## SHORT REPORT

**Awareness of human papillomavirus among women attending a well woman clinic**

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**Objective:** To assess the level and accuracy of public understanding of human papillomavirus (HPV) in the United Kingdom.

**Methods:** Women attending a well woman clinic were asked to complete a questionnaire assessing HPV awareness and specific knowledge about the virus.

**Results:** Questionnaires were completed by 1032 women, of whom 30% had heard of HPV. Older women, non-smokers, and those with a history of candida, genital warts, or an abnormal smear result were more likely to have heard of HPV. Even among those who had heard of HPV, knowledge was generally poor, and fewer than half were aware of the link with cervical cancer. There was also confusion about whether condoms or oral contraceptives could protect against HPV infection.

**Conclusions:** In this relatively well educated sample, awareness and knowledge of HPV were poor. Public education is urgently needed so that women participating in cervical cancer screening are fully informed about the meaning of their results, especially if HPV testing is soon to be introduced.

Human papillomavirus (HPV) is widely acknowledged to be the most prevalent sexually transmitted infection (STI) in the United States and elsewhere. High-risk types of HPV are a necessary though not sufficient cause of the vast majority of cervical cancers. Studies in the United States have found low awareness of HPV among women in university and healthcare settings. In the United Kingdom, HPV testing is recommended for the triage of women with borderline smear results. A similar system is being considered in the United Kingdom, and HPV testing in primary screening has also been suggested.

Studies in the United States have found low awareness of HPV among women in university and healthcare settings. In the United Kingdom, 70% of female university employees surveyed had never heard of the virus and in a representative population sample, fewer than 1% recalled HPV as a risk factor for cervical cancer (unpublished data).

It is critical that women participating in cervical screening are aware of HPV and its causal role in cervical intraepithelial neoplasia (CIN) and cancer. Information about HPV has been found to cause confusion among women with no prior knowledge of the virus or its link with cervical cancer and smear results which mention “wart virus” are poorly understood.

We assessed HPV knowledge among women attending a well woman clinic to gain an understanding of the level and accuracy of public awareness.

**METHODS**

**Participants**

Participants were women attending the Margaret Pyke Centre, an NHS well woman clinic in central London. Speaking English was the only inclusion criterion. Participants’ reasons for attending the centre are shown in table 1 and are broadly representative of the clinic as a whole.

**Measures**

Knowledge of HPV was measured using a series of questions similar to those used in other studies. Women who reported having heard of HPV were asked how they had heard about it. They also responded to six statements about HPV with “true,” “false,” or “don’t know” (see table 2).

Demographic characteristics and STI and cervical screening history were also assessed with simple questions.

**Procedure**

Women attending the centre over 15 months between 2000 and 2002 were asked to complete a survey about cervical screening and HPV self sampling. Selected clinic sessions were targeted each week to ensure that women attending for different reasons were included. Those attending for smear tests were invited to participate in a trial of HPV self testing, the results of which will be presented elsewhere. The study was approved by the University College London Hospitals local research ethics committee.

**RESULTS**

**Characteristics of the sample**

The response rate was high, with approximately 80% of women who were asked agreeing to complete a questionnaire. Those who declined mostly did so because of time constraints. Of the 1045 women completing the questionnaire, 13 did not respond to the question about having heard of HPV and are excluded from all analyses, leaving a sample size of 1032. Participants were representative of the clinic population being predominantly young (mean age 30.2 (SD 7.7)), white, well educated, and in full time employment (see table 1). Equal numbers of women were married/cohabiting (47%) and single (47%). Most reported having had between one and three sexual partners in the past year and 27% reported a previous diagnosis of an STI.

**HPV knowledge**

About 30% of women (316/1032) had heard of HPV. There were significant, but generally small associations with demographic characteristics (see table 1). Awareness of HPV was higher in older (47%) than younger women (25%). Women reporting a history of candida or genital warts had higher awareness of HPV, as did those who reported ever having an abnormal smear result. Not surprisingly, knowing someone who had had HPV was associated with greater awareness. Awareness was lower among smokers (22%) than non-smokers (35%). When the significant predictors were entered into a logistic regression model (see table 1), all remained significant independent predictors of awareness of HPV except experience of an abnormal smear result.

Even among women who had heard of HPV (n=316), knowledge was poor (see table 2). They generally knew that HPV was sexually transmitted and could be carried by men.
but fewer than half knew that it is the main cause of cervical cancer, and only a third knew that genital warts do not cause cervical cancer. The majority believed condoms to be protective and, worryingly, only half knew that the contraceptive pill does not protect against HPV infection. The most common sources of information were the media or a general practitioner. Women who had heard about it from an "other" source cited a wide variety including pamphlets, sexual health classes, through having had HPV in the past, or having a medical background.

**DISCUSSION**

This is the first study to evaluate HPV knowledge among women in a primary healthcare setting in the United Kingdom. In this predominantly young and sexually active population, only 30% reported awareness of HPV, and knowledge was generally poor even among those who had heard of it, consistent with the findings of previous US and UK studies. Given that the sample was highly educated, and there was some evidence of a trend towards poorer knowledge among less educated women, it is likely that knowledge in the general population is even lower. However, the age effect would be in the opposite direction, as the sample was skewed towards younger women who had lower awareness.

Awareness of HPV was associated with experience of candida, genital warts, or an abnormal smear, indicating that attending for treatment for these might expose women to information about HPV. Knowing someone who has had HPV was another predictor of awareness, although women generally cited the media or their general practitioner as sources of knowledge.

Awareness was lower among smokers, which is of concern as smoking increases the risk of cervical abnormalities and cancer among women with HPV infection. Raising awareness of the virus and the role of cigarette smoking in viral persistence and CIN progression among smokers should be a priority.

Women’s uncertainty about whether the pill protects against HPV partly reflects their lack of knowledge about the sexually transmitted nature of the virus. Of those who knew...
that HPV is sexually transmitted, 70% were aware that the pill is not protective, compared with only 32% of those who did not know or were not sure that HPV is an STI. It is also possible that the protective role of the pill in other gynaecological cancers might have influenced women's beliefs about its impact on HPV risk.

The majority of women believed that condoms are protective against HPV, although the evidence for this is unclear. It seems likely that condoms provide some protection, but the message about condom use will need to be clarified so that women can be given consistent information.

Caution must be exercised when drawing conclusions beyond our sample, as it was not representative of the UK population. Being younger, better educated, and more predominantly white. However, low HPV awareness was consistent with other studies, which lends credence to this finding.

Public education about HPV is essential, in order that women participating in cervical screening understand the possible results of the smear test, particularly if HPV testing is introduced. Clear and consistent messages about HPV transmission, cancer risk, and protection must be developed in order that women are fully informed when they participate in cervical screening.

ACKNOWLEDGEMENTS

This study was funded by Cancer Research UK. We would also like to thank the staff and patients at the Margaret Pyke Centre for their time and cooperation in the study.

CONTRIBUTORS

AS, JW, and LC conceived the study and obtained funding; KM and SF designed the measures and conducted the fieldwork; JW contributed to the fieldwork, carried out the data analysis and wrote the first draft of the text; all authors commented on drafts and contributed to the final manuscript.

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Accepted for publication 13 February 2003

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