

# Predictors of consistent condom use among Portuguese women attending family planning clinics

Eleonora C. V. Costa<sup>a</sup>, Rosa Oliveira<sup>b</sup>, Domingos Ferreira<sup>c</sup> and M. Graça Pereira<sup>c</sup>

## ABSTRACT

Women account for 30% of all AIDS cases reported to the Health Ministry in Portugal and most infections are acquired through unprotected heterosexual sex with infected partners. This study analyzed socio-demographic and psychosocial predictors of consistent condom use and the role of education as a moderator variable among Portuguese women attending family planning clinics. A cross-sectional study using interviewer-administered fully structured questionnaires was conducted among 767 sexually active women (ages 18–65). Logistic regression analyses were used to explore the association between consistent condom use and the predictor variables. Overall, 78.7% of the women were inconsistent condom users. The results showed that consistent condom use was predicted by marital status (being not married), having greater perceptions of condom negotiation self-efficacy, having preparatory safer sexual behaviors, and not using condoms only when practicing abstinence. Living with a partner and having lack of risk perception significantly predicted inconsistent condom use. Less educated women were less likely to use condoms even when they perceive being at risk. The full model explained 53% of the variance in consistent condom use. This study emphasizes the need for implementing effective prevention interventions in this population showing the importance of taking education into consideration.

## Introduction

Women account for 30% of all AIDS cases in Portugal and the main mode of HIV transmission in this group is through unprotected heterosexual sex with infected partners (INSA, 2013). Type of contraceptive prevalence contributes to this risk since oral contraception prevails over condom use (INSA & INE, 2009).

Since condoms remain the major strategy to prevent HIV transmission, HIV risk research has focused on analyzing the relationship between condom use and several psychosocial constructs (Chandran et al., 2012). Studies have found that greater perceptions of condom negotiation self-efficacy (Crosby et al., 2013; French & Holland, 2013), greater perceptions of risk (Ma et al., 2009; Schroder, Hobfoll, Jackson, & Lavin, 2001), low level of barriers to condom use (Elifson, Klein, & Sterk, 2010; Protogerou & Turner-Cobb, 2011) and preparatory safer sexual behaviors (Chandran et al., 2012; Corneille, Zyzanski, & Belgrave, 2008) predict consistent condom use.

Studies have also found significant relationships between consistent condom use and socio-demographic

characteristics, including age (Adu-Oppong, Grimes, Ross, Risser, & Kessie, 2007), level of education (Chandran et al., 2012; Shai, Jewkes, Levin, Dunkle, & Nduna, 2010), religion (Adu-Oppong et al., 2007), marital status (Chandran et al., 2012; Elifson et al., 2010) and number of partners (Bobrova, Sergeev, Grechukhina, & Kapiga, 2005).

Increasing HIV risk perception may enhance HIV-related protective behaviors, thus decreasing the propensity for HIV infection. HIV risk perception may be influenced by multiple factors including educational attainment (Essien et al., 2007). Low educational attainment has been linked to low levels of knowledge and HIV risk behavior (Mullings, Marquart, & Brewer, 2000). Literature has also shown the moderator role of education, specifically, higher educational attainment (Chandran et al., 2012; Essien et al., 2007) in the relationship between risk perception and condom use.

To our knowledge, no study has been conducted to identify the determinants of consistent condom use in sexually active Portuguese women. Therefore, the goal of this study was not to test any particular theory, but to identify the predictors of consistent condom use as

well as the role of education as a moderator in the relationship between risk perception and condom use, in order to inform future HIV prevention strategies among sexually active women.

## Methods

### Sample and procedure

Standardized questionnaires were administered to female patients at urban family planning clinics in the north of Portugal ( $N = 767$ , Table 1). Women were eligible to participate if they were searching for gynecological care and were sexually active in the previous six months. Participants gave written consent to participate.

### Measures

Participants were administered several self-report questionnaires which had been previously adapted and validated into Portuguese from the Women's Health Study (Hobfoll, Jackson, Lavin, & Schroder, 2002) by Costa and McIntyre (2002).

### Socio-demographic measures

Questions elicited age, area of residence, education, employment status, cohabitation, marital status, religion, yearly income, pregnancy, and number of children.

### Behavioral measures

*Consistent condom use* was assessed using two items (frequency of penile-vaginal sex and frequency of condom use using a 6-month recall period) and the latter item was subtracted from the former to yield the frequency of unprotected vaginal sex (UVS). UVS was then dichotomized with those reporting no UVS classified as consistent condom users (21.3%), whereas all others were classified as inconsistent condom users (78.7%).

*Preparatory safer sexual behaviors* inquired about recent purchases of condoms, intention to purchase them in the future, and reliance on partners for condoms, using a four-point scale (*no to always*).

### Knowledge

*AIDS-related knowledge* was assessed with 14 items ( $\alpha = 0.79$ ). Eight items measured knowledge of HIV transmission ( $\alpha = 0.76$ ) and the remaining assessed knowledge of HIV prevention ( $\alpha = 0.66$ ).

**Table 1.** Socio-demographic characteristics of the sample ( $N = 767$ ).

Variables	<i>n</i>	%
<i>Age</i>		
18–29	243	31.7
30–39	235	30.6
40–65	289	37.7
<i>Area of residence</i>		
Urban	379	49.4
Rural	388	50.6
<i>Education</i>		
Less than university education	562	73.3
University education	205	26.7
<i>Employment</i>		
Yes	542	70.7
No	225	29.3
<i>Living with</i>		
Parents	212	27.6
Family	38	5.0
Friends	6	0.8
Partner	465	60.6
Children	351	45.8
Alone	32	4.2
<i>Marital status</i>		
Married or cohabiting	464	60.5
Not married	235	30.6
Divorced, separated or widowed	68	8.9
<i>Religion</i>		
Practicing catholic	387	50.5
Non-practicing catholic	334	43.5
Other	46	6
<i>Yearly income</i>		
Less than 6000 euros	447	63.7
Between 6000–12,000	180	25.6
More than 12,000	75	10.7
<i>Pregnancy</i>		
Is now pregnant	39	5.1
Has been pregnant	485	63.2
<i>Number of children</i>		
None	290	37.8
One or more	477	62.2
<i>Consistent condom use</i>		
Yes	163	21.3
No	604	78.7
<i>Preparatory safer sexual behavior</i>		
Recent condom purchase	54	7.0
Intention to buy condoms	55	7.2
Reliance on partner	130	16.9

### Psychosocial measures

*AIDS risk perceptions* were assessed by three items that evaluated AIDS risk in community and personal AIDS risk, using a four-point scale (*no risk to high risk*), and women were also asked whether they discussed AIDS prevention, using a three-point scale (*never to with every partner*).

*Risk beliefs about the partner* were assessed by four items that evaluated women's beliefs about partners' risk behavior on a three-point scale and an overall indicator for partner risk was computed ( $\alpha = 0.65$ ).

*Barriers against safe sex behaviors* was assessed by 11 items grouped into five subscales (*strongly disagree to strongly agree*). One item assessed *abstinence*; three items assessed *lack of risk perception* ( $\alpha = 0.66$ ); two items measured *negative attitudes towards safer sex*

behavior ( $\alpha = 0.71$ ); two items assessed negative perceived partner's attitude ( $\alpha = 0.87$ ) and three items measured low perceived communication self-efficacy ( $\alpha = 0.70$ ).

Self-efficacy condom negotiation was assessed by five items about how confident women feel negotiating condom use with their partners ( $\alpha = 0.96$ ), using a nine-point scale (not at all confident to fully confident).

General Self-Efficacy Scale was measured by 10 items ( $\alpha = 0.70$ ) with a seven-point scale (not at all true to exactly true) and was used to assess the perception of personal competency in dealing effectively with a variety of stressful situations.

## Analysis

Logistic regression was used to evaluate univariate relationships with the dichotomized measure of consistent condom use. Significant variables in the univariate analyses were entered in a multivariate logistic regression model (forward stepwise method). SPSS 22.0 was used. The moderation analysis was performed using the causal step methodology proposed by Baron and Kenny (1986).

## Results

### Models of consistent condom use

Independent positive associations with consistent condom use were found for marital status (being not married), preparatory safer sexual behavior, abstinence, and self-efficacy for condom negotiation. Living with a partner and lack of risk perception were negatively associated with consistent condom use (Table 2).

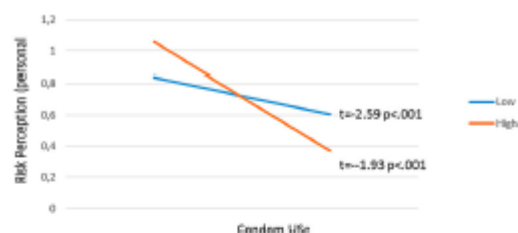
A test of model with all significant univariate correlates against a constant-only model was significant  $\chi^2$  (6,  $N = 767$ ) = 282.336,  $p < .001$ , suggesting that the correlates reliably distinguished between those who are consistent condom users vs. those who are not. The Hosmer-Lemeshow test for goodness of fit was not significant  $\chi^2$  (8,  $N = 767$ ) = 9.007,  $p = .342$ , suggesting that the model fits with the data. The full model explained 53% of the variance (Nagelkerke  $R^2 = 0.53$ ).

### Moderation analysis

The results showed that education moderated the relationship between risk perception and condom use. Although the relationship between risk perception and

**Table 2.** Results of univariate and multivariate logistic models with consistent condom use.

Variables	Consistent condom use		Univariate model				Multivariate model			
	No (N = 604)	Yes (N = 163)	OR	OR (95% CI)		p-Value	OR	OR (95% CI)		p-Value
Age	37.50 (10.71)	31.91 (11.73)	0.951	0.934	0.968	<.001				
Area of residence	0.48 (0.50)	0.61 (0.49)	1.686	1.185	2.399	<.001				
Education	0.25 (0.43)	0.33 (0.47)	1.486	1.022	2.162	.037				
Employment	0.73 (0.45)	0.63 (0.48)	0.645	0.448	0.930	.018				
Living with parents	0.22 (0.41)	0.50 (0.50)	3.691	2.567	5.308	<.001				
Living with family	0.04 (0.20)	0.08 (0.27)	2.007	1.003	4.017	.045				
Living with friends	0.01 (0.08)	0.01 (0.11)	1.863	0.338	10.264	0.468				
Living with partner	0.69 (0.46)	0.28 (0.45)	0.174	0.118	0.254	<.001	0.280	0.137	0.571	<.001
Living with children	0.51 (0.50)	0.25 (0.43)	0.306	0.207	0.453	<.001				
Living alone	0.03 (0.18)	0.08 (0.27)	2.668	1.289	5.526	.006				
Marital status	0.39 (0.62)	0.84 (0.63)	2.644	2.048	3.413	<.001	1.987	1.196	3.301	.008
Religion	0.53 (0.59)	0.65 (0.66)	1.377	1.041	1.821	.025				
Yearly income	0.48 (0.68)	0.43 (0.69)	0.907	0.686	1.201	.497				
Being pregnant	0.06 (0.24)	0.02 (0.14)	0.296	0.090	0.973	.034				
Having been pregnant	0.69 (0.46)	0.40 (0.49)	0.300	0.210	0.429	<.001				
Number of children	1.26 (1.24)	0.77 (1.27)	0.299	0.209	0.428	<.001				
Preparatory safer sexual behavior	1.01 (1.69)	4.44 (3.20)	1.666	1.536	1.806	<.001	1.737	1.571	1.920	<.001
HIV transmission knowledge	5.38 (2.05)	5.45 (1.96)	1.018	0.934	1.109	.690				
HIV prevention knowledge	4.26 (1.52)	4.36 (1.39)	1.044	0.928	1.175	.474				
AIDS-related knowledge	9.64 (3.06)	9.81 (2.74)	1.019	0.961	1.081	.530				
AIDS risk in community	1.35 (0.99)	1.38 (1.00)	1.036	0.870	1.233	.695				
Personal AIDS risk	0.34 (0.67)	0.33 (0.68)	0.982	0.757	1.273	.891				
To talk about AIDS and AIDS prevention	0.74 (0.95)	1.16 (0.94)	1.570	1.311	1.880	<.001				
Risk beliefs about the partner	0.47 (1.16)	1.21 (2.25)	1.373	1.206	1.564	<.001				
Abstinence	0.49 (0.81)	0.47 (0.76)	0.975	0.784	1.213	.821	1.725	1.225	2.429	.002
Lack of risk perception	4.63 (1.96)	3.77 (2.28)	0.819	0.752	0.891	<.001	0.835	0.732	0.953	.007
Negative attitudes towards safer sex	1.53 (1.56)	1.42 (1.49)	0.952	0.849	1.067	.394				
Negative perceived partner attitude	1.31 (1.47)	1.11 (1.23)	0.903	0.795	1.026	.116				
Low perceived communication self-efficacy	1.91 (1.88)	1.87 (1.77)	0.989	0.901	1.087	.825				
Barriers against safer sex total scale	9.87 (5.49)	8.64 (5.80)	0.960	0.930	0.992	.013				
Self-efficacy for condom negotiation	36.04 (13.90)	40.27 (9.04)	1.032	1.014	1.050	<.001	1.037	1.012	1.064	.004
General perceived self-efficacy	4.60 (0.79)	4.53 (0.90)	0.910	0.736	1.126	.387				



**Figure 1.** Education as a moderator between risk perception and condom use.

condom use was significant whether education was high or low, it was stronger when education was lower ( $t = -2.59, p < .001$ ), that is, less educated women are less likely to use condoms, even when they perceive they are at risk (Figure 1).

## Discussion

The results of this study support the applicability of some behavioral change theories' constructs in explaining consistent condom use and the hypothesis that some socio-demographic characteristics like marital status might affect condom use (Chandran et al., 2012).

Self-efficacy for condom negotiation and preparatory safer sexual behavior were associated with consistent condom use, which supports the hypothesis that relationship variables and safe sex intentions play a key role in safer sex decision-making. Other studies confirmed that consistent condom use was predicted by preparatory safer sexual behavior (Corneille et al., 2008) and by greater perceptions of condom negotiation self-efficacy (Crosby et al., 2013). Abstinence was also significantly associated with consistent condom use, suggesting that women with this behavior (not using condoms only when they are abstinent) are more likely to be consistent condom users.

The negative association between cohabitation with a partner and consistent condom use is well documented in the literature, for example, being in a marital-type relationship is an important predictor of condom refusal (Elifson et al., 2010; Shai et al., 2010). Marriage rates have declined, in the last years, in Portugal and many couples choose to live together, and this type of arrangement seems to be a predictor of inconsistent condom use (INE, 2012). The negative relation between lack of risk perception and consistent condom use may well be explained by participants' beliefs that since their partner was not at risk, they did not need to use condoms, indicating that those who have this specific barrier against safe sex are more likely to be inconsistent condom users (Ma et al., 2009).

Education was found to moderate the relationship between risk perception and condom use. Less educated women were less likely to use condoms even when they perceive being at risk. Most studies have found a significant increase in HIV-risk perception among participants with higher education (Chandran et al., 2012). Literacy makes women more likely to be exposed and receptive to information about AIDS prevention regarding preventive measures such as condom use (Juliana, Ekama, & Innocent, 2013).

The findings of this study are limited by the validity of the self-reported data, particularly the use of memory to recall the sexual activities and condom use in the last six months. Another limitation of the study is the cross-sectional design. Addressing inaccurate perception of risk and diminishing the barriers against safe sex may be a key to improve consistent condom use among Portuguese women particularly in less educated women. Also, building women's self-efficacy for negotiating condom use and women's preparatory safer sexual behavior may be vital to intervene in this population.

## Disclosure statement


No potential conflict of interest was reported by the authors.


## Funding


This work was supported by the Center for Philosophical and Humanistic Studies of the Portuguese Catholic University, funded by the Foundation for Science and Technology under grant number PEst-OE/FIL/UI0683/2014.

## ORCID

Eleonora C. V. Costa  <http://orcid.org/0000-0002-8586-7775>

Rosa Oliveira  <http://orcid.org/0000-0002-3456-0853>

Domingos Ferreira  <http://orcid.org/0000-0002-8258-047X>

M. Graça Pereira  <http://orcid.org/0000-0001-7987-2562>

## References

- Adu-Oppong, A., Grimes, R., Ross, M., Risser, J., & Kessie, G. (2007). Social and behavioral determinants of consistent condom use among female commercial sex workers in Ghana. *AIDS Education and Prevention*, 19(2), 160–172. doi:10.1521/aeap.2007.19.2.160
- Baron, R. M., & Kenny, D. A. (1986). The Moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173–1182. doi:10.1037/0022-3514.51.6.1173

- Bobrova, N., Sergeev, O., Grechukhina, T., & Kapiga, S. (2005). Social-cognitive predictors of consistent condom use among young people in Moscow. *Perspectives on Sexual and Reproductive Health*, 37, 174-178. doi:10.1363/3717405
- Chandran, T. M., Berkvens, D., Chikobvu, P., Nostlinger, C., Colebunders, R., Williams, B. G., & Speybroeck, N. (2012). Predictors of condom use and refusal among the population of Free State province in South Africa. *BMC Public Health*, 12, 381. doi:10.1186/1471-2458-12-381
- Corneille, M. A., Zyzanski, L. E., & Belgrave, F. Z. (2008). Age and HIV risk and protective behaviors among African American women. *Journal of Black Psychology*, 34(2), 217-233. doi:10.1177/0095798408314139
- Costa, E., & McIntyre, T. (2002). *Portuguese translation and adaptation of the questionnaire from the Women's Health Empowerment Project*. Unpublished Manuscript, Department of Psychology, Minho University, Braga, Portugal.
- Crosby, R. A., DiClemente, R. J., Salazar, L. F., Wingood, G. M., McDermott-Sales, J., Young, A. M., Rose, E. (2013). Predictors of consistent condom use among young African American Women. *AIDS and Behavior*, 17(3), 865-871. doi:10.1007/s10461-011-9998-7
- Elifson, K., Klein, H., & Sterk, C. (2010). Predictors of unsafe sex among at-risk heterosexual women. *Women's Health Urban Life*, 9(2), 80-106.
- Essien, E., Ogangbade, G., Ward, D., Ekong, E., Ross, M., Meshack, A., & Holmes, L. (2007). Influence of educational status and other variables on human immunodeficiency virus risk perception among military personnel: A large cohort finding. *Military Medicine*, 172(11), 1177-1181.
- French, S. E., & Holland, L. J. (2013). Condom negotiation strategies as a mediator of the relationship between self-efficacy and condom use. *The Journal of Sex Research*, 50(1), 48-59. doi:10.1080/00224499.2011.626907
- Hobfoll, S. E., Jackson, A. P., Lavin, J., & Schroder, K. E. E. (2002). The effects and generalizability of communally-oriented HIV/AIDS prevention versus general health promotion groups for single, inner-city women in urban clinics. *Journal of Consulting and Clinical Psychology*, 70, 950-960. doi:10.1037/0022-006X.70.4.950
- Instituto Nacional de Estatística. (2012). *Estatísticas Demográficas* [Demographic Statistics]. INE, L.P., Lisboa - Portugal, 2009.
- Instituto Nacional de Saúde Doutor Ricardo Jorge. (2013). *Infecção VIH/SIDA: A Situação em Portugal a 31 de Dezembro de 2013*. [HIV/AIDS: The situation of Portugal in 31 December 2013]. Lisboa: Instituto Nacional de Saúde Doutor Ricardo Jorge (Departamento de Doenças Infecciosas do INSA). Unidade de Referência e Vigilância Laboratorial Epidemiológica. Núcleo de Vigilância Laboratorial de Doenças Infecciosas, L.P.
- Instituto Nacional de Saúde Doutor Ricardo Jorge & Instituto Nacional de Estatística. (2009). *Inquérito Nacional de Saúde 2005/2009*. [National Health Survey 2005/2009]. INE, L.P. / INSA, L.P., Lisboa - Portugal, 2009.
- Juliana, A., Ekama, O., & Innocent, O. (2013). Literacy and HIV/AIDS awareness, prevention and management among women in Cross River State. *Journal of AIDS and HIV Research*, 5(10), 387-390. doi:10.5897/JAHR12.082
- Ma, Q., Ono-Kihara, M., Cong, L., Pan, X., Xu, G., Zamani, S., ... Kihara, M. (2009). Behavioral and psychosocial predictors of condom use among university students in Eastern China. *AIDS Care*, 21(2), 249-259. doi:10.1080/09540120801982921
- Mullings, J., Marquart, J., & Brewer, V. (2000). Assessing the relationship between child sexual abuse and marginal living conditions on HIV/AIDS-related risk behavior among women prisoners. *Child Abuse & Neglect*, 24, 677-688.
- Protogerou, C. & Turner-Cobb, J. (2011). Predictors of non-condom use intentions by university students in Britain and Greece: The impact of attitudes, time perspective, relationship status, and habit. *Journal of Child & Adolescent Mental Health*, 23(2), 91-106. doi:10.2989/17280583.2011.634548
- Schroder, K. E. E., Hobfoll, S. E., Jackson, A. P., & Lavin, J. (2001). Proximal and distal predictors of AIDS risk behaviors among inner-city African American and European American women. *Journal of Health Psychology*, 6, 169-190. doi:10.1177/135910530100600207
- Shai, N., Jewkes, R., Levin, J., Dunkle, K., & Nduna, M. (2010). Factors associated with consistent condom use among rural young women in South Africa. *AIDS Care*, 22(11), 1379-1385. doi:10.1080/09540121003758465