomédicas [Internet]. 2009 [cited 2013 Jun 10];IV(4):42–6. Available from: http://www.researchgate.net/publication/229429991_Prevalencia_de_anticorpos_anti-vrus_da_Hepatite_C_em_Profi_ssionais_de_Saude/file/79e415015296b5de47.pdf
13. Global Infection Rates. Hepatitis c. Avalilable from: http://www.pkids.org/files/pdf/phr/03-06hcvglobal.pdf. 2006. p. 1–7.
14. Leoni AF, Martelloto GI, Jakob E, Cohen JE, Aranega CI. Conductas sexuales y riesgo de infecciones de transmission sexual en estudiantes de medicina de la Universidad Nacional de Córdoba. DST J Bras Doenças Sex Transm. 2005;17:96-8.
15. Mackert M, Champlin S, Mabry A. Understanding college student health literacy. 2014. Available from: http://nursing.utexas.edu/chpr/docs/2014/poster/Mackert%20Abstract%2027.pdf
16. Ratzan SC, Parker RM (2000). In: *National Library of Medicine Current Bibliographies in Medicine: Health Literacy*. Selden CR, Zorn M, Ratzan SC, Parker RM, Editors. NLM Pub. No. CBM 2000-1. Bethesda, MD: National Institutes of Health, U.S. Department of Health and Human Services.
17. Barrett SE, Puryear JS, Westpheling K (2008). Health literacy practices in primary care settings: Examples from the field. The Commonwealth Fund, S1 (11). Available from http://www.commonwealthfund.org/~/media/Files/Publications/Fund%20Report/2008/Jan/Health%20Literacy%20Practices%20in%20Primary%20Care%20Settings%20%20Examples%20From%20the%20Field/Barretthliteracypracticesprimarycaresettingsexamples-field_1093%20pdf.pdf
18. Martins AC, Andrade I. Cross-cultural adaptation and validation of the Portuguese version of the Newest Vital Sign. Rev Enf Referência.2014;IV(3):75-83. Available from://http://dx.doi.org/10.1270/RIII1399
19. Santos O. Health literacy: empowering the person with overweight for the control and reduction of body weight. Núcleo Endocrinol Diabetes Obesidade [Internet]. 2010 [cited 2014 Jul 11];4:127–34. Available from: https://dspace.uevora.pt/rdpc/bitstream/10174/2320/1/(2010) Literacia em saúde - capacitando a pessoa com excesso de peso para o controlo e redução da carga ponderal.pdf
20. Costa LC, Rosa MI da, Battisti IDE. Prevalence of condom use and associated factors in a sample of university students in southern Brazil. Cad Saude Publica [Internet]. 2009 Jun [cited 2014 Jul 15];25(6):1245–50. Available from: http://www.ncbi.nlm.nih.gov/pubmed/19503955

21. Jones RK, Darroch JE, Singh S. Religious differentials in the sexual and reproductive behaviors of young women in the United States. J Adolesc Health [Internet]. 2005 Apr [cited 2014 Jul 15];36(4):279–88. Available from: http://www.sciencedirect.com/science/article/pii/S1054139X04004124
22. News EF. Consenso sobre Contracepção 2011 [Internet]. 2011 p. 68–70. Available from: http://www.spdc.pt/files/publicacoes/11_11363_2.pdf
23. Alves AS, Lopes MHB de M. Knowledge, attitude and practice about the use of pill and preservative among adolescents university students. Rev Bras Enferm [Internet]. 2008 [cited 2014 Jul 15];61(1):11–7. Available from: http://www.scielo.br/pdf/reben/v61n1/02.pdf
24. Figueiredo R, Neto JA. Uso de contracepção de emergência e camisinha entre adolescentes e jovens. Rev da SOGIA-BR [Internet]. 2005 [cited 2014 Jul 11];2. Available from: http://redece.org/Artigo Figueiredo e Andalafti ampliado.pdf
25. Higgins JA, Tanner AE, Janssen E. Arousal loss related to safer sex and risk of pregnancy: implications for women's and men's sexual health. Perspect Sex Reprod Health [Internet]. 2009 Sep [cited 2014 Jul 16];41(3):150–7. Available from: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2988073&tool=pmcentrez&rendertype=abstract