

# Media Framing of Human Papillomavirus (HPV) Health Issues and HPV Vaccine-Related Sentiment in English Language News Media in India (2015-2018)

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**Abstract-** India records a high incidence of Human Papillomavirus (HPV)-related infections and cancers, with cervical cancer being the second biggest cause of mortality among women with cancer in the country. Immunization against the high-risk HPV serotypes can efficiently prevent related diseases. The HPV vaccine was recommended to be added in the Universal Immunization Program (UIP) of India by the National Technical Advisory Group on Immunization (NTAGI) in 2017. However, following a controversial vaccine trial in 2009 and a pending decision on a related legal case, the Government of India has refrained from including the vaccine in the UIP. This study is an analysis of the media coverage of HPV-related issues and HPV vaccine-related sentiment in English language news media in India from 2015 to 2018. The sampled news media for the study include four national daily newspapers, *The Hindu*, *The Times of India*, *The Indian Express* and *Hindustan Times*; and two Indian news websites, *The Wire* and *Scroll.in*. Results based on the sentiment analysis of the media coverage reveal a predominantly positive sentiment towards the HPV vaccine with a marginal presence of thematically framed negative and contested opinion against the vaccine. The analysis of media framing of the issue reveals a prevalence of authoritative frames devoid of exemplification, and an extensive use of behavioral determinants of health to establish responsibility in HPV-related health status.

**Index Terms-** health behavior, health journalism, Human Papillomavirus, HPV vaccine, vaccine uptake, Indian media, media framing

## I. INTRODUCTION

### *HPV incidence and HPV vaccine policy in India*

Human Papillomavirus (HPV) is a common virus that is present abundantly in the environment and is among the most common sexually transmitted infections (STI). Scientific research has established that certain types of high-risk HPV strains, specifically the HPV serotypes 16 and 18, are responsible for

cancers of cervix uteri, penis, vulva, vagina, anus and oropharynx in women as well as men. The incidence of HPV related cancers, especially cervical cancer among women, is very high in India. Approximately, 453.02 million women aged 15 and older are at the risk of developing cervical cancer in India. Every year, 96922 women are diagnosed with cervical cancer, while 60078 succumb to the disease (ICO/IARC HPV Information Centre, 2018). Cervical cancer is the second most common cause of cancer-related deaths among women in India. As a result of long-term tobacco use and concurrent HPV infections among the population, the rate of head and neck cancers associated with HPV infections is also expected to rise in India (Gupta, Johnson, & Kumar, 2016).

The probability of acquiring HPV infections and the severity of HPV-related diseases are determined by several medical and non-medical factors. The non-medical factors include environmental factors, such as, polluted environment, poor sanitation, and lack of clean water for cleaning and consumption; behavioral factors, such as, having unprotected sex, having multiple sex partners, tobacco use and poor maintenance of health and hygiene. Socio-economic and political factors like income, social status, gender, social rituals and norms, access to healthcare and other amenities, political institutions, nature and ideology of government and bureaucracy, corruption, and public policy, among others are also significant determinants of HPV-related health status. Several structural factors within the field of medicine, such as, research, knowledge and training, health infrastructure, administration, services, etc, and biological/physiological factors, such as, gender, age, genetics, prevailing diseases, among others, also determine an individual's HPV-related health status. An overall poor health, arising from a combination of certain specific factors or several medical and non-medical determinants of health puts an individual at a high risk of contracting HPV infections and HPV-related diseases.

Timely immunization with the HPV prophylactic vaccine, along with regular HPV screening, can help prevent HPV infections and HPV-related cancers (Schiffman, Wentzensen, Wachold, Kinney, Gage, & Castle, 2011; Ronco, et al., 2014; Petrosky, et al., 2015; Zhai & Tumban, 2016). The safety and the efficacy of the HPV vaccine have been confirmed by the results of large

trials across the different countries and health contexts. Currently, there are three types of approved prophylactic HPV vaccines available for use: the bivalent (against HPVs 16/18), the quadrivalent (against HPVs 6/11/16/18) and the 9-valent vaccines (against HPV 6/11/16/18/31/33/45/52/58).

In 2017, the National Technical Advisory Group on Immunization (NTAGI) recommended introducing the HPV vaccine in the Universal Immunization Programme (UIP) of India (NTAGI, 2017). In 2009, a feasibility study of the HPV vaccine conducted by an American non-profit organization, Program for Appropriate Technology in Health (PATH), in partnership with the provincial governments of the Indian states of Andhra Pradesh and Gujarat, hit a roadblock following the deaths of eight pre-adolescent girls, who were among the 24,000 girls who had been administered the vaccine during the study. The Parliamentary Standing Committee of the Ministry of Health and Family Welfare (MHFW), India, highlighted ethical violations committed during the trial conducted jointly by PATH and Indian Council of Medical Research (ICMR), which was one of PATH's technical partners for the study in India. The study was abruptly stopped, even though it was found that the deaths of the adolescent girls were not related to immunization with the HPV vaccine (Larson, Brocard, & Garnett, 2010). In 2012, a writ petition filed in the Supreme Court of India called for revoking licenses of the two HPV vaccine manufacturers, Merck Sharp & Dohme (MSD) and GlaxoSmithkline (GSK), citing that the then Drug Controller General of India (DCGI) had allegedly approved the vaccine by the manufacturers without conducting proper clinical trials and without any evidence of the vaccine's efficacy and safety. What with the decision still pending with the apex court of India, the Government of India has suspended its decision on introducing the vaccine by the two manufacturers in the UIP. However, the Indian states of Delhi and Punjab have introduced the vaccine for adolescent girls in their immunization program as an optional vaccine (Narayanan, 2018). An Indian pharmaceutical company is currently in its final stage of clinical testing of a quadrivalent HPV vaccine. It remains to be seen whether the HPV vaccine made by the Indian manufacturer, after completing trials and its market launch, will be adopted in the UIP or not.

### ***HPV and media coverage***

Health behavior associated with the causes of HPV infections, and vaccine uptake in a population are influenced by the public perception of the risks of HPV infections and beliefs related to the efficacy of HPV vaccine. The news media plays a crucial role in forming a public perception of risks and health beliefs by disseminating information about health issues and policies. Finding its theoretical base in the concept of media influence and the ecological model of health behavior (Sallis & Owen, 2015), this study involves an analysis of news coverage related to HPV and HPV vaccine in English language news media in India from 2015 to 2018. Since public perception of an issue is based on its interpretation by the public using personal and social frames, including those presented by the media (Goffman, 1974), the prime focus of this study is to analyze the frames assigned to the HPV and HPV vaccine issue by the media. The World Health

Organization (WHO) Commission on Social Determinants of Health recommends including information about social determinants of health in public policy and awareness messages (Commission on Social Determinants of Health, 2008). The study also screens the news items to identify and analyze the presence of medical and non-medical determinants of HPV-related health status.

In India, awareness about HPV-related diseases and HPV vaccination is low (Hussain, et al., 2014; Rashid, Labani, & Das, 2016; Chawla, Chawla, & Chaudhary, 2016). Recent studies have also shown resistance to the HPV vaccine, citing fears about post-vaccination complications and the prohibitively high cost of vaccine (Singh, et al., 2018). However, there's evidence that attitude towards the HPV vaccine, and associated risk-benefit beliefs among parents of adolescents can be modified through strategic messages which focus on highlighting the risks of HPV infections and the efficacy of the vaccine against HPV-related diseases (Degarege, et al., 2019).

While research on HPV and HPV vaccine-related messages in Indian media is lacking, significant presence of negative information regarding vaccines and immunization has been found on Indian online and web-based media. The negative information found is primarily coverage of adverse events reporting – from minor allergic reactions to rare deaths – without any proof of causality, or is about shortage of vaccine and social resistance to immunization (Das & Singh, 2018). Research shows that negative news coverage can generate a negative information loop, beginning with a negative media report about a vaccine and leading to a spike in adverse events reporting post-vaccination. Consequently, there is a drop in vaccine uptake, inviting more negative media coverage. A Denmark-based study (Suppli, Hansen, Rasmussen, Valentiner-Branth, Krause, & Mølbak, 2018) found a significant negative correlation between negative media coverage of vaccines and vaccine uptake, coinciding with a spike in Google search activity related to the side effects of the HPV vaccine, Gardasil, manufactured by MSD.

## **II. METHODS AND INSTRUMENTS**

A sample of HPV and HPV vaccine-related news coverage was drawn from four leading national daily English language newspapers: *The Hindu*, *The Times of India*, *Hindustan Times* and *The Indian Express*; and two independent news website: *The Wire* and *Scroll.in*, for the period 2015-2018. The English language press in India was purposively selected to study the HPV-related media messages disseminated among the urban upper/middle class and educated population, which constitutes the main readership group of the English language media in India (Parameswaran, 1997). The sample of new items was selected through keyword search in the headline and/or the body text of news items using four terms: *HPV*, *Human Papillomavirus*, *HPV vaccine* and *cervical cancer*. A keyword search on the online and print versions of the selected news media filtered a sample of 138 news items for the study. All news items were studied and manually coded using content analysis as the prime method for textual analysis. Qualitative and quantitative findings of the

textual enquiry measures listed below were used to find the frames employed by the media in its coverage of HPV and related issues.

- (1) **Health Issue:** Each news item was categorized on the basis of its prime focus on the HPV-related health issue under the following categories: *HPV; HPV vaccine/immunization; HPV-related cancers, HPV/HPV-related cancers screening, and HPV/HPV-related cancer treatment.*
- (2) **News type:** Each news item was categorized as either *news; feature/article; editorial/opinion; or others.*
- (3) **News source:** The attributed source of each news item was recorded and coded.
- (4) **Attribution:** Attribution of quotes and other information within each news item was recorded and coded. The two broad categories of attribution were: *authoritative sources*, such as, governments, health organizations and institutes, research and publication, health professionals, health care and other industry, and public figure; and *non-authoritative source*, such as, patients or the public.
- (5) **Place:** Each news item was categorized on the basis of its framing of HPV-related issues using geographical location as *global; national; international; regional or local.*
- (6) **Sentiment towards HPV vaccine:** sentiment towards the HPV vaccine in each item was recorded and categorized as follows:
  1. *Positive towards HPV vaccine:* News items containing information or references that support immunization against HPV; cite efficacy and safety of the vaccine.
  2. *Negative towards HPV vaccine:* News items that carry only negative HPV vaccine information, including inefficacy, dangers, side-effects and high cost.
  3. *Neutral or having no opinion:* News items that do not present a stance on the HPV vaccine, or only mention the vaccine without recommending or opposing it.
  4. *Contested position on the HPV vaccine:* News items that pit the positive and negative information related to the vaccine against each other, establishing a conflict, however, without a resolution that favors any one side.
- (7) **Health approach:** Each news item was categorized on the basis of its prime public health approach, which coded as *prevention; awareness; screening/testing, or control.*

- (8) **Determinants of health:** Using a directed content analysis approach (Hsieh & Shannon, 2005), each news item was categorized on the basis of medical and non-medical determinants of health (DOH). The DOH categories were constructed on the basis of the determinants of health listed by the Commission on Social Determinants of Health (CSDH) by World Health Organization (WHO). The categories include structural factors like the social and economic environment, the physical environment, and individual characteristics and behaviors, among the non-medical determinants of behavior (WHO, 2019).

Each news item is categorized within a particular DOH if it includes references to that DOH and carried statements claiming the influence of the said DOH on the HPV-related health status of an individual or group. The sampled news items that were found to be containing more than one DOH were assigned to every category that was applicable in the analysis. The DOH categories were:

1. **Health behavior:** defined as statements claiming the impact of personal hygiene, nutrition, sexual behavior and individual attitude on HPV health status.
2. **Economic:** defined as statements claiming impact of livelihood, low-income, cost of vaccine and health services, the cost of medical interventions, economic independence and affordability of health and livelihood amenities on HPV health status.
3. **Social:** defined as statements containing reference to social factors, like gender, marital status, social norms, social hierarchy, race, ethnicity, social support, education, culture, customs and beliefs, as influencers of HPV health status.
4. **Environmental:** defined as statements claiming influence of the physical environment, such as, the natural environment, climate, resources; living and work environment; and infrastructure on HPV health status.
5. **Political:** defined as containing references to government policies, political environment, bureaucracy and ideology as an influence on the HPV health status.
6. **Biological/Physiological:** defined as containing references to age, sex, prevailing health status, illness history or other bodily factors as a factor in deciding HPV health status.
7. **Medical:** defined as containing references to professional expertise, medical practice, infrastructure, research, knowledge and other aspects of medical field as a factor influencing HPV health status.

An association between the news framed according to each DOH, HPV health issue and sentiment towards the health issue was conducted using cross tabulation of coded data followed by association testing using the Fisher's exact test of independence.

### III. RESULTS

**Health issue:** In the sample of 138 stories, 61 (44.2%) news items focused on HPV vaccine, 44 (31.8%) were about HPV-related cancers, primarily cervical cancer among women, 17 (12.3%) were about HPV-related scientific and medical information, 12 (8.7%) were about screening and 4 (2.9%) were about treatment and related interventions.

**News type:** 77 (55.7%) were news stories, 44 (31.9%) were articles or features, and 17 (12.3%) were either opinion or editorials.

**News source:** The data reveals that 86 (62.3%) stories were written by a newspaper staffer, 32 (23.2%) stories were sourced from a news agency and 20 (14.5%) were written by guest writers from the field of medicine, public health and science, either expressing personal opinion or representing an organizational perspective.

**Sentiment towards the vaccine:** Figure 1 shows the distribution of HPV-related coverage across six media outlets from 2015 to 2018 using a box plot with quartile-wise distribution. An overlay of the sentiment towards the HPV vaccine represented by each news item is included in the graph. The studied data reveals presence of an overall positive sentiment represented in the news items. In the data, 78 news items (56.5%) mentioned the efficacy and importance of HPV vaccine as a potent prophylactic against HPV-related diseases; 44 news items (31.8%) represented neutral or no opinion about the HPV vaccine; 12 news items (8.7%)

contained contested sentiment; and 4 news items (2.9%) contained a negative sentiment towards the vaccine.

**Attributions:** Medical professionals were also amongst the most attributed sources within news items (26%), followed by Government and government agencies (19%); Scientific research or journal articles (17.3%); international health organizations (13.7%); national health institutes (10.1%); Indian health organizations (2.8%) and others that included governments of other countries, pharmaceutical industry, celebrity or a public figure (13.7%).

**Place:** In the data set, 108 stories (78.2%) covered the HPV and HPV vaccine issues within a national context; 94 news items (68.1%) discussed the issue within a global context; 48 stories (34.7%) had a regional context; 36 stories (26%) frames the issue within an international context; and only 1 news item (0.7%) contained a local context.

**Determinants of health:** Health behavior was the most frequently used non-medical DOH of HPV-related health status (47.1%), followed by economic (26%), social (24.6%), environmental (8.7%) and political (6.5%). In the sample, 129 news items (93.4%) also contained references to medical and biological/physiological determinants of health, while 14 news items (10.1%) made no reference to any DOH, leaving out any information regarding HPV and related illnesses causal factors.

**Health approach:** Prevention against HPV infections and related diseases as a health approach was the focus of 81 news items (58.7%); 27 news items (19.5%) were based on the awareness approach of public health; 14 news items (10.1%) were based on screening for HPV infections, cervical cancer and other HPV-related diseases; 8 news items (5.7%) focused on HPV-related treatment, while another 8 news items (5.7%) focused on control at the public health level.

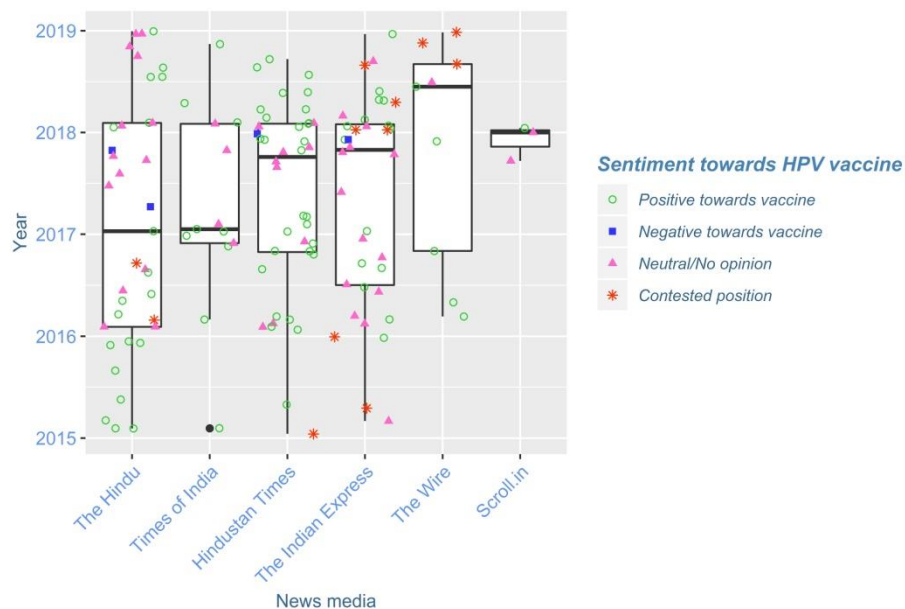


Figure 1

In the subset of news items focusing on prevention, 50 items (61.7%) were about the HPV vaccine, while only 1 item (1.2%) was about HPV-related screening and diagnostics. About 21 stories (25.9%) focused on general messages to prevent HPV-related cancers, and about 9 (11.1%) were preventing HPV infections. In the prevention subset, 66 news items (81.4%) carried a positive sentiment towards the HPV vaccine, 2 items (2.4%) carried a negative sentiment (total negative were 4 in the data set), 8 items (9.8%) were neutral or had no opinion and 5 items (6.1%) presented a contested position.

In the subset of news items based on the awareness approach, 11 news items (40.7%) were about HPV-related cancers, 10 news items (37%) carried awareness messages about by the HPV vaccine and 6 news items (22.2%) carried awareness messages about HPV.

**Association between HPV health issues, sentiment towards HPV vaccine and determinants of health**

The studied data reveals a significant association between the type of HPV health issue and the sentiment towards HPV vaccine

present in the news items (p-value = 0.0004998). The association between the HPV health issue and sentiment towards the vaccine was calculated using Fisher's exact test of independence for count data with simulated p-value (based on 2000 replicates). In the data categorized per HPV health issue, among the 61 news items that focused on the HPV vaccine, 41 news items (67.2%) carried a positive sentiment towards the vaccine; 11 (18%) contained contested sentiment news items; 6 news items (9%) were neutral as they only mentioned the HPV vaccine, and 3 news items (5%) carried a negative sentiment story. News items about HPV-related cancers were most likely to have a neutral sentiment, or no opinion, about the HPV vaccine (22 stories, as well as a positive sentiment towards the HPV vaccine (21 stories). Similarly, news items about HPV and related illness screening and diagnostics, and HPV/cervical cancer treatment, contained either a positive sentiment (7 news item and 2 news items, respectively) or contained neutral or no opinion about the HPV vaccine (5 items and 2 items, respectively).

**Tables 1-6** provide a summary of HPV-related news items categorized on the basis of determinants of health frame, HPV health issue and sentiment towards HPV vaccine.

Determinant of Health	HPV related issue	Sentiment towards vaccine				Total
		Positive towards vaccine	Negative towards vaccine	Neutral/ No opinion	Contested	
Health Behavior	HPV	4	0	9	0	13
	HPV vaccine	12	0	1	3	16
	Cervical Cancer/ HPV related Cancers	16	1	14	0	31
	HPV /Cervical Cancer Screening	2	0	3	0	5
	Treatment	0	0	0	0	0
<b>Total</b>		<b>34</b>	<b>1</b>	<b>27</b>	<b>3</b>	<b>65</b>

**Table 1** (above) summarizes the results of analysis of sentiment towards HPV vaccine in news items focusing on different HPV-related health issues within the data subset of news items framed using the health behavioral determinants of health. There is a significant association between HPV health issue and sentiment towards HPV vaccine (p= 0. 003498) based on Fisher's exact test of independence using replicates (2000)

Determinant of Health	HPV related issue	Sentiment towards vaccine				Total
		Positive towards vaccine	Negative towards vaccine	Neutral/ No opinion	Contested	
Economics	HPV	1	0	1	0	2
	HPV vaccine	14	1	1	6	22
	Cervical Cancer/ HPV related Cancers	6	1	3	0	10
	HPV /Cervical Cancer Screening	1	0	1	0	2
	Treatment	0	0	0	0	0
<b>Total</b>		<b>22</b>	<b>2</b>	<b>6</b>	<b>6</b>	<b>36</b>

**Table 2** (above) summarizes the results of analysis of sentiment towards HPV vaccine in news items focusing on HPV-related health issues within the data subset of news items framed using the economic determinants of health. There is an insignificant association between HPV health issue and sentiment towards HPV vaccine ( $p = 0.1579$ ) based on Fisher's exact test of independence using replicates (2000).

Determinant of Health	HPV related issue	Sentiment towards vaccine				Total
		Positive towards vaccine	Negative towards vaccine	Neutral/ No opinion	Contested	
<b>Social</b>	HPV	0	0	6	0	<b>6</b>
	HPV vaccine	12	0	0	2	<b>14</b>
	Cervical Cancer/ HPV related Cancers	4	1	6	0	<b>11</b>
	HPV /Cervical Cancer Screening	1	0	2	0	<b>3</b>
	Treatment	0	0	0	0	<b>0</b>
<b>Total</b>		<b>17</b>	<b>1</b>	<b>14</b>	<b>2</b>	<b>34</b>

**Table 3** (above) summarizes results of analysis of sentiment towards HPV vaccine in news items focusing on HPV-related health issues within the data subset of news items framed using the social determinants of health. There is a significant association between HPV health issue and sentiment towards HPV vaccine ( $p = 0.0004998$ ) based on Fisher's exact test of independence using replicates (2000).

Determinants of Health	HPV related issue	Sentiment towards vaccine				Total
		Positive towards vaccine	Negative towards vaccine	Neutral/ No opinion	Contested	
<b>Environmental</b>	HPV	0	0	1	0	<b>1</b>
	HPV vaccine	2	0	0	0	<b>2</b>
	Cervical Cancer/ HPV related Cancers	3	0	4	0	<b>7</b>
	HPV /Cervical Cancer Screening	1	0	1	0	<b>2</b>
	Treatment	0	0	0	0	<b>0</b>
<b>Total</b>		<b>6</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>12</b>

**Table 4** (above) summarizes results of analysis of sentiment towards HPV vaccine in news items focusing on HPV-related health issues within the data subset of news items framed using the environmental determinants of health. There is an insignificant association between HPV health issue and sentiment towards HPV vaccine ( $p = 0.7026$ ) based on Fisher's exact test of independence using replicates (2000).

Determinants of Health	HPV related issue	Sentiment towards vaccine				Total
		Positive towards vaccine	Negative towards vaccine	Neutral/ No opinion	Contested	
<b>Political</b>	HPV	1	0	0	0	<b>1</b>
	HPV vaccine	3	0	1	4	<b>8</b>
	Cervical Cancer/ HPV related Cancers	0	0	0	0	<b>0</b>
	HPV /Cervical Cancer Screening	0	0	0	0	<b>0</b>
	Treatment	0	0	0	0	<b>0</b>
<b>Total</b>		<b>4</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>9</b>

**Table 5** (above) summarizes results of analysis of sentiment towards HPV vaccine in news items focusing on HPV-related health issues within the data subset of news items framed using the political determinants of health. There is an insignificant association between HPV health issue and sentiment towards HPV vaccine ( $p=1$ ) based on Fisher’s exact test of independence using replicates (2000).

Determinants of Health	HPV related issue	Sentiment towards vaccine				Total
		Positive towards vaccine	Negative towards vaccine	Neutral/ No opinion	Contested	
Medical/ Biological/ Physiological	HPV	4	0	7	1	12
	HPV vaccine	31	1	5	8	45
	Cervical Cancer/ HPV related Cancers	17	0	19	0	36
	HPV /Cervical Cancer Screening	7	0	3	0	10
	Treatment	0	0	2	0	2
<b>Total</b>		<b>59</b>	<b>1</b>	<b>36</b>	<b>9</b>	<b>105</b>

**Table 6** (above) summarizes results of analysis of sentiment towards HPV vaccine in news items focusing on HPV-related health issues within the data subset of news items framed using the medical/biological/physiological determinants of health. There is a significant association between HPV health issue and sentiment towards HPV vaccine ( $p = 0.0004998$ ) based on Fisher’s exact test of independence using replicates (2000).

#### IV. ANALYSIS AND DISCUSSION

A prevalence of prevention and awareness messages related to HPV-related issues and the HPV prophylactic vaccine in the HPV-related coverage by the English language news media in India was found. Prevention messages focusing on the HPV vaccine largely carried a positive sentiment towards the vaccine, while 2 out of the total 4 news items in the data set with a negative sentiment were also found in this subset. News items carrying awareness messages were among the ones with the most neutral sentiment or no mention of the HPV vaccine, while the remaining 2 out of 4 negative sentiment news items were also found in this sub-set. These findings suggest that the risk-benefit messages related to the HPV vaccine are frequently framed within the prevention and awareness health discourse disseminated by the media.

The data reveals coverage of the HPV-related issues and the HPV vaccine to be temporally connected. However, thematic framing was used in news items carrying contested position or negative sentiment towards the HPV vaccine. It was found that 3 out of 4 stories with a negative sentiment towards the HPV vaccine appeared in the news media after officials of an economic affairs-related outfit that is affiliated with a right-wing political organization in India, wrote to the Prime Minister of India’s office in December 2017, against the implementation of the HPV vaccine in the UIP, as a reaction to the NTAGI recommendation to include the vaccine (Mathew & Ghosh, 2017). The remaining one news item with a negative sentiment, written by a guest writer for the news media, was an opinion-based article about ethical issues in clinical trials conducted in India. All the stories with the negative sentiment included references to the 2009 HPV vaccine trial controversy in India, and associated vaccine inefficacy with the alleged ethical

violations in the trials. The stories related to the controversial letter to PMO also cited the high cost of the vaccine as a drawback. The deaths of the pre-pubescent girls during the 2009 HPV vaccine trial were mentioned without clearly associating them with HPV immunization and without providing evidence for or against the safety of the vaccine. Almost all news items with the contested sentiment towards the vaccine carried references to the controversial trial by PATH in 2009.

Health behavior was the most frequently referenced determinant of HPV-related health status. News items that framed the HPV-related issues using the health behavior DOH mentioned personal hygiene, sexual behavior, specifically having multiple sex partners and unprotected sex, as a high-risk factor in HPV-related diseases. References to general risk behaviors associated with cancer incidence, such as, smoking, tobacco use and unhealthy lifestyle, etc, were also present. Studies about coverage of the HPV vaccine in the US and British news media reveal mediation of links between sexual behavior and immunization with the HPV vaccine by the media. The news media coverage primarily argued against any causal relationship between HPV vaccination and sexual behavior that might lead to rise in promiscuity following immunization, (Forster, Wardle, Stephenson, & Waller, 2010; Casciotti, Smith, Tsui, & Klassen, 2014). However, no such mediation of links between the HPV vaccine and sexual promiscuity was present in the news items sampled for this study.

An absence of non-authoritative sourcing and attributions, and the dominating presence of authoritative sources of news items and attributions within the news items reveal the media’s use of authoritative frames in its coverage of the HPV issues. The public, the patient or the individual opinion and voice was absent. Exemplification, which has shown to influence public

opinion about issues related to health and society (Zillmann, Gibson, Sundar, & Perkins, 1996), was absent in the authoritative framing of the HPV issue.

The HPV vaccine-related news items were mostly framed within the economic DOH, followed by the health behavior DOH. This suggests that the media's perception of economic factors, such as the cost of the vaccine, affordability of health services and interventions in a low-income country like India, and its perception of behavioral factors, such as, sexual activity, hygiene and lifestyle, etc, influences its coverage of the HPV vaccine issue. News items related to cervical cancer and other HPV-related cancers were mostly framed within the health behavior DOH, and almost never within the environmental DOH frame. The implication of this framing can be studied in future research related to HPV-related media coverage. It was also found that the HPV-related issues were routinely covered in a national or global context, while regional and local perspectives were sparse.

## V. CONCLUSION

The study revealed a predominantly positive sentiment towards the HPV vaccine in the media coverage of the issue. The news items with the negative or the contested sentiment towards the

vaccine were thematically framed by the media. References to previous adverse events' reportage, the vaccine trial controversy, the cost of vaccine and negative perception related to the vaccine, appeared as the most significant discursive elements in the thematic framing of the HPV vaccine issue. All news items maintained authoritative sourcing and attribution pattern. The association between the presence of positive attitude towards the HPV vaccine and authoritative framing using authoritative sources and attribution can be further investigated.

Becker (1986) stated that the media usually levied responsibility on the individual for his health and wellbeing, while placating the role of society, state, etc, in preventing and curing a disease. The prevalence of an authoritative framing of the HPV-related issues using behavioral determinants of health by media, as seen in the studied sample, necessitates a critical examination of attribution of responsibility and its affect on public policy, public perception and health behavior. Since the results of this study are based on a selected sample of the English language news media in India, it is recommended that the results be used as probes for studying HPV-related coverage in the vernacular press, online media and social media as well.

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