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Background

- Anal cancer, and its precursor lesion, anal intraepithelial neoplasia (AIN), are strongly associated with high-risk (HR) human papilloma virus (HPV)¹ and with HIV infection.
- Rates for anal cancer have been increasing particularly in HIV-positive individuals and men who have sex with men (MSM)².
- Although MSM have higher risk of anal cancer than the general population, more research that studies the burden of HPV and AIN in Puerto Rico and Portugal is needed³, given the high burden of HIV infection in both countries^{4,5}.
- This study aimed to describe the magnitude of the associations between 1) HIV and 2) anal HR-HPV infection with AIN, in a clinic-based multi-centric sample of men from Puerto Rico and Portugal.

Methods

Clinics:

- The Anal Neoplasia Clinic (ANC) of the University of Puerto Rico Comprehensive Cancer Center is located in San Juan, Puerto Rico and offers services in the diagnosis and treatment of anal lesions for men and women; data available from Oct 2014-May 2018.
- The CheckpointLX center is located in Lisbon, Portugal, and offers counseling, screening and treatment of sexually transmitted infections (STIs) in MSM; data available from Jan 2012-Jan 2017.

Study design: Cross-sectional study.

Study population: Men aged ≥ 18 years from the ANC (n=311) and CheckpointLX center (n=209) who underwent anal pap (cytology) and had data on HIV status were eligible.

Data collection:

- Anal samples were collected from the anal canal using a Dracon swab immersed in a liquid cytology medium.
- AIN were classified using the Bethesda system as follows: (1) negative (No SIL), (2) atypical squamous cells of undetermined significance or low grade squamous intraepithelial lesion (ASCUS/LSIL), and (3) atypical squamous cells cannot excluded high grade squamous intraepithelial lesions or high grade squamous intraepithelial lesion (ASC-H/HSIL).
- HPV detection and genotyping of HPV-16, HPV-18, and other HR types (31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 66 and 68) were done using PCR based methods.

Statistical analysis:

- Descriptive analysis were used to describe sociodemographic, clinical, and behavioral characteristics of the study population.
- Bivariate analysis includes contingency tables, chi-square and Fischer's exact test analysis to describe associations between HIV and HR-HPV with AIN, in both sites.
- Multinomial logistic regression were done to compute unadjusted and adjusted odds ratios (OR) with a 95% confidence to estimate the associations of interest.
- Data was analyzed using STATA 13.

Results

Table 1. Characteristics of the study population.

Variables	Puerto Rico: ANC (n=311) n (%)	Portugal: CheckpointLX (n=209) n (%)
Mean Age \pm SD	40.9 \pm 12.6	31.8 \pm 8.3
HIV Infection		
No	44 (14.2)	186 (89.0)
Yes	267 (85.9)	23 (11.0)
Sexual practice*		
Heterosexual	177 (58.0)	191 (92.3)
Homosexual	94 (30.8)	16 (7.7)
Bisexual		
Anal cytology		
Negative	83 (26.7)	197 (94.3)
ASCUS/LSIL	193 (62.1)	11 (5.3)
HSIL/ASC-H	35 (11.3)	1 (0.5)

*Some missing values due to incomplete information in the medical record.

Figure 2: Prevalence of anal HR-HPV by HIV and AIN status among men from the study population.

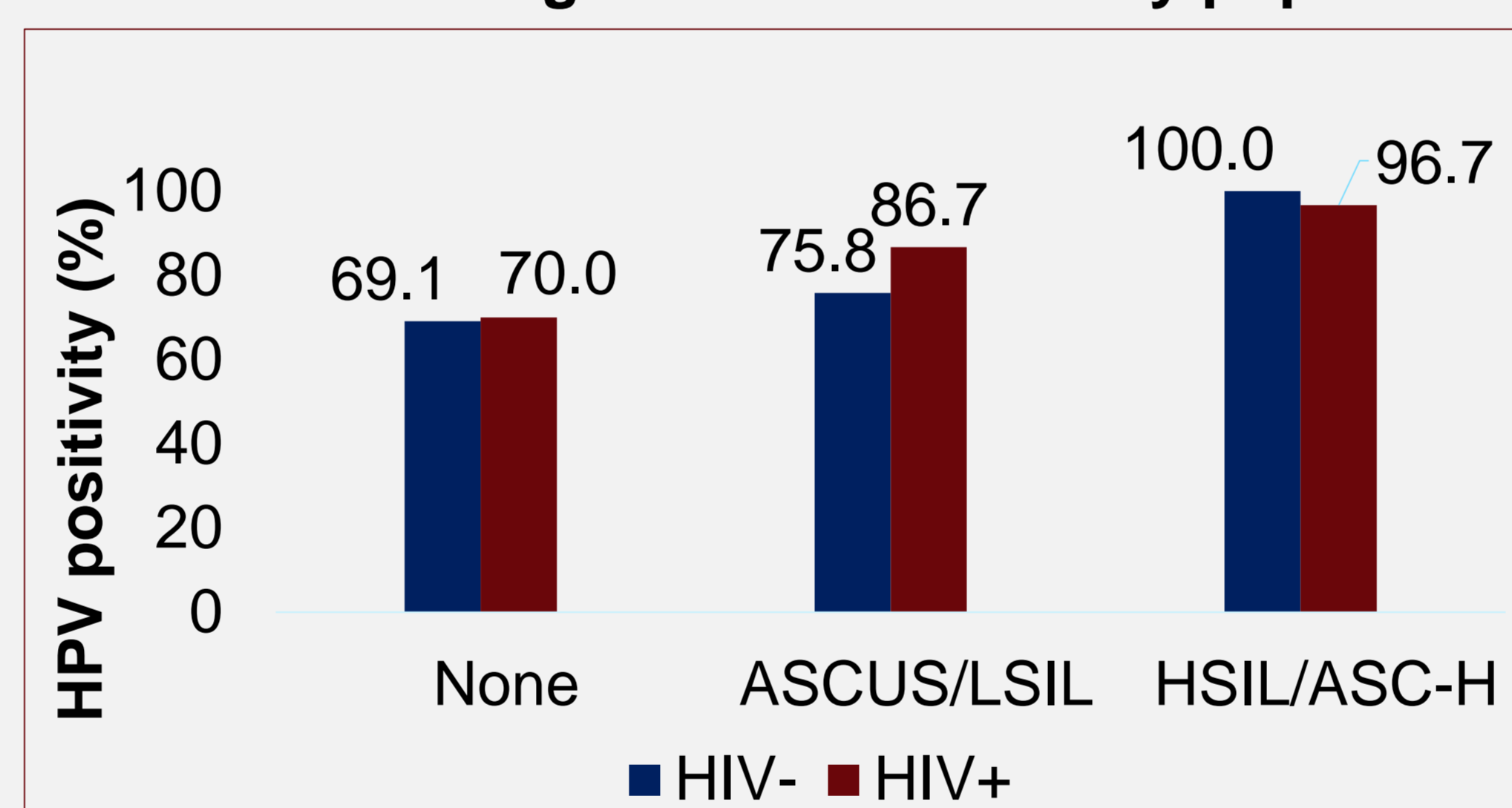


Figure 1: Prevalence of anal HR-HPV infection by HIV status among study population

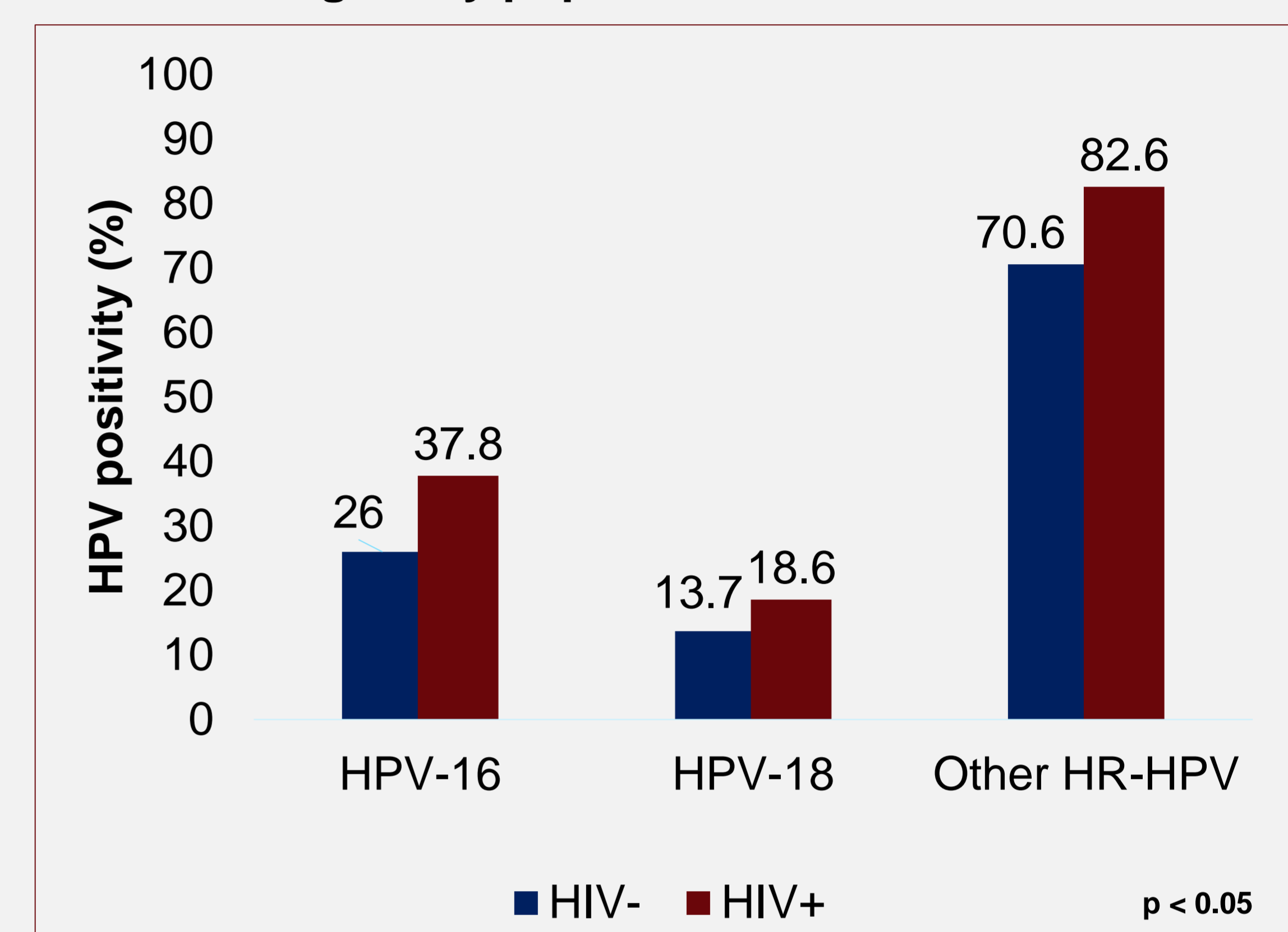


Table 2: Magnitude of the association between HR-HPV, HIV and severity of AIN among the study population.*

	OR none vs ASCUS/LSIL (95% CI)	OR none vs HSIL/ASC-H (95% CI)
Anal HR-HPV Infection		
HR-HPV-	1.0	1.0
HR-HPV+	2.7 (1.60-4.53)	14.83 (1.95-112.44)
HIV Status		
HIV-	1.0	1.0
HIV+	10.97 (6.86-17.54)	17.15 (5.72-51.39)

* Adjusted by age and sexual practice.

Conclusions and Recommendations

- The prevalence of HR-HPV was higher in HIV-infected individuals and increased by AIN severity status. Similar results have been showed in previous studies⁷. HR-HPV infection and AIN were independently strongly associated with AIN, with stronger associations observed for high grade lesions.
- High prevalence of HR-HPV and AIN evidences the need for anal cancer prevention strategies in these populations, including increased HPV vaccination and anal cancer screening efforts, and highlight the need of specialized clinics that diagnose and treat AIN among high-risk populations. More research in this area is needed in this area, as well as screening guidelines among high-risk populations.

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