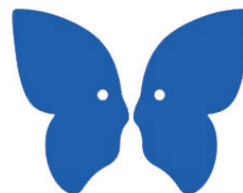




Overall Narrative on the HPV Vaccine Project

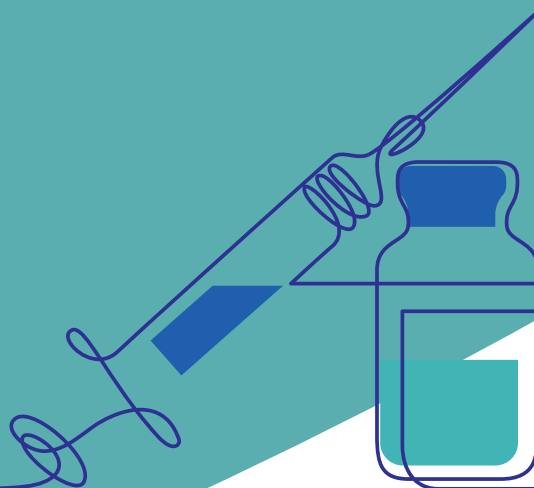
Reducing physician hesitancy in
recommending the Human Papillomavirus
(HPV) vaccine to adolescent girls (9-14 years)



**Centre for
Social and
Behaviour
Change**

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Problem Definition

What prevents physicians from actively recommending the HPV vaccine to adolescent girls?

Introduction

Cervical cancer is the fourth most common cancer among women worldwide. India itself accounts for about 17% of the global cervical cancer incidence burden with close to 97,000 new cases reported every year.^{1,2} It is also the second leading cause of cancer deaths among women in the country with an estimated 60,078 deaths reported annually.³ These numbers become starker when we point to the fact that there exists a simple method of prevention, the Human Papillomavirus (HPV) vaccine.

The HPV vaccine was introduced in 2008 in India and is recommended to be administered to adolescent girls between the ages of 9-14 years. But since its inception, the uptake and administration of the HPV vaccine have been low.

When we investigate further to understand why - we come across multiple reasons like the policy challenges associated with vaccine approval, the low awareness of the risks of HPV among the general population, sidestepping STI related health discussions - though one surprising reason that emerged was the observation that physicians, who we expect to be advocates of the vaccine, displaying elements of hesitancy when it comes to recommending the vaccine to their patients. Physicians tend to not initiate the conversation on the vaccine, counsel patients on it or even actively encourage its uptake.



¹ <https://pubmed.ncbi.nlm.nih.gov/31812369/>

² <https://hpvcentre.net/statistics/reports/IND.pdf>

³ <https://hpvcentre.net/statistics/reports/IND.pdf>

In a country like India - where there is high reverence and reliance on doctors for all types of medical information; hesitancy on the part of physicians to recommend the HPV vaccine can have serious adverse consequences for the general public - in knowing about the vaccine, actively seeking it and therefore in increasing the incidence and risks of cervical cancer.

The Centre for Social and Behaviour Change (CSBC), in collaboration with the Cancer Foundation of India (CFI) and support from the American Cancer Society's (ACS) Global

HPV Cancer Free initiative, conducted a diagnostic research study with physicians, vaccine beneficiaries and community influencers, to understand the sources for this hesitancy related to the HPV vaccine.

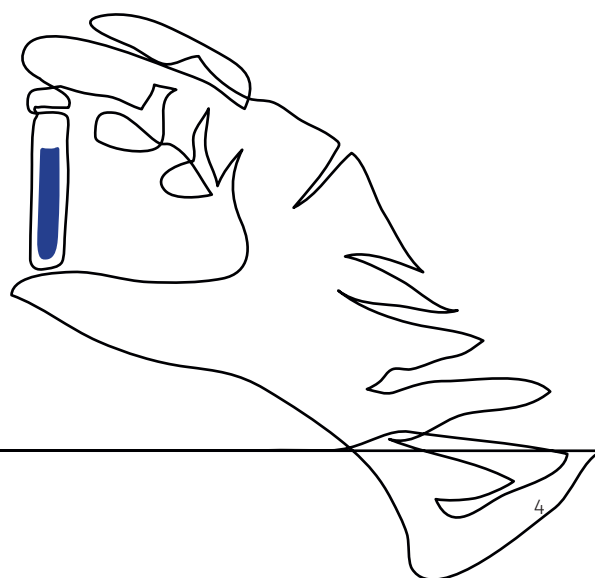
These biases coupled with a stressful environment of limited interaction-time and a need to reduce opportunity cost, result in physicians choosing to not or in some cases weakly recommend the HPV vaccine.

What we found

Multiple behavioural biases affect physicians' decision-making around the HPV vaccine

- > **Availability and optimism bias:** Underestimating the incidence and risk of HPV
- > **Skewed perception of trust:** Reduces their confidence of the vaccine being a safe and effective solution for HPV

- > **Concern of breaking social norms:** Makes them uncomfortable to talk about HPV (a sexually transmitted infection) or even bring up fearsome words like cancer with parents of young girls why - we come across multiple reasons



Research study details

The study was conducted in West Bengal, with the support of RTI International. A total of 97 interviews were completed (89 in-depth interviews and 8 focus group discussions) with the following sample:

- > Four physician specialities of Pediatricians, Gynaecologists, Gynaecologists and General Physicians (GPs)
- > Adolescent girls and their parents or guardians as decision-makers
- > Government officials, school teachers of adolescent girls and front-line health workers

Detailed findings from the diagnostic research are provided below:

1

Physicians underestimate the prevalence and the threat of HPV and cervical cancer and therefore the importance and necessity of the HPV vaccine

- > Most physicians reported that cervical cancer cases are not commonly seen by them, either due to the nature of their speciality or the area of their practice. The low number of such observed cases contributes to the underestimation of the disease. This **'availability bias'** (i.e. the tendency to make judgements about the likelihood of an event occurring based on how readily an example comes to mind)⁴ leads to the belief that cervical cancer (and therefore the HPV vaccine) is not an issue that needs to be actively discussed with patients.
- > Physicians reported that they believe the incidence of cervical cancer to be higher among a "certain group of women" - these included women belonging to lower socio-economic categories, rural areas (with low hygiene maintenance) and/or women who were more likely to be seen as following "sexually unsafe" practices (with multiple sexual partners, high parity and a high number of abortions). This results in "othering", that is, physicians, attributing the incidence of HPV to specific types of groups and restricting their conversation on HPV to these particular groups.

⁴ <https://www.behavioraleconomics.com/resources/mini-encyclopedia-of-be/availability-heuristic/>

This leads them to be more optimistic about their “regular” patients, believing that they would not be at high risk of HPV. In this way, physicians express

an optimism bias and only selectively recommend the HPV vaccine based on their judgement of who fits the “other group”.^{5 6}

2

Physicians display a lack of trust in the safety and efficacy of the HPV vaccine

- > Physicians expressed mixed views on the effectiveness of the vaccine - while some believed it to be necessary for preventing cervical cancer, others were not convinced of its effectiveness. There was also a belief among physicians that the vaccine could have potential adverse side-effects such as an impact on future fertility and a risk of congenital abnormalities in future progeny. A few physicians reported confusion with regards to the vaccine schedule, with changing guidelines around the age group and doses for the vaccine (2 doses for 9-14-year-olds and 3 doses for 15-26-year-olds). Such changing norms made the vaccine seem experimental and led to reluctance in bringing up the topic with the recommended age group of 9-14-year-old girls.
- > The high cost of the vaccine (which ranges from approximately Rs. 2800 to Rs. 3300 per dose), makes physicians believe that the push for the vaccine is driven by the economic interests of vaccine manufacturers rather than looking out for the health benefits for the general public.⁷
- > Physicians also cited the non-inclusion of the HPV vaccine to the country's Universal Immunization Programme (UIP), as a concern of its credibility. The linking of trust in the vaccine to the UIP - even when the vaccine has been approved by the National Technical Advisory Group on Immunization in India (NTAGI) and is globally recognized as a safe and effective vaccine, is an example of the skewed perceptions of trust (or mistrust) stemming from association rather than on specific parameters of the vaccine.

⁵ Hansen, C., North, A., & Niccolai, L. (2019). Cognitive Bias in Clinicians' Communication about Human Papillomavirus Vaccination. *Health Communication*, 35(4), 430-437. <https://doi.org/10.1080/10410236.2019.1567439>

⁶ Both these biases also pose the risk of creating a self-fulfilling prophecy i.e. strengthening these beliefs by acting on them.

⁷ <https://www.hindustantimes.com/india/is-hpv-vaccine-safe-for-my-daughter-yes/story-4gBa5z5rDtxREhNJ6lzzQP.html#:~:text=HPV%20vaccines%20are%20sold%20under,India%20have%20cervical%20HPV%20infection.>

3

Physicians find it difficult to converse about the HPV vaccine, with the concern of breaking social norms and creating socially awkward situations:

- > Given that the HPV infection is a sexually transmitted infection (STI), physicians reported finding it difficult to easily initiate and counsel parents on cervical cancer and its risk factors (smoking, multiple sexual partners, unsafe sexual practices, etc). Bringing up these topics with parents of young girls was seen as uncomfortable, due to existing cultural norms in India which view these practices as taboo or “immoral”. This **‘cultural bias’** guides the avoidance of the topic as physicians feel that bringing up these discussions could make parents feel that they are wrongly associating their family or daughter with such “immoral practices”
- > Physicians also report that topics such as “cancer”, cause a certain level of discomfort among parents, particularly when discussed in relation to the adolescent age group. This results in physicians requiring additional effort to, not only counsel them on the HPV vaccine but also to assuage parents’ fears surrounding cancer. Additionally, bringing up the topic of a “vaccine” for an adolescent age group is seen as being difficult due to a certain “vaccine fatigue” that is reached among parents by the

time their children reach adolescence (as most vaccines are given within the first five years of birth, creating a norm around childhood immunization; but due to the few adolescent vaccines, none around adolescent immunization exists).

These three biases are further amplified when we take into account the environment in which these conversations happen - which are usually characterized by limited physician-patient interaction time and the need to reduce immediate short-term opportunity costs. These two factors lead to physicians placing more emphasis on the short-term benefits (reduced inconvenience of having the HPV conversation and saving time) rather than on future consequences of not discussing the vaccine (which anyway seem limited for physicians due to doubts about the incidence of HPV and efficacy of vaccine).



What next?

Diagnosing the specific behavioural biases among physicians which result in hesitancy around recommending the HPV vaccine, makes it possible to apply insights from behavioural sciences to design effective nudges and interventions that directly target the biases and minimize the level of hesitancy among physicians - resulting in a stronger recommendation of the vaccine and potentially increased uptake. In the document “Research Brief” - we outline the behavioural interventions designed to target the behavioural biases and the findings from the experimental research on the effectiveness of the interventions to reduce physicians’ hesitancy in recommending the HPV vaccine.

Understanding the theory of Behavioural Biases:

Our mind’s processes can be divided into two systems that influence decision-making: System 1 and System 2. System 1 thinking is fast, automatic, and operates by forming intuitions and judgements based on repeated experiences. System 2 thinking, on the other hand, is slow, deliberate and operates on the basis of reason. This makes system 1 prone to cognitive biases which can affect the decisions that we take, while system 2 filters out these biases to help us make the optimal choices. However, in our day-to-day life, it is system 1 which is more influential because engaging in system 1 thinking requires less mental effort.⁸ As a result, despite having access to knowledge and information to make the right decision, individuals often make decisions that are sub-optimal.

Let’s use a simple example of solving the question: *“A baseball bat and a ball cost \$1.10 together, and the bat costs \$1.00 more than the ball, how much does the ball cost?”*

What was your immediate answer? If you answered 10 cents - then that is incorrect, but what the most common response tends to be when we use our System 1 automatic thinking. But on greater deliberation (activating System 2) we would realize the current answer to be 0.5 cents.

Physicians are subject to these same biases - hence though they have the best intention of their patients in mind, their system 1 thinking might be subjected to biases (due to the specific circumstances or factors related to a health topic, like in the case of the HPV vaccine) and due to that make suboptimal decisions about certain medical recommendations/decisions. Understanding this, helps us then use insights from behavioural science to address this challenge.

Research Brief

How do we ‘nudge’ physicians to actively recommend the HPV vaccine?

Background



Even with the availability of the HPV vaccine (a vaccine to prevent cervical cancer), cervical cancer continues to be the second leading cause of cancer deaths among women in India. When understanding the cause for this, one surprising finding is the weak recommendation of the vaccine by physicians. Physicians tend to be the main source of medical information for large parts of the population, and their hesitancy related to the vaccine can severely affect the uptake of the vaccine. On deeper diagnosis, we find that the reason for the hesitancy stems from multiple behavioural biases that lead physicians to underestimate the risks of HPV, doubt the safety and efficacy of the vaccine and worry about the social awkwardness from initiating conversations on the vaccine. You can read more about the different behavioural biases in this document.

The use of behavioural insights can help to target these biases and shift doctors towards the more desired behaviour of

active and strong recommendation of the HPV vaccine. The Centre for Social and Behaviour Change (CSBC), in collaboration with the Cancer Foundation of India (CFI) and support from the American Cancer Society’s (ACS) Global HPV Cancer Free initiative, developed multiple solutions informed by behavioural insights, that target the identified behavioural biases and help to shift physicians to reduced hesitancy (or increased confidence) in recommending the vaccine to patients. Shortlisted solutions were tested using a rigorous experimental methodology to assess their effectiveness in increasing intentionality to recommend the HPV vaccine.

This document provides a quick overview of the solutions that were tested and the results from the experimental research.

Results from our experimental study on different behaviourally-informed solutions suggest that the two solutions of:

1	2
	
<p>Refreshing the dangers of cervical cancer and the ease of its prevention</p>	<p>Endorsement of the vaccine by a Trusted Medical Champion</p>

These significantly boost intention to recommend the HPV vaccine amongst physicians. In the short term, these two solutions show great promise, with about a 100% increase in the likelihood of expressing an intention to recommend HPV vaccine -- when exposed to either of these treatments.

What were the solutions we shortlisted?

1

Interventions targeting “Low Trust”

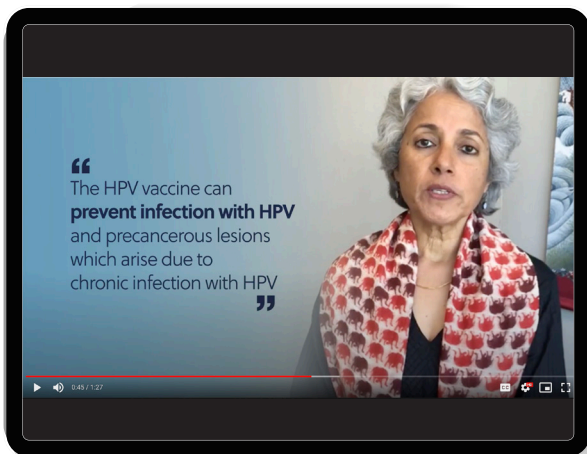
Endorsement by a Trusted Medical Champion

Trust can be transitive in nature - i.e. it can “spillover” from one known trusted party to another which is less known and trusted.⁹ Leveraging this transitive nature of trust, an endorsement of the vaccine’s safety and efficacy by a trusted well-known medical professional (referred to as a champion)

can then result in the “rollover” of trust from the individual to the vaccine they recommend.

Treatment Deployed:

A video of Dr Soumya Swaminathan, Chief Scientist, WHO highlighting the risks of cervical cancer and the safety and efficacy of the HPV vaccine.



Dr. Soumya Swaminathan

MBBS (AFMC) MD (AIIMS)

- Chief Scientist, WHO
- Former Director General of ICMR
- Former Secretary of the Department of Health Research, Ministry of Health and Family Welfare, GOI

“ It is our **responsibility as doctors** to really make sure that we explain to people why **the HPV vaccination is essential for young girls**. In the future, if we are to eliminate cervical cancer among women as a public health problem, it is absolutely essential that we advocate for HPV vaccination for girls. ”

⁹ Rethinking Trust by Roderick M. Kramer

2 Interventions targeting under-estimation of the risks of HPV

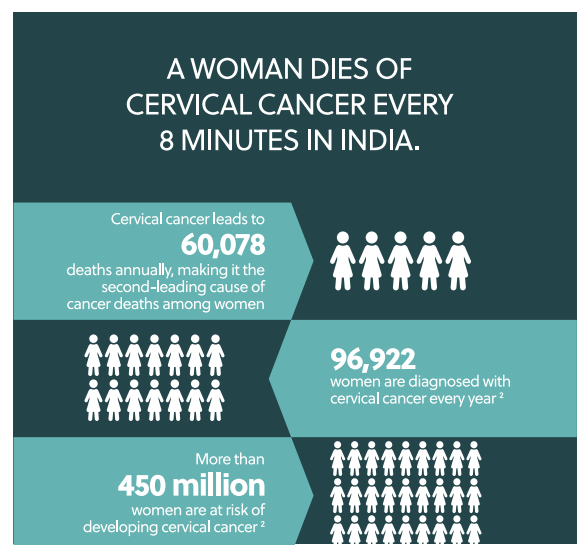
Refreshing the dangers of cervical cancer and the ease of prevention

Mental accessibility promotes mental efficiency¹⁰ i.e. an idea that is more salient might be easier to reach in a given situation than one that is drowned out. By making prominent the nature and extent of the problem (cervical cancer) and the role of physicians in solving it (by promoting HPV vaccine), we can change current beliefs around the problem not being a major one or being a problem of certain groups.



Treatment Deployed:

A video that showed the danger of HPV and cervical cancer incidence in India and the deaths from it. The information was paired with details on the safety and effectiveness numbers for the vaccine, to reinforce the point that there exists a convenient preventive solution.



THE HPV VACCINE CAN HELP PREVENT CERVICAL CANCER

A strong recommendation of the HPV vaccine from you is critical to eliminating cervical cancer as a public health problem.

RECOMMEND THE HPV VACCINE NOW AND SAVE LIVES.

¹⁰ Subtract, Ledy Klotz 2020

3

Interventions targeting ways to make the HPV recommendation easy:

- > People tend to avoid socially awkward conversations, in the fear that it might threaten their acceptance from others.¹¹ Physicians display this when they avoid talking about STIs (Sexually Transmitted Infections) with their patients, as they fear it would be breaking cultural norms. Such awkwardness can also arise when they fear rejection of their recommendation by the patient. This leads to reduced conversations on HPV, cervical cancer and the HPV vaccine. Three interventions were designed to make the conversation easier for doctors:
- > **Icebreakers for sensitive conversations**
Providing doctors with simple social cues and examples for initiating conversations

on the HPV vaccine. The cues were designed in a way to make the conversation less awkward, by bundling it with another topic, using a presumptive tone of recommending the vaccine and making the cost of not following the recommendation of the vaccine costly.

- > **Treatment Deployed:** A video that explained the cues and demonstrated these different conversation techniques being used by a doctor to talk about the HPV vaccine with the parents of an adolescent girl, and them being receptive to it.

Combine Conversations

about the HPV vaccine with other more common conversations to normalize the vaccine for parents



Increase Value Of The Vaccine

by highlighting the criticality of vaccinating at the right age and the cost associated with not vaccinating or with delaying vaccination



Make It A Part Of Routine Recommendations

by moving from swiftly from discussion on the vaccine towards action (such as vaccinating or fixing an appointment for vaccination)



¹¹ <https://digest.bps.org.uk/2012/11/14/the-new-psychology-of-awkward-moments/>

> Introducing environmental cues to initiate conversation

Insertion of an environmental cue can pin the initiation of the conversation to a third agent, outside of the two principal agents of the doctor and the patient - making it less awkward by reducing the dissonance when the conversation is initiated.

Treatment Deployed: A video that showed the use of this technique during a doctor-patient interaction, where a poster, urging doctors to talk about the HPV vaccine with their patients to protect their lives, is used as an environmental cue to initiate the conversation on the vaccine.



**WE WANT YOU TO JOIN
THE FIGHT AGAINST CERVICAL CANCER**

A woman dies every 8 minutes in India due to cervical cancer. ¹

**AS DOCTORS AND PARENTS,
YOU COULD HELP PREVENT THIS**

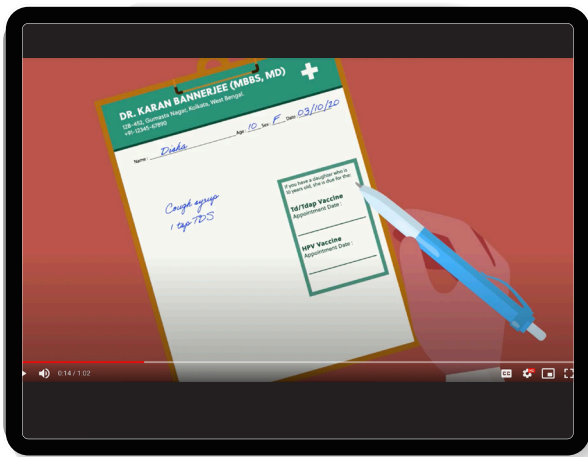
 Give the HPV vaccine to girls between 9 & 14 years 


¹ India Against Cancer. Cancer Statistics

> **Bundling the HPV recommendation with other recommendations:**

Bundling a sensitive topic with a non-sensitive one, can lead to a coupling effect and neutralize the conversation. By bundling the HPV vaccine with the less controversial Td/Tdap vaccine, doctors can neutralize the conversation to a more generic topic on vaccines and encourage patients to adopt both.

Treatment Deployed: A video which showed how through the use of a prescription format that included appointment dates for both the HPV vaccine and the Td/Tdap vaccine, the doctor could bundle the conversation on both with their patient, making it easier for the parent to accept both.



DR. KARAN BANNERJEE (MBBS, MD) 

788, Gumasta Nagar, Kolkata, West Bengal.
+91-98189-12345

Name : _____ Age : _____ Sex : _____ Date : _____

If you have a daughter who is 10 years old, she is due for the:

HPV Vaccine
Appointment Date : _____

How we tested the Interventions



Approach

We used a survey-based experiment to evaluate the impact of our interventions. Trained enumerators recruited doctors through purposive sampling in mostly urban West Bengal, and facilitated the experiment by providing instructions and a tablet on which the experiment was loaded to the doctors.



Protocol

Doctors first had to answer a short baseline survey, followed by exposure to a stimulus in the form of a short video and poster, post which they had to answer a longer endline survey. Assignment to the stimulus was completely randomised, with an equal probability of being assigned to one of the 5 treatment stimuli and the two control stimuli.



Outcomes

The endline questionnaire measured

- > Knowledge about the HPV vaccine: We asked doctors 6 multiple choice questions that measured information related to the usage of the HPV vaccine (like target age, doses etc.)
- > Safety and efficacy attitudes towards the HPV vaccine: We asked doctors to rate on a Likert-like scale how safe the vaccine is, how likely it would be to result in adverse effects, how effective it is in preventing HPV infections and preventing cervical cancer
- > Intention to recommend: Our primary outcome was asking doctors how often they planned on recommending the HPV vaccine to parents/guardians of adolescent girls in their daily routine in the future.
- > Sustenance of intent: We repeated our intention questions with our sample after a lag period of 1 week, in order to understand if any treatment effect was sustained.



Sample

Our overall sample consisted of 616 doctors -- 253 Gynaecologists, 195 Pediatricians, 168 General Physicians from West Bengal. Out of 616 doctors, 62 doctors self-administered the experiment using online links, the other 554 doctors were provided links in-person, with the choice to take the experiment on their own device or the research teams' tablets, given safety concerns around COVID-19.



Analysis

Since our primary outcome measures were ordinal variables (Likert-like on a scale of 1-7), we use ordinal logistic regression to measure the treatment effect. We report Odds Ratios from our analysis since these are relatively more interpretable than the ordered logit coefficient. The treatment effect, per se, is reported as the increase in odds (likelihood) of reporting a higher intention to recommend the vaccine for someone in the treatment group, compared to someone in the control group.



Limitations

Due to COVID-19, there were clear limitations in the ways the study could be executed, with most of the protocols having to be adapted to remote methods due to mobility restrictions and safety concerns. Due to this measurement of the actual practice of the recommendation behaviour was difficult, and instead, we had to rely on phone surveys and stated preference measurement techniques for this. High attrition between the main survey and follow-up visit resulted in only 29% of the total sample completing the follow-up survey; resulting in us being unable to use that data for analysis and instead relying primarily on the intentionality measure to understand the effectiveness of the interventions.

What we found

The interventions of **“Refreshing the dangers of cervical cancer and the ease of prevention”** and **“Endorsement by a Trusted Medical Champions”** had significant effects in improving intentionality to recommend the HPV vaccine.

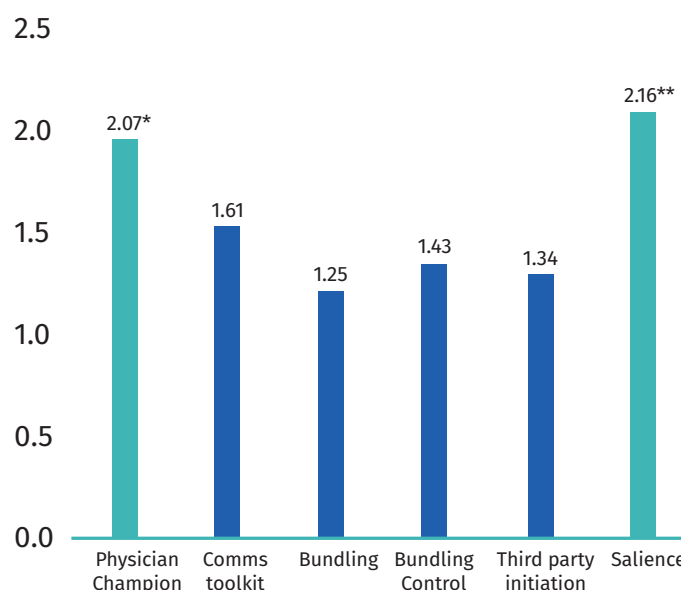
When compared with the control group - the intervention directed at refreshing dangers of cervical cancer and ease of prevention, saw a positive effect of 2.16 odds ratio at 5% significance level; which indicates a 100% increase in the likelihood of expressing an intention to prescribe HPV vaccine. Whereas the intervention of endorsement by a trusted medical champion had a positive effect of 2.07 odds ratio at a 10% significance level; also similarly indicating a 100% increase in

the likelihood of expressing an intention to prescribe HPV vaccine.

These interventions had limited statistically significant results on secondary outcome variables of perceptions, knowledge, attitudes of trust and self-efficacy, except for the endorsement intervention significantly increasing knowledge.

The other interventions on making conversations on HPV vaccine easier, through icebreakers, environmental cues and bundling, show generally positive associations on the outcome of intentionality to vaccinate, although we cannot conclusively say they are effective, given that the associations are not statistically significant.

Primary OV: What interventions increase intent to recommend the HPV Vaccine?



What does this mean?

The possible hypotheses for why the two interventions of **“Refreshing the dangers of cervical cancer and the ease of prevention”** and **“Endorsement by a Trusted Medical Champions”** worked are:

- > **Reduced the bias of under-estimating risks of cervical cancer:** emphasised the burden of cervical cancer in India (through recent statistics) and the deaths emerging from it, targeted any biased risk assessment of HPV and cervical cancer.
- > **Increased trust in HPV vaccine:** both interventions stressed the safety and efficacy of the HPV vaccine and presented it as an important and easy solution for cervical cancer.
- > **Showcased the role and responsibility of doctors:** both interventions highlighted the importance and responsibility of doctors' recommendation of the HPV vaccine in cervical cancer.

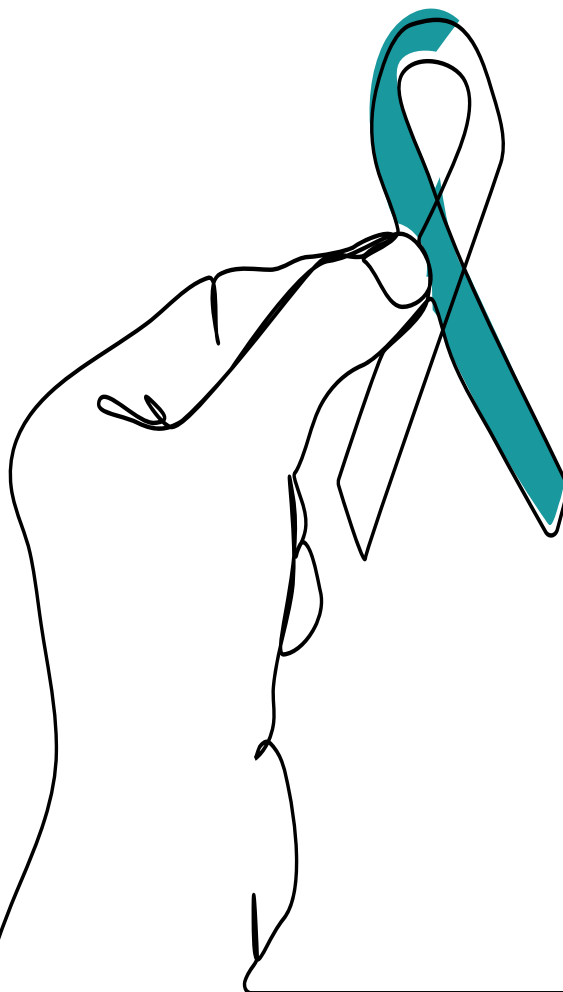


What now?

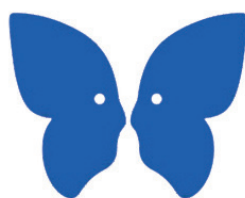
To increase uptake of the HPV vaccine in India, **there is a need to integrate the following solutions targeted to physicians, as part of any HPV vaccine promotion initiative¹²**

- > Refresh physicians on the dangers and risks associated with HPV and the burden of cervical cancer and the ease of prevention through vaccines. The risks of HPV might not be at the ‘top of mind’ for physicians who are dealing with multiple health issues and regular emphasis on it along with presenting the vaccine as a simple solution can go a long way in pushing them to initiate the conversation on this with their patients.
- > Build trust in the HPV vaccine, by having trusted well-known medical professionals endorse it publicly. Such endorsements can help physicians move past uncertainty, and more confidently encourage the vaccine to their patients.
- > Emphasize the responsibility of the doctors to protect their patients from the risks of cervical cancer. The emphasis can help doctors realize how their limited encouragement or counselling on the HPV vaccine could put the patient at risk and nudge them to be a more active champion for their patient.

From a larger policy perspective, it is important for policymakers to understand how service providers can also be subject to behavioural biases that might impede their decision-making and result in poor health outcomes. Health service providers are usually over-burdened by the health system, and cannot be expected to always work 'optimally'. Simple solutions or nudges like the ones discovered for the HPV vaccine can make a big difference in prompting physicians to shift away from their biases and hesitancy and provide the best medical care for their patients.



¹² Further details on how these solutions could be seamlessly integrated into existing HPV initiatives are to be provided in the "Scale-up Guide".



**Centre for
Social and
Behaviour
Change**



csbc@ashoka.edu.in



www.csbc.org.in



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