

# Human Papilloma Virus and Vaccine - Knowledge and Acceptability in an Irish General Hospital

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## Abstract

Background: In 2019, Ireland extended its Human Papilloma Virus (HPV) vaccine schedule from females of school going age, to include males. Aims: We know that knowledge aids in vaccine acceptability [1], and as such we aimed to assess women's knowledge of HPV and the vaccine, and if they found the vaccine to be acceptable for both men and women. Methods: This was a questionnaire based study, which took place over a six month period in a general hospital. 100 women attending our gynaecology clinic were asked to complete a 22Q questionnaire, which was based on similar, validated questionnaires. Participants were included if over 18 years, female and capable of consenting. Results: We collected results from n=100 women. Over  $\frac{1}{4}$  (n=26) had never heard of the HPV vaccine. Of these, none knew the risk factors for contracting HPV nor the diseases caused by HPV. Of this subgroup all women responded 'I don't know' when asked if they think boys and girls should receive the vaccine. Of women who had heard of the vaccine (n=74), 85% believed girls should receive the vaccine, while only 56% believed boys should. Conclusions: Our study highlights the ongoing lack of knowledge surrounding HPV and the HPV vaccine within this community. The importance of knowledge for vaccine acceptability, is highlighted by vaccination considered less acceptable for males, perhaps owing to the lack of education towards this gender. This may affect vaccine uptake within this subgroup and as such we suggest further education be directed towards males

## Human Papilloma Virus and Vaccine - Knowledge and Acceptability in an Irish General Hospital – A Questionnaire Based Study

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## Shortened Running Title:

Human Papilloma Virus and Vaccine - Knowledge and Acceptability

## Abstract

### Background:

In late 2019, Ireland extended its Human Papilloma Virus (HPV) vaccine schedule from females of school going age, to also include males.

### Aims:

We know that knowledge aids in vaccine acceptability [1], and as such we aimed to assess women's knowledge of HPV and the vaccine, and if they found the vaccine to be acceptable for both men and women.

## Methods:

This was a questionnaire based study, which took place over a six month period in a general hospital. 100 women attending our gynaecology clinic were asked to complete a 22Q questionnaire, which was based on similar, validated questionnaires. Participants were included if over 18 years, female and capable of consenting.

## Results:

We collected results from n=100 women. Over  $\frac{1}{4}$  (n=28) had never heard of the HPV vaccine. Of these, only 1 knew the risk factors for contracting HPV and only 4, the diseases caused by HPV. Of this subgroup 75% women responded 'I don't know' when asked if they think girls should receive the vaccine and 86% responded 'I don't know' with regards to boys receiving the vaccine.

Of women who had heard of the vaccine (n=74), 85% believed girls should receive the vaccine, while only 56% believed boys should.

## Conclusions:

Our study highlights the ongoing lack of knowledge surrounding HPV and the HPV vaccine within this community. The importance of knowledge for vaccine acceptability, is highlighted by vaccination considered less acceptable for males, perhaps owing to the lack of education towards this gender. This may affect vaccine uptake within this subgroup and as such we suggest further education be directed towards males.

## Introduction:

Human Papilloma Virus (HPV) is an oncogenic virus, known to cause a range of malignancies, including cervical, anal and oropharyngeal. [1]. Following World Health Organisation (WHO) recommendations, in 2010 Ireland introduced the quadrivalent HPV vaccine into its school-based vaccination program, specifically for girls starting second-level education. While this specific vaccine schedule started successfully, 2016/17 saw a huge decline in uptake rates to about 50%, far below the target uptake of 85% [2]. This decline was thought to be secondary to lobbyist groups with emotive social media platforms [3]. In response to this, the National Immunisation Office increased their own social media presence and alliance groups to promote the vaccine and 2019 saw the uptake rate increase back to 70% [4].

2019 also saw huge changes surrounding the HPV vaccine in Ireland, with inclusion of boys starting second-level education to the schedule. It also saw the change of the vaccine from the quadrivalent type, to the non-valent type[5]. Uptake levels for the year 2018/19 are yet to be released at the time of writing, other than a blanket uptake rate of 70% quoted.

Despite, being recognised as one of our most successful public health measures [6], vaccination is no stranger to hesitancy and refusal, with refusal seen as early as the 18<sup>th</sup> century to the very first vaccine – the smallpox vaccine [7]. Ironically, a vaccine's success as a public health measure can only be achieved with a certain level of uptake, for example 85% as is for the HPV vaccine in Ireland. We require the public's acceptance of vaccines for there to be adequate uptake, and for their role to be successful [8]. In fact, the SAGE working group for vaccine hesitancy identified three key determinants for vaccine uptake amongst the public, which were; 1). Confidence – that is confidence in health care professionals and in the vaccine itself, 2). Complacency – that is a low level of awareness of the risks of the disease for which the vaccine prevents and 3). Convenience – easy access to and availability of the vaccine [8]. While our school program offers convenience, do we have an appropriate level of confidence amongst the public and a low level of complacency?

As we come to the end of the first school year in which the HPV vaccine has been made available to boys, we await the levels of uptake for 2019/20. Given this vaccine will be new to boys and vaccine uptake is dependent on confidence, will our levels of uptake amongst boys reflect that of their female counterparts? Do

individuals have an adequate understanding of the spectrum of malignancies caused by HPV, most notably those that affect men?

From Ireland's variable rate of uptake over the past decade, we have also seen the role of social media in both increasing and decreasing vaccine confidence and thus uptake. As social media's use increases amongst populations, will we also see its role in public health promotion increase?

With these questions in mind, we sought to perform a study to determine women's knowledge surrounding the human papilloma virus and vaccine, as well as assess where they gained this knowledge and information from. Within our study, we also sought to specifically compare and contrast women's opinion of the HPV vaccine for girls and boys.

## **Methods:**

This questionnaire-based study examined women's knowledge of the human papilloma virus in terms of its risk factors for contraction, and the diseases caused by it. We also assessed their opinion on whether or not girls should receive the vaccine and whether or not boys should. Finally, we assessed where they gained their knowledge about HPV and the vaccine from.

## **Study setting**

This study was conducted in the Gynaecological outpatient department of Wexford General Hospital, Ireland. This study was granted full ethical approval by the Medical Research and Ethics Committee at the HSE South East, Patients were provided with written patient information leaflets prior to completing the questionnaire. By completing the questionnaire, we assumed consent to participate. Inclusion criteria women over 18 years of age Women unable to give consent or complete questionnaires without interpreter were excluded.

## **Questionnaire**

There were 21 questions within the questionnaire. It started by assessing participant demographics including; age, relationship status, employment status and native language. The questionnaire was then broken down into three sections. The first section assessed participants personal history and experience, including have they themselves received the vaccine, have they participated in the cervical screening program, are they sexually active and have they ever attended colposcopy.

The second section assessed the participants current knowledge of the subject. We assessed if they had heard of HPV and if so, from where, as well as the risk factors for contracting HPV and the diseases associated with the virus. We also assessed if they have heard of the cervical screening program and the HPV vaccine, and if so, where from. Options for the source of their information included; family, friends, social media, GP/health care professional and the news.

The final section assessed the participants own opinions. We assessed if they thought if girls and if boys should get the HPV vaccine.

## **Results:**

A total of 100 fully completed questionnaires were analysed. The questionnaire started by assessing the participants demographics. The majority of our cohort (42%) were in the age bracket of 25-39years (Figure 1a). They were primarily 'in a relationship' (54%), with a further 37% answering 'single' with regards to their relationship status. In terms of employment status, our group were mostly employed (60%), with 27% unemployed, 8% students and 5% preferring not to answer (figure 1b). The majority of participants, or 88% identified English as their primary language.

The questionnaire then assessed some of the participants personal experience and history surrounding the topics in question. Of those who participated, the majority had *not* received the HPV vaccine (77%). 16 participants (16%) had received the vaccine and of these 9 were in the <25years age group. 7 women were unsure if they had received the vaccine or not. Of those eligible to take part in the cervical screening program, that is those 25years and above (n=84), the majority (87%) had received a cervical smear, with only 13/84 women reporting they had never gone for their cervical smear. 91% of our cohort are or have been sexually active, with 4 women reporting never have been sexually active and 5 not wishing to answer.

With regards to the participants knowledge, we found that 72% had heard of the human papilloma virus. Of these women, the majority (36%, 26/72) listed the ‘news’ as their primary source of information for same. This was followed by GP or other health care professional (25%, 18/72) and social media (18%, 13/72) (Figure 2a). We noted that of those who listed ‘the news’ as their primary source of information, all were age 25 and above. Of those answered that they had never heard of HPV (n =28), we noted that 15 or 53% were unemployed and of those eligible for the cervical screening program (n = 22), 7 admitted to never had a smear before (31%), which shows lower compliance with the screening program compared to our total population, where only 16% hadn’t received a smear. From here, we considered the responses in two groups; Group A - those who had heard of HPV (n =72) and Group B - those who had not (n = 28). Within group A, more than half knew at least one disease caused by HPV (40/72, 55%) (Figure 2b), with cervical cancer being the most common answer, followed by genital warts. Within group B, despite answering that they haven’t heard of HPV, 4 women (4/28, 14%) said they knew of a disease caused by HPV, with two of these correctly identifying cervical cancer. With regards to how HPV is transmitted, again more than half of group A (60%, 43/72) correctly identified sexual contact as a route of transmission (Figure 2c). 29 of these women did not know. Within group B, 1 woman correctly identified sexual contact as the route (<1%). Finally, 61% of group A (44/72) were aware of how to prevent the spread of HPV, compared to <1% in group B.

Finally we assessed if participants believed if girls and if boys should receive the HPV vaccine. Within group A, a large majority of participants, 70% (50/72), believed that girls should, with 18% (13/72) unsure, and 12% saying they didn’t believe girls should (Figure 3a). This is compared to group B, where 75% of participants (21/28) said they didn’t know if girls should receive the vaccine and only 21% of participants believing girls should. (Figure 3b). Combined, 56% participants believed girls should receive the vaccine, 10% believed they shouldn’t and 34% were unsure.

With regards to boys receiving the vaccine, again a majority of group A believed they should (51%, 37/72). This was followed by 36% (26/72) saying they didn’t know, and again just over 12% saying they believed girls should not receive the vaccine (Figure 4a). In group B, a large majority, 86%, did not know if boys should receive the vaccine, followed by 1 participants thinking they shouldn’t and 3 thinking they should (Figure 4b). Combining both groups, only 40% of participants believed boys should received the vaccine, with the majority (50%), saying they didn’t know.

## Discussion:

In order for the HPV vaccine to be effective as a public health measure, we require 85% uptake [8]. Despite, an increase in uptake from the previous year, 2019 still only saw 70% uptake and the introduction of the vaccine for boys is too early to comment on its success. With this in mind it is crucial that we continue to educate the public around HPV and its associated diseases, as well as promote the vaccine.

From our study, we were pleased to see that 72% of women had heard of the virus. However, despite hearing of the virus, this cohort of women still demonstrated a lack of knowledge surrounding its pathophysiology, with only 55% knowing what diseases it causes, 60% knowing how it is transmitted and 61% knowing how to prevent it .We also acknowledge that over one quarter of participants in our study, admit to not even hearing about the virus. This indicates that further education is needed.

It is clear from our study, that there is increased acceptance of the vaccine in those who are more educated on its role. This highlights the need for education in order to increase vaccine uptake. From those who had heard of the virus, 70% believed girls should receive the HPV vaccine. This is compared to those who had

not heard of the virus, where only 21% believed girls should receive the vaccine. Combined, this gave us an overall rate of 56% who agreed that girls should receive the HPV vaccine – far below what the ideal uptake rate is. Interesting, less participants believed boys should receive the vaccine, with more participants showing uncertainty, and answering ‘I don’t know’. Of those who had heard of the vaccine, only 51% believed boys should receive the vaccine. This is compared to the 70% who believed girls should. This may be due to less awareness and education surrounding the role of the vaccine in this gender, given its new introduction to the vaccine schedule. With this in mind, it will be interesting to see the HPSC data once released from the year 2019/20, in order to compare the actual data of vaccine uptake between the two genders. If the data reflects that in our study, further efforts will need to be put in place to specifically highlight the role of the vaccine in males. We consider this discrepancy to be the most important finding of our study.

Finally, our study acknowledged a heterogony in information sources used by participants to receive information surrounding the virus. Interestingly, doctors and health care professionals were *not* the most common quoted source of information, but rather ‘the news’. Social media was the third most common source. This is an important finding, as it may influence how we should proceed with educating people about HPV. We acknowledge that our study is small, however in order to tackle the sub-optimal rates of vaccine uptake, alternative and novel ways of patient education may need to be employed.

The weakness of this study include that it is a single centre study with limited numbers. We would recommend that this study be replicated across various units to offer insight into different populations, as well as increases participant numbers. We also acknowledge that our questionnaire used was not validated, however we were unable to source a validated questionnaire for our study at present.

In conclusion this study demonstrates that increased focus educating people on HPV and its associated diseases is required, in order to reach optimal vaccine uptake. Education is particularly needed towards the male population. We also need to further explore the most effective way of educating the public, and potentially explore alternative mediums, such as social media.

We have no interests to disclose.

Authorship:

SJM was the primary author involved at all stages including, planning the study, carrying out the study, analysing results and writing up the work.

AD was involved in planning the study and analysing the results.

MW was involved in analysing the results and writing up the work.

We received ethical approval for this study from the Research Ethics Committee of HSE South Eastern Area on 23<sup>rd</sup> December 2019.

No funding was required for this study.

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### Figure Legends:

**1a and b:** Breakdown of participants age and employment status.

**2a,b,c and d** 2a. Breakdown of where participants have heard about HPV

2b Of those who have heard of HPV (n=72), only 56% know what diseases it causes

2c Of those who have heard of HPV (n=72), 60% know how it is transmitted

2d A breakdown of who has heard of HPV. 72 participants had, 28 had not

3a and b:

3a Of those who had heard of HPV (n=72), 69% believed girls should receive the vaccine, 13% believed they should not and 18% were unsure.

3b Of those who had not heard of HPV (n=28),only 21% believed girls should receive the vaccine, 4% believed they should not and 75% were unsure.

4a and b:

4a Of those who had heard of HPV (n=72), 51% believed boy should receive the vaccine, 13% believed they should not and 36% were unsure.

4b Of those who had not heard of HPV (n=28) ,only 3% believed boys should receive the vaccine, 11% believed they should not and 86% were unsure.

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