

Risk factors for incident infection with oncogenic types of human papillomavirus among Brazilian women

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Objective

- To examine sexual risk factors for acquisition of high-risk oncogenic human papillomavirus types (HR-HPV) among women



Ludwig-McGill Cohort Study

- Prospective longitudinal cohort study
- Recruitment of 2,462 female patients attending cervical cancer screening at a maternal and child health clinic in São Paulo, Brazil between 1993 and 1997 and followed for up to 10 years
- Cervical specimens and sexual risk factor information measured by interview at months 0, 4, 8, 12 and every 6-12 months thereafter
- HPV-DNA testing of cervical specimens for 39 genotypes by MY09/11 PCR protocol



Outcome

- Acquisition of new high-risk oncogenic HPV types (HR-HPV) at follow-up
- “New type” defined as one not observed at previous study visits
- HPV types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, and 68 were classified as HR-HPV



Risk factors examined

- Time-dependent risk factors
 - marital status
 - number of sexual partners since last interview
 - number of partners in lifetime
 - acquisition of a new partner since last interview
 - frequency of sexual activity since last interview
 - condom use since last interview
 - use of oral contraceptives since last interview
 - vaginal discomfort since last interview
- Time-independent risk factors
 - report that partner was not monogamous in 1 year prior to enrolment
 - age at first vaginal intercourse



Sample restrictions

- Total of 2,426 women enrolled
- Study sample restricted to women who attended a minimum of 2 follow-up visits
- Further restricted to follow-up visits for which there were complete information on outcome and risk factors
- Sample for analysis:
 - 1833 women
 - 7,697 follow-up intervals up to visit 7 (48 months)
 - 7,879 person-years of follow-up



Analysis

- Effects of sexual risk factors measured as odds ratios (OR)
- Longitudinal logistic regression
- Accounted for repeated measures using generalized estimating equations (GEE) with autoregressive correlation structure
- 95%CI estimated using empirical standard errors



Characteristics of participants at enrolment (n=1,833)

Mean age (SD)	33.1 (8.5)
Ever smoked	50.79%
Marital status	
Married/common-law	82.60%
Single, never married	9.77%
Separated/divorced/widowed	7.58%
Median age first intercourse (IQR)	17 (15-20)
Median number of sex partners in lifetime (IQR)	2 (1-3)
Number of partners in past year	
None	4.88%
One	90.85%
Two or more	4.27%
Report that partner was not monogamous in past year	15.60%



HPV prevalence and incidence

	Prevalence at enrolment (n=1830 women)	Cumulative incidence at 48 months (n=7,697 follow-up visits)	Incidence per 100 woman-years (n=7,879 woman-years)
Any HPV	16.23%	33.22%	11.9
HR-HPV	9.29%	23.35%	6.7



Independent risk factors for incident HR-HPV, multiple logistic regression (GEE)

	OR _{adjusted}	(95%CI)
Living with partner (married/common-law)	0.63	(0.48, 0.84)
2+ sex partners since last interview	1.79	(1.18,2.71)
New partner since last interview	1.71	(1.16,2.54)
Frequency of intercourse since last interview		
[0-2.5) times/month	1.00	
[2.5-8) times/month	0.78	(0.42,1.47)
[8-12) times/month	0.69	(0.31,1.52)
12+ times/month	0.31	(0.11,0.90)

Adjusted for all variables shown and age, number of sex partners in lifetime, and partner not monogamous in year prior to enrolment.

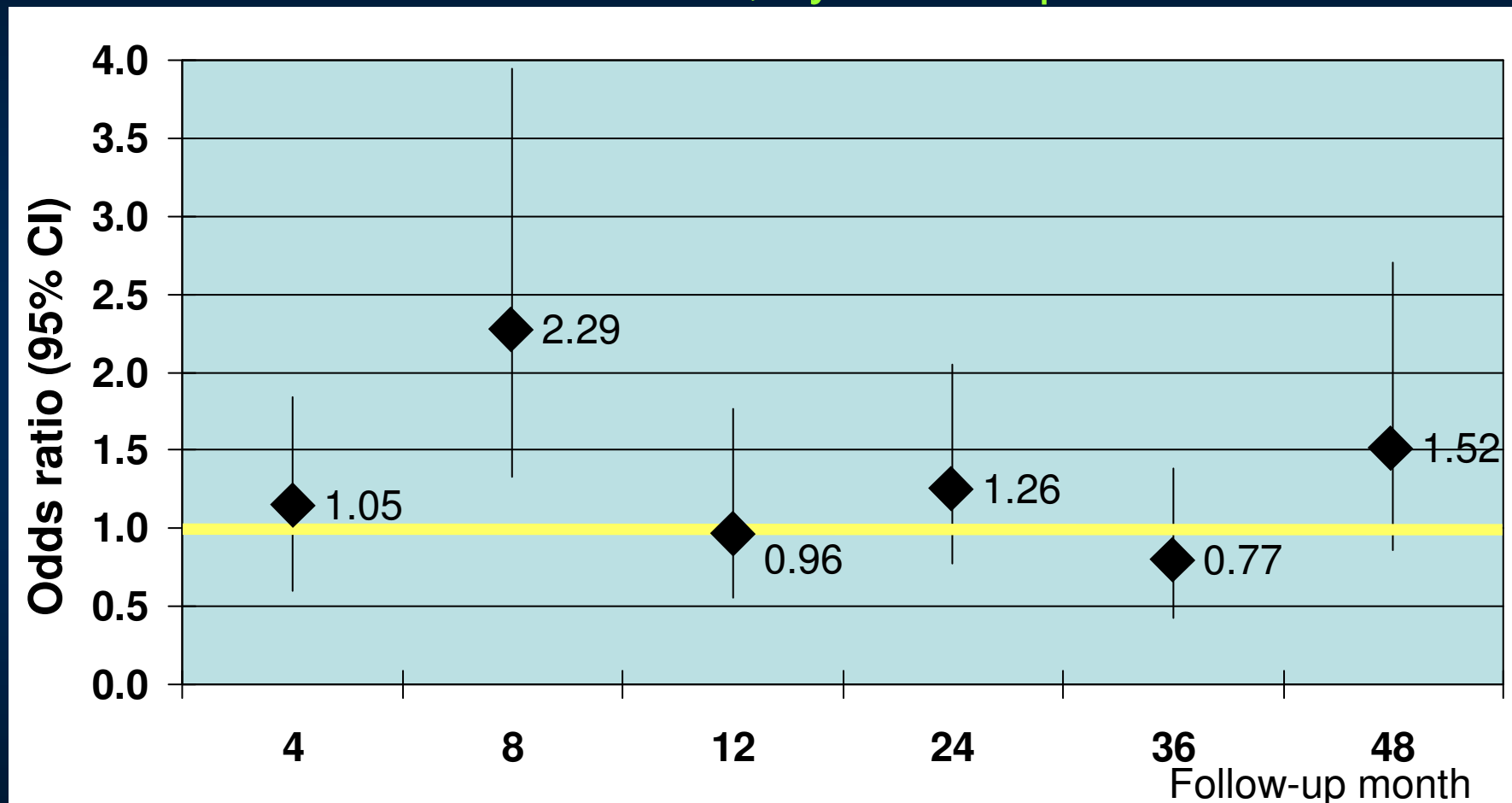


Rates of incident HR-HPV infection related to number and nature of recent partners

	# HR-HPV events	# person-years (PY)	Incidence rate per 100PY
2+ partners	84	448	18.9
New partner(s)	108	592	18.2
Not living with partner	195	1,448	13.5
Living with partner, only 1 partner, not new	288	6,106	4.7



Odds ratio estimates for report that male partner was not monogamous in 1 year prior to enrolment and incident HR-HPV, by follow-up month



Limitations

- Measurement error
 - E.g., non-monogamous partner, condom use, vaginal discomfort
 - True HR-HPV acquisition or re-emergence of latent infection?
- Unmeasured risk factors
 - HPV status of male partners



Interpretation

- Detection of a new HR-HPV infection was related to the number and nature of women's recent male partners
- Though inconclusive, data suggest that behaviour of male partners is important and that timing of measurement of their behaviour is important for HR-HPV acquisition

Poster 334: Evidence of HPV transmission among couples who recently initiated a sexual relationship: Results from the HITCH Cohort Study



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