

Amount of Narratives Used on Japanese Pro- and Anti-HPV Vaccination Websites: A Content Analysis

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Abstract

Background: HPV vaccination is an effective way in preventing cervical cancer. However, HPV vaccination coverage rate has fallen to only a few percent in Japan. Anti HPV-vaccination websites often use narratives of those who have experienced adverse reactions to HPV vaccine to enhance their persuasiveness. Scholars suggest using the same medium to promote HPV vaccination online; e.g., presenting narratives of those who have experienced cervical cancer. We examined the amount of narratives used on Japanese pro- and anti-HPV vaccination websites. **Methods:** We conducted online searches using two major search engines (Googl.jp and Yahoo!.jp). Identified websites were classified as “pro,” “anti,” or “neutral” depending on their claims. Two independent raters coded the pro and anti websites and counted the number of narratives of people who experienced side effects of HPV vaccine or cervical cancer. **Results:** A total 26% of anti websites posted narratives on side effects. No pro websites posted narratives about having cervical cancer. **Conclusion:** Pro-HPV vaccination websites is recommended to post narratives to enhance the persuasiveness of their arguments.

Keywords: Cervical cancer- human papillomavirus (HPV) vaccination- anti-vaccination movement- internet-narrative

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Introduction

Cervical cancer, which is commonly caused by chronic infection with an oncogenic strain of HPV, is the third most commonly diagnosed cancer and the fourth leading cause of cancer deaths among women worldwide (Ferlay et al., 2015). Approximately 10,000 people are diagnosed with, and about 3,000 people die of, cervical cancer annually in Japan (National Cancer Center Japan, 2016). Mortality due to cervical cancer has increased, and in recent years patients in their 20s and 30s have been most widely affected (National Cancer Center Japan, 2016). HPV vaccination is recommended by the World Health Organization (WHO) (WHO strategic advisory group of experts on immunization, 2016) and has been made available in most industrialized countries.

The HPV vaccination rate for age-eligible young girls aged 12–16 years was as high as about 70%–80% in 2011 and 2012 in Japan (Hanley et al., 2015). However, owing to a series of negative campaigns by mass media on severe adverse reactions caused by the HPV vaccination, such as difficulties walking and memory impairment, the rate of HPV vaccination fell sharply to only a few percent by 2014 (Hanley et al., 2015). Fears concerning adverse reactions to HPV vaccination are now a significant reason for

avoiding vaccination in Japan and in other Asian-Pacific countries (Obel et al., 2015; Saqer et al., 2017; Toh et al., 2017; Yam et al., 2017), despite studies demonstrating the safety of HPV vaccines (WHO strategic advisory group of experts on immunization, 2016).

The anti-vaccination movement, which propagates on the internet that vaccines have little or no efficacy yet carry a high risk of side effects and warns people against receiving vaccination, took advantage of the HPV vaccination crisis. We previously found that there were more Japanese anti-HPV vaccination websites than pro websites (Okuhara et al., 2017). Anti-HPV vaccination websites can be easily and uncritically shared among many individuals owing to advances in social distribution online (Kata, 2010). It is a matter of great concern that anti-HPV vaccination websites may help to prolong the HPV vaccination crisis.

The anti-vaccination movement on the internet often uses narratives of people who have experienced adverse reactions to vaccines, to enhance the persuasiveness of their arguments (Shelby and Ernst, 2013). Narrative is an account of an individual’s experience conveyed in the first person or the third person (Winterbottom et al., 2008). Narratives of “victims of vaccines” evoke vivid images, appeal to emotions, and often propagate rapidly (Shelby

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and Ernst, 2013); e.g., “She began to have seizures and convulsions one week after HPV vaccination. Her life has changed completely since then.” Studies indicate that such narratives increase people’s risk perception of vaccine side effects (Betsch et al, 2011), and that anti-vaccination websites including such narratives decrease the readers’ intention to vaccinate (Betsch et al., 2010).

To counter the power of such anti-vaccination narratives, in addition to evidence-based vaccine information, using narrative to promote vaccination online has been proposed (Shelby and Ernst, 2013); e.g., “I am suffering from the aftereffect of cervical cancer. Therefore, I recommend you receive the HPV vaccine to prevent cervical cancer.” A website of the US Centers for Disease Control and Prevention (CDC) has posted the narrative of a survivor of cervical cancer who recommends that readers receive the HPV vaccine (CDC, 2014). Several recent studies in the context of vaccine communication have indicated that narratives about experiences of disease increase the audience’s risk perception of developing the disease as well as the intention to vaccinate and vaccination behaviors to prevent the disease, and to a greater degree than do didactic messages (de Wit et al., 2008; Hopfer, 2012; Prati et al., 2012; Nan et al., 2015). Thus, presenting narratives of people who have experienced the symptoms, treatments, and sequelae of cervical cancer may be effective, to enhance the recommendation to receive the HPV vaccine.

However, to our knowledge, the amount of such narratives that are currently used on pro- and anti-HPV vaccination websites is unknown. In the present study, we focused on the narratives of people who had experienced adverse reactions to the HPV vaccine and those who had experienced cervical cancer, and examined the amount of such narratives on Japanese pro and anti-HPV vaccination websites.

Materials and Methods

Material collection and classification

We conducted online searches on October 5, 2016 using a formula for Japanese-language input entered into the two most popular search engines in Japan, Google Japan (www.google.co.jp) and Yahoo! Japan (www.yahoo.co.jp), which respectively accounted for approximately 66% and 30% of all internet searches in September 2016 (StatCounter Global Stats, 2016). Although the English language has terms such as “vaccine,” “vaccination,” and “immunization,” the Japanese language only contains the terms “wakuchin” and “yobouseshu.” “Wakuchin” corresponds to “vaccine” and “yobouseshu” corresponds to “vaccination” and “immunization.” Additionally, Japanese refer to HPV vaccine as “sikyu keigan (i.e., cervical cancer) wakuchin.” Therefore, the search was performed using the keywords “sikyu keigan AND (wakuchin OR yobouseshu),” which was translated in this manuscript as: cervical cancer AND (vaccine OR vaccination); cervical cancer AND (vaccine OR vaccination) AND (danger OR safe); (side effect OR safety); (benefit OR risk); (approval OR disapproval); (necessary OR unnecessary); (efficacious OR inefficacious); (meaningful OR meaningless); (receive

OR not receive). The top 100 results were reviewed for each search formula by the first author. Duplicate listings, bulletin board systems, Twitter, Wikipedia, videos, and websites exclusively about the government’s suspension of proactive recommendation for HPV vaccination (e.g., municipal press releases) were excluded. The sentiments/claims of the materials were independently classified as “pro,” “anti,” or “neutral” by two raters: the first author and a trained rater (for coding guidelines, see Appendix A for coding guidelines).

Coding procedure

On the classified pro and anti websites, we investigated the presence of narratives of people who had experienced side effects of HPV vaccines or those who had experienced cervical cancer. The narratives were classified as follows: the narrator was the same person who had experienced an adverse reaction or cervical cancer; the parent of such a person; the author of the article (see Appendix B for coding guidelines). The coding unit of the narratives was one narrator. For example, when an author of a website presented the stories of three girls who suffered from side effects after vaccination, we counted the number of narratives as three. We applied this coding unit because in this way, we could avoid duplicate counts when one person’s story was divided into multiple parts and presented in multiple places throughout one article.

Initially, the first author and another rater conducted a preliminary analysis by applying the coding guidelines to 30 randomly selected materials, to resolve any discrepancies in interpretation. They then independently coded all materials.

Statistical analysis

The kappa statistic was used to measure interrater agreement for both material classification and coding procedure. Statistical analyses were performed using IBM SPSS Statistics for Windows, Version 21.0 (IBM Corp., Armonk, NY, USA).

Results

The interrater agreement was excellent (weighted kappa coefficient of .957 for material classification, and from .796 to .947 for coding procedure). Of the total 270 websites identified, up to 137 websites (50.7%) propagated anti-HPV vaccination messages, 101 (37.4%) were pro-HPV vaccination, and 32 (11.9%) were neutral. Of the 101 pro-HPV vaccination materials, 72 were by health professionals, 19 by mass media, and 10 by laypersons. Of the 137 anti-HPV vaccination materials, 20 were by health professionals, 35 by mass media, and 82 by laypersons. As Table 1 shows, 35 of the anti websites (26%) included narratives on adverse effects of HPV vaccine, and those 35 anti websites contained 74 narratives in total. Four of the pro websites (4%) included narratives on side effects of HPV vaccine, and those four websites included 15 narratives. No narratives about cervical cancer were posted on either pro or anti websites.

Table 1. Distribution of Narratives and Websites Including Narratives by Category

		Pro websites (n = 101)						Anti websites (n = 137)					
		Side effects of HPV vaccine			Cervical cancer			Side effects of HPV vaccine			Cervical cancer		
		Self	Parent	Author	Self	Parent	Author	Self	Parent	Author	Self	Parent	Author
Narratives, n	Subtotal	5	5	5	0	0	0	14	20	40	0	0	0
	Total	15			0			74			0		
Websites, n (%)	Total	4 (3.9)			0 (0)			35 (25.5)			0 (0)		

Discussion

The present study examined the amount of narratives of people who have experienced side reactions to HPV vaccines or cervical cancer on pro and anti-HPV vaccination websites. We found that up to 26% of anti websites posted 74 narratives of people who had adverse reactions after HPV vaccination. As expected, anti-HPV vaccination websites used the narrative strategies to some extent.

A few pro websites had also posted narratives describing side effects of the HPV vaccine. These pro websites posted the narratives to suggest the possibility that the symptoms manifested by some girls may be not adverse reactions to the vaccine but rather psychogenic disorders that are peculiar to puberty. On the other hand, the narratives on side effects of the HPV vaccine on anti websites conveyed messages about the toxicity and danger of the vaccine. This finding was consistent with those of previous content analyses (Kata, 2010). Considering the persuasiveness of such anti-vaccination narratives (Shelby and Ernst, 2013; Betsch et al., 2011), our results highlight a matter of great concern because these anti websites may successfully persuade some members of their audience to forego receiving the HPV vaccine.

In contrast, no narratives of people who had experienced cervical cancer were found on either pro or anti websites. Considering the persuasiveness of such narratives in the promotion of vaccination (de Wit et al., 2008; Hopfer, 2012; Prati et al., 2012; Nan et al., 2015), this finding was regrettable. This result may be because health information prefers to convey statistical information to be evidence-based; e.g., “The frequency of severe adverse reactions to the HPV vaccine, such as acute disseminated encephalomyelitis, is one in 4.3 million.” Additionally, in July 2016 in Japan, girls who suffer from side effects, and their families, sued Ministry of Health, Labour and Welfare and pharmaceutical companies. Since this filing suit, victim support organizations and anti-HPV-vaccine activists have directed harsh online and offline criticism at pro-HPV-vaccine activists. Therefore, people who had experienced cervical cancer may not want to appear in public to promote HPV vaccination.

Ways of improving this lack of narrative persuasion in pro-HPV vaccination websites were out of the scope of this study, though we can offer some suggestions as follows. After obtaining our results, we conducted a supplemental online search using Google Japan and the keywords “cervical cancer AND experience”. As a result, we identified dozens of websites posting narratives of people who had experienced cervical cancer in the top several dozen hits. These websites were authored by

pharmaceutical companies, nonprofit organizations, and individual cancer survivors. Most stories were narrated by the person who experienced cervical cancer and recommended HPV vaccination and cervical cancer screening, as suggested for the promotion of vaccination (Shelby and Ernst, 2013). Pro-HPV vaccination websites can make use of these existing websites. For example, pro websites may link to existing websites, or the authors of these websites can optimize search engine results with keywords such as “cervical cancer AND (vaccine OR vaccination).” By utilizing these existing websites, HPV vaccine promoters may be able to partially complement the current lack of narratives on pro-HPV vaccination websites.

The present study has some limitations. First, although a considerable number of websites (n=270) were selected for analysis, availability, means of access, and time limitations made it unfeasible to examine all websites. Second, we did not systematically analyze the details of contents and the contexts of examined narratives. Third, our results may have reflected coders’ biases. Despite these limitations, this is the first study to examine the amount of narratives currently used on pro- and anti-HPV vaccination websites.

In conclusion, one-fourth of anti-HPV vaccination websites posted narratives of people who had experienced adverse reactions to the HPV vaccine. Conversely, no pro-HPV vaccination websites posted narratives of those who had experienced cervical cancer, even though such narratives may enhance persuasiveness of arguments promoting HPV vaccination. Posting narratives of individuals who have experienced cervical cancer on pro-HPV vaccination websites is expected because it is one means of countering the use of narratives by the anti-HPV vaccination movement on the internet. Utilizing existing websites that contain narratives about experiences of cervical cancer may be a shortcut to using these narrative strategies in the promotion of HPV vaccination online.

Abbreviation

HPV: human papillomavirus

WHO: World Health Organization

CDC: Centers for Disease Control and Prevention

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Conflicts of interest

None.

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