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Background

- Oropharyngeal cancer (OC) is a growing problem & often presents late
- Associated with sexual behaviour & poor dental hygiene
- Oral sex increasingly practiced
- 45%–100% OCs are HPV positive¹
- Currently no validated screening test for OCs
- Few data available from Australia
- Dentists potentially the first health care workers to identify OCs

We therefore set out to pilot the collection of relevant demographic and behavioural data in a population attending two general dental surgeries, coupled with assessment of oral hygiene and sampling for HPV in oral rinses.



<https://www.theguardian.com/film/2013/jun/02/michael-douglas-oral-sex-cancer>

Methods

Following informed consent, participants aged ≥18 years provided 10ml saline oral rinses. Oral hygiene was assessed by the dental surgeon using a standardised Oral Hygiene Index (OHI). Participants completed demographic/behavioural questionnaires.

Human beta globin gene (HBG) was used to assess sample adequacy and then the sample was tested for HPV genotypes using:

- an in-house assay adopted from Gravitt²
- INNO-LiPA® HPV Genotyping (Innogenetics, Gent, Belgium)
- Abbott Real Time High Risk HPV test (Des Plaines, IL, USA)

Results

Demographics

300 participants were enrolled between July 2015 and February 2016

43.7% were males and 79.6% were from Sydney

Median age: 50.0 years (range 19-87)

6.3% reported a history of STIs

1.6% of 125 tested were infected with HIV

45% gave a history of warts anywhere on their body

16.7% of 167 females reported at least one abnormal cervical Pap test

5.8% recalled being vaccinated against HPV

36% had never practiced oral sex

59.9% female participants reported oral sex practices:

- 57.5% exclusively with males

- 2.4% exclusively with females

67.9% male participants reported oral sex practices:

- 64.1% exclusively with females

- 3.8% exclusively with males

Oral Hygiene Index (OHI)

77.7% had good oral hygiene (OHI≤1)

23.7% reported current bleeding from gingivae

Genotypes detected in oral rinse specimens

HBG was detected in all oral rinse samples.

Results of the two testing assays are shown in Table 1.

HPV genotypes 16, 18, 35, 51, 52, 58 and 66 were detected.

INNO-LiPA test

HPV in six (2.0%) of 300 tested participants:

HPV 16, 35, 51, 58, 66 in one participant each
HPV 18 + 52 detected in one further participant.

Abbott test

HPV was found in five (1.7%) of 294 tested participants:

HPV type 18 in one participant

Other high risk HPV in four participants

Table 1: Genotyping results

STUDY ID	HBG RESULT	IN-HOUSE HPV SCREENING ASSAY RESULT	INNO-LiPA GENOTYPE RESULT	ABBOTT TEST RESULT
1031	pos	neg	HPV 51	OTHER HR HPV
2010	pos	pos	HPV 66	OTHER HR HPV
1001	pos	equivocal	HPV 58	OTHER HR HPV
2002	pos	neg	HPV 35	OTHER HR HPV
1161	pos	Pos	HPV 18,52	HPV 18
1228	pos	Pos	HPV untypeable/HPV 16 on repeat	Neg

Participants with oral HPV detected

Six participants had HPV detected in oral rinse specimens. Details are shown in Table 2.

Table 2: Characteristics of participants with HPV detected in oral rinse specimen, compared to those with no HPV detected

Characteristics	HPV detected (n=4)		No HPV detected (n= 296)	
	Male	Female%	Male	Female
HPV detected	6 (4.5%)	0	125 (95.5%)	167 (100.0%)
Age mean	60.3	-	48.8	48.1
University education	4 (66.6%)	-	77 (61.6%)	98 (58.7%)
Postgraduate	16.6	-	24 (19.2%)	29 (17.4%)
Self-employed	3 (50.0%)	-	10 (8.0%)	8 (4.8%)
Employed in health care	1 (16.6%)	-	5 (4.0%)	28 (16.7%)
Retired	2 (33.3%)	-	12 (9.6%)	19 (11.4%)
Currently smoking	2 (33.3%)	-	25 (20.0%)	36 (21.5%)
Never smoked	4 (66.6%)	-	43 (34.4%)	77 (46.1%)
History of STIs Known to be HIV infected	0.0	-	12(9.9%)	7(%)4.2
History of warts anywhere	1 (16.6%)	-	62(49.6)	71(42.5%)
History of HPV vaccination	0.0	-	2(1.6%)	13(8.3%)
Ever practiced oral sex	4 (66.6%)	-	85 (68.0%)	101 (60.5%)
Mean OHI	1.1	-	0.71	0.7

Conclusions

This small, proof of concept study provides the first data regarding detection of HPV in oral rinse specimens from an Australian general dental population. Participants were remarkably willing to disclose potential risk activities, and to provide data regarding sexual practices.

High risk HPV genotypes were only detected in oral rinse specimens from males.

The determination of associated risk factors requires a larger sample.

This study suggests a possible future role for dentists in identifying individuals potentially at risk of oropharyngeal cancer.

References

1. Ramqvist T, Dalianis T. Oropharyngeal cancer epidemic and human papillomavirus. *Emerg Inf Dis* 2010;**16(11)**:1671-7
2. Gravitt PE, Peyto CL, Alessi TQ *et al.* Improved amplification of genital human papillomaviruses. *J Clin Micro* 2000;**38(1)**:357-61



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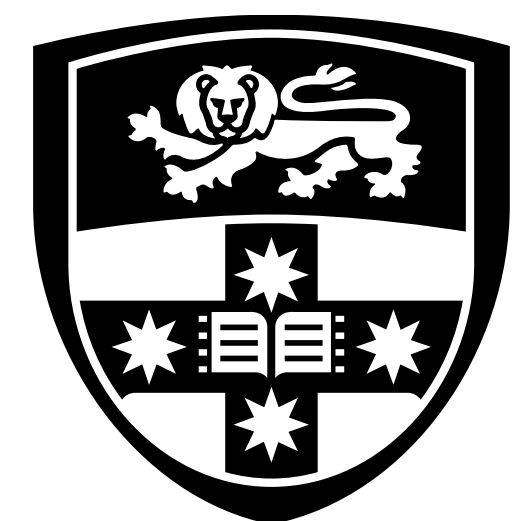
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