

Web Table 1- Study characteristics of qualitative studies

Study/Country	Setting	Data Collection Method, Date	Participants	Method of Analysis	Key questions	Key Results
Henderson et al 2011 , ‘A false sense of security’? Understanding the role of the HPV vaccine on future cervical screening behaviour: a qualitative study of UK parents and girls of vaccination age, UK	39 schools and 4 General Practices, South-East England	Semi-structured interviews and small group discussion Parents-July 2009-June 2010, Girls- Oct 2008-April 2010	37 parents 44 girls (14 unvaccinated, 30 vaccinated) Aged 12-13 years	Thematic combined with constant comparison of data	The level of protection offered by the HPV vaccine Decision-making in the context of awareness of the need for future cervical screening Information needs in relation to the HPV vaccine and future cervical screening	Uncertainty existed around the level of protection offered by the HPV vaccine. Girls were generally unclear of their need to attend screening in the future
Hilton et al 2011 , “I thought cancer was one of those random things. I didn’t know cancer could be caught. . .” Adolescent girls’ understandings and experiences of the HPV programme in the UK, UK	Purposive recruitment, using adverts, leaflets, websites	18 focus groups (9 in Scotland, 9 in England) Dec 2009-May 2010	87 School girls Aged 12-18 years	Framework	Knowledge and understandings about HPV infection and its link to cervical cancer Understandings and concerns about HPV vaccination Vaccination experiences Understandings of the importance of cervical cancer screening	Poor knowledge of HPV, only half were aware of the link to cervical cancer. HPV prevalence is underestimated and as a result girls assess their own likelihood of contracting HPV as low, believing that HPV infection is only common among people who have multiple sexual partners. Just over half were aware of the need for cervical screening in the future

Racktoo et al 2009 , 'HPV? Never heard of it' Students and the HPV vaccine, UK	Northern city high school	4 focus groups, each with 5-6 students (Date of study not recorded)	21 girls Aged 12-13 years	Framework	Knowledge about HPV Concerns about the HPV vaccine Acceptability of the vaccination programme Information about HPV and the HPV vaccine	HPV and HPV vaccine knowledge is poor. Vaccine uptake is still high Better ways to deliver information are needed
Williams et al 2011 , Attitudes towards human papillomavirus vaccination: a qualitative study of vaccinated and unvaccinated girls aged 17–18 years, UK	One state school and one state further education college	Face to face interviews March-May 2009	10 girls (5 vaccinated, 5 unvaccinated) Aged 17-18 years old	Framework	Knowledge of cervical cancer and HPV, their own and friends' experiences of and attitudes towards the HPV vaccine, and their decision to have it or not	Knowledge of HPV and the HPV vaccine was limited, some had not even heard of HPV Poor understanding of link to cervical cancer Misconceptions about HPV vaccine being for those that are sexually promiscuous

Web Table 2- Study characteristics for survey studies

Study/Country	Setting	Data Collection Method, Date, Response Rate	Participants	Key questions	Key results
Bowyer et al 2013, Knowledge and awareness of HPV and the HPV vaccine among young women in the first routinely vaccinated cohort in England, UK	Thirteen state schools in London	September 2011 Self-completed questionnaire RR-98%	1047 participants Year 11 females Aged 15-16years old	Awareness and knowledge of HPV	80% were aware of HPV No difference were seen in ethnicity/religion/ social class, however vaccinated participants were more likely to have heard of HPV Only three HPV knowledge items were answered correctly by over 60% of respondents; HPV can be passed on during sex (70.3%), having many sexual partners increases the risk of getting HPV (63.1%) and the vaccine requires three doses (69.8%)
Di Giuseppe et al 2008, Human papillomavirus and vaccination: knowledge, attitudes, and behavioural intention in adolescents and young women in Italy, Italy	Two Universities and six public secondary schools in Campania region, in the South of Italy	March-May 2007 Self-completed questionnaire RR- 99.5%	1341 participants in total No breakdown of school and university students Median age 19 years (range 14-24 years)	HPV knowledge Perceived risk of contracting HPV Sexual behaviour Sources of information	29.8 % reported that they have heard of HPV Only half had heard of cervical cancer 42% knew that the HPV vaccine was a preventative measure

<p>Forster et al 2012, Interest in having HPV vaccination among adolescent boys in England, UK</p>	<p>College, South East England</p>	<p>March-September 2009 Self completed questionnaire RR- 89%</p>	<p>528 males, Aged 16-18 years</p>	<p>Knowledge of HPV (only have you heard of it) Intention to be vaccinated and reasons for and against</p>	<p>52% of boys had previously heard of HPV 41% said they intended to have HPV vaccination if it were available to them, 49% were unsure and 10% said they would not have it. None of the demographic factors were associated with increased awareness of HPV or intention to have the vaccine.</p>
<p>Gottvall et al 2009, High HPV vaccine acceptance despite low awareness among Swedish upper secondary school students. Sweden</p>	<p>24 classes, from one private and six public upper secondary schools, representing both vocational (31%) and theoretical (69%) educational programmes.</p>	<p>Autumn 2008 Self completed questionnaire RR- 86%</p>	<p>608 participates in total 347 females and 261 males Aged 15-16 years</p>	<p>General knowledge of sexually transmitted diseases Sources of information Knowledge of HPV and HPV vaccine.</p>	<p>88% answered questions regarding HPV knowledge with 'Don't know'. Only 13.5 % had heard of HPV and 5.8% of the HPV vaccine, girls are more likely to have heard of the vaccine Intention to use a condom decreased if the students themselves were to be vaccinated and they believed that other adolescents would share this view</p>

<p>Hoglund et al 2009, Knowledge of human papillomavirus and attitudes to vaccination among Swedish high school students. Sweden</p>	<p>Five High Schools in Sweden</p>	<p>2007 Self- completed questionnaire RR- 80%</p>	<p>459 students 250 females and 209 males Aged 15-20 years Mean age 16.2 years</p>	<p>Knowledge of sexually transmitted diseases Knowledge of HPV Sexual behaviours Attitudes towards HPV vaccination</p>	<p>More than half of the students had had sexual intercourse, girls more than boys. HIV was noted as the most common STI, only one person mentioned of HPV. Only 5% have ever heard of HPV. No difference in knowledge between boys and girls. They would be less interested in using condoms if vaccinated against HPV</p>
<p>Lenselink et al 2008, Young adults and acceptance of the human papillomavirus vaccine, Netherlands</p>	<p>2 university's and 1 non-university technical college</p>	<p>August- September 2005, Self- completed questionnaire RR- 91%</p>	<p>600 students 377 females and 223 males Aged 19-25 years Mean age 19.8 years</p>	<p>Knowledge of HPV, cervical carcinoma, Pap smears, and acceptance of HPV vaccination</p>	<p>17.7% in total had heard of HPV Medical students had more knowledge than other students Misconception existed regarding role of family history as risk factor for cervical cancer Only lower age and female gender were associated with vaccine acceptance Education and knowledge were not associated with acceptance</p>
<p>Marek et al 2011, Adolescents' awareness of HPV infections and attitudes towards HPV vaccination 3 years following the introduction of the HPV vaccine in Hungary, Hungary</p>	<p>Public primary and secondary schools from 16 Hungarian cities and towns, covering each of the 7 administrative regions of Hungary</p>	<p>January and May 2009 Self- completed questionnaire RR > 90%</p>	<p>1769 school students 596 were students of primary school Aged 12–14 years 1173 attended secondary school Aged 15–19 years</p>	<p>HPV knowledge Cervical cancer knowledge Routes of transmission and prevention of sexually transmitted diseases Preferred information sources Attitudes and beliefs concerning screening & HPV vaccination</p>	<p>20% of male and 30% of female primary school students had previously heard of HPV 30% of male and 50% of female secondary school students had heard of HPV. Half of the participants thought that 'vaginal intercourse' was the only way of spreading HPV</p>

<p>McCusker et al 2013, Gaps in detailed knowledge of human papillomavirus (HPV) and the HPV vaccine among medical students in Scotland UK</p>	<p>University of Glasgow</p>	<p>Nov 2008 & Nov 2009 Self-completed questionnaire RR- 100% & 98.2%</p>	<p>2008- 150, 2009-217 1st year medical students Aged 17-20 years</p>	<p>Level of HPV knowledge The effect of HPV public information campaign on knowledge If men and women acquire similar level of knowledge from the same sources</p>	<p>96% & 92% (2008 & 2009) of females and 100% & 86 % of males were aware that HPV is sexually transmitted. 44% and 39% of females thought that 80-100% of cervical cancer is associated with HPV. (Male 46% & 35%). 50% & 73% females thought the vaccine covers 0-5 HPV types (52% & 51% males)</p>
<p>Medeiros et al 2010, Knowledge differences between male and female university students about human papillomavirus (HPV) and cervical cancer: Implications for health strategies and vaccination, Portugal</p>	<p>University of Porto, Six faculties split into health sciences and non-health sciences schools. One higher education nursing school</p>	<p>June 2007- June 2008 Self-completed questionnaire RR- 83% (calculated)</p>	<p>1706 university students 1084 females and 622 males From these 1113 were health sciences students (802 females and 311 males) and 593 were non-health sciences students (282 females and 311 males). Aged 17-35years Median and mean age 20 years</p>	<p>Knowledge about cervical cancer Knowledge about HPV Knowledge about the relationship between HPV and cervical cancer Attitudes and beliefs about HPV vaccination Attitudes and beliefs about sexual education.</p>	<p>55.4% (n = 945) of students had already heard of HPV, significant associations found between area of subject and awareness of HPV (health sciences Vs non health sciences) Knowledge of HPV, out of 32 the mean score was 15.56 (SD = 4.91). No statistical differences were found regarding gender, only with area of subject. Knowledge & beliefs about the relation between HPV & cervical cancer, statistical differences were found between the two groups by subject studied</p>
<p>Pelucchi et al 2010, Knowledge of human papillomavirus infection and its prevention among adolescents and parents in the greater Milan area, Northern Italy, Italy</p>	<p>Two middle schools in Milan (one private and one state run), Five high schools specialising in classical, linguistic or scientific studies (two private and three state run) in the greater Milan area and Varese, One state-run technical school in Milan.</p>	<p>May-June 2008 Self-completed questionnaires RR- 77% for parents RR - 79% for children</p>	<p>2,331 parents 863 children 649 females and 209 males 209 (5 students did not respond to gender question) Aged 14-20 years Mean age 16 years</p>	<p>Student questionnaire: HPV infection & vaccination Willingness to be vaccinated Sexual activity</p>	<p>Female and male students were 75% and 63% (p = 0.008) aware that the HPV vaccine is aimed at preventing cervical cancer Students- 68% of females and 40% of males said they would undergo HPV vaccination (p < 0.001). Female students who had a boyfriend or had engaged in sexual activity</p>

<p>Samkange-Zeeb et al 2013, Awareness and knowledge of sexually transmitted diseases among secondary school students in two German cities, Germany</p>	<p>8 Secondary schools in Bremen and Bremerhaven in Northern Germany</p>	<p>Oct-Dec 2011 Self-completed questionnaire RR- 28%</p>	<p>1148 school children 632 females and 516 males Aged 12-20 years old Median age 15 years</p>	<p>Sexual Activity and information about sex. Awareness of STDs Knowledge of STDs, Awareness of HPV</p>	<p>were less likely to be in favour of the vaccine 45% of the female teenagers perceived themselves at risk of HPV infection. Large proportion of the male students thought that it did not concern them. 13 % had heard of HPV. Significantly more females than males had heard of HPV (18 vs. 8 %), only 6% responded positively to all 3 HPV questions. 26 % were aware that HPV can cause cervical cancer (36 % of the girls and 15 % of the boys) and 20 % that it is possible to be vaccinated against HPV (29% of the girls and 9 % of the boys), With multivariate analysis; age, gender and having ever had sex remained the significant predictors of awareness of HPV.</p>
<p>Schmeink et al 2011, Young adults awareness of HPV and vaccine acceptance after introduction of the HPV vaccine in the Dutch national vaccination program, Netherlands</p>	<p>University students from Nijmegen, Netherlands</p>	<p>June-Dec 2009 Self-completed questionnaire RR- 96%</p>	<p>698 students 362 females and 336 males Aged 18-25 years Mean age 20.5</p>	<p>Sexual behaviour, vaccine acceptance, knowledge of HPV, cervical cancer and national cervical screening programme</p>	<p>46.4% were aware of HPV. Of these 87% knew that it was sexually transmitted, 79.6% thought that condom use is fully protective. 47.5% knew that the lifetime risk of acquiring HPV is >50%. 4.4% aware that it is asymptomatic. 83.4 % of all participants had heard of warts, but only 32% knew they were caused by HPV.</p>

					Females had greater awareness than males and medical students had overall more knowledge.
Sopracordevole et al 2012 , Teenagers' knowledge about HPV infection and HPV vaccination in the first year of the public vaccination programme, Italy	Secondary high school in Pordenone,	May-June 2009 Self- completed questionnaire RR-100%	1105 students 629 females and 476 males Aged 13-23 years Mean age was 15.7 years	6 multiple-choice questions about HPV infection and related diseases, 6 questions about HPV vaccination, sexual behaviours and prevention measures after vaccination.	45.4% females had been vaccinated against HPV. 75% had heard of HPV, 92.8% of females Vs 51.3% (244/476) of males. 70.5% acknowledged sexual contacts as the only route of transmission of HPV. 87.7% knew HPV related to the number of sexual partners. 93.3% of schoolgirls were conscious of the continuing need to perform regular cervical smear tests even after vaccination, just like non-vaccinated women
Stöcker et al 2013 , Human papillomavirus vaccine uptake, knowledge and attitude among 10th grade students in Berlin, Germany, 2010, Germany	14 schools over 9 city districts in Berlin	Sep-Dec 2010 Self completed questionnaire RR-59%	442 students 238 females and 204 males Female Females aged 14–18 years Males aged 13–19 years	Sources of information about vaccines, knowledge and attitudes towards HPV.	Males had considerable less knowledge when compared with vaccinated females (p-values < 0.001) but only slightly less knowledge than unvaccinated females (p = 0.038 and p = 0.239). One-third of female students were unaware that HPV is sexually transmitted.
