COMMENTARY

A content analysis of HPV related posts on instagram

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ABSTRACT

Human papillomavirus, or HPV, is the most common sexually transmitted disease in the United States. Despite the potential deleterious effects of HPV, vaccine uptake remains suboptimal. One potential venue for educating the public about HPV and vaccinations is through social media such as the widely used Instagram platform. Given the widespread reach of a platform with such a vast user base, the aim of this study was to describe posts related to HPV on Instagram. Content categories were established using fact sheets from the Centers for Disease Control HPV index page. Important content categories were created and the resultant coding sheet was used to analyze posts from the hashtag #HPV. Of the 150 posts analyzed, 53 posts (35%) mentioned the HPV vaccine. More were pro-vaccine (28%) versus anti-vaccine (7%). Posts mentioned the association of HPV with cancer (35%) and prevention of HPV (32%). Posts with a higher number of likes were more likely to mention cancer ($p = 0.016$) and HPV screening ($p = 0.041$). Among those that mentioned the HPV vaccine, posts that were anti-vaccine were less likely to mention prevention ($p < 0.001$) and cancer ($p < 0.001$). As new technology emerges and is widely adopted, health professionals should be aware and adept at using what is popular to influence given audiences. This applies to adolescents in particular, who, by and large are frequent users of technology for communication.

ARTICLE HISTORY

Received 25 October 2018
Revised 26 November 2018
Accepted 12 December 2018

KEYWORDS

HPV; social media; vaccination

Introduction

Human papillomavirus, or HPV, is the most common sexually transmitted disease (STD) in the United States (US).¹ It encompasses 150 related viruses, which are then given a number to represent the type of virus.² Some of these types can lead to various types cancer such as anal, cervical, mouth/throat, penile, vulvar, or vaginal.² In addition, those with HPV can develop genital warts. Transmission of HPV occurs through sexual contact.² The Centers for Disease Control and Prevention (CDC) reports that the prevalence for any occurrence of oral HPV in adults (ages 18–69) was 7.3% in the time spanning 2011–2014.³ In addition, the CDC reports that the prevalence for any occurrence of genital HPV in adults (ages 18–59) was 42.5% in the time spanning 2013–2014.³ A recent report by the CDC's Morbidity and Mortality Weekly indicates that almost half of US adolescents (ages 13–17) attained all doses of the HPV vaccine, however, it will be decades until researchers can determine the effectiveness of the vaccine at reducing HPV related cancers can be determined.⁴

To date, uptake in the vaccine has been suboptimal. A variety of barriers have been identified, which range from issues of trust to religious exemptions.⁶ The decision making process for HPV uptake is complex, and research suggests that those who use the internet to search for information are more knowledgeable.⁷ The popularity of parental/caregiver use of the internet in health decision making has been established.⁸ However, it is important to note that content on the internet can vary greatly in the messages conveyed. For example, anti-vaccination content was highly prevalent in a study that focused on parenting blogs.⁹ An

image sharing social media forum of interest is Instagram, which has a reported one billion users.¹⁰ Given the widespread reach of a platform with such a vast user base, the aim of this study was to describe posts related to HPV on Instagram.

Methods

Content categories were established using fact sheets from the Centers for Disease Control HPV index page.¹¹ Important content categories were created and the resultant coding sheet was used to analyze posts from the hashtag #HPV. Data was collected by one researcher (CHB) at three different time intervals, which were spaced two weeks apart in 2018 (September 7, September 21, and October 4). At each point in time, the 50 most recent posts using the hashtag #HPV were coded. Prior to coding, it was determined if the post was suitable for this study in that text (when applicable) was written in the English language and that the post pertained to HPV. At the first data collection point, there were 55,621 posts. At the second there were 57,700, and at the third there were 58,666. A total of 43 posts were excluded in the first round, 107 in the second and 49 in the third. Posts were coded on the spot by first recording the date posted and number of likes, and then proceeding to determine what the focal points of the posts were by using the coding sheet to demarcate yes or no for presence of content. If posts contained mention of HPV vaccination, they were either defined as pro-vaccination (those which encouraged or promoted receipt of the HPV vaccination), anti-vaccination (those which discouraged receipt of the HPV vaccination), or neutral

(those which neither encouraged nor discouraged). A sample of 10 images were randomly selected and coded by a second researcher to establish inter-rater reliability, which, when calculated indicated a high level of agreement with a Cohen's kappa of .955. Statistical tests were performed using SPSS (v23). Fisher's exact test were used except where all expected cell counts were greater than 5, in which case chi-square tests of association were used. Independent sample T-tests were used for continuous variables. Results were considered to be significant if $p < 0.05$. The IRB at William Paterson University does not review studies that do not involve human subjects and considers them to be exempt.

Results

Of the 150 posts analyzed, most (82%) contained both text and image. Most photos (54%) did not include a person, though more commonly women were shown (29%) versus men (9%, Table 1). Posts had an average of 27.7 likes with a range of 0–288 likes. Posts frequently mentioned the association of HPV with cancer (35%) and prevention of HPV (32%). Posts with a higher number of likes were more likely to mention cancer ($p = 0.016$) and HPV screening ($p = 0.041$, Table 2).

Among the 53 posts (35%) that mentioned the HPV vaccine, more were pro-vaccine (28%) versus anti-vaccine (7%). No posts that mentioned the vaccine were deemed neutral. Posts that were anti-vaccine had significantly more average likes (mean 46.91, standard deviation [SD] 71.0) than pro-vaccine posts (mean 19.14, SD 17.6, $p = 0.024$). Posts that were anti-vaccine were less likely to mention prevention ($p < 0.001$) and cancer ($p < 0.001$) than posts that were pro-vaccine (Table 2).

Discussion

The findings of this study indicate that content related to HPV on Instagram is varied in nature, and contain a variety of important messages, such as the ways in which HPV can be

Table 1. Characteristics of analyzed posts (N = 150).

		N	(%)
Gender displayed	Women	44	(29)
	Men	14	(9)
	Both	12	(8)
	Neither	81	(54)
Number of likes	0–10	58	(38)
	11–20	37	(25)
	21–30	19	(13)
	31+	37	(25)
Vaccine opinion	Pro	42	(28)
	Anti	11	(7)
	Not mentioned	97	(65)
Mention of...	Association with cancer	53	(35)
	Prevention	49	(32)
	Treatment	27	(18)
	Screening	23	(15)
	Diagnosis	15	(10)
	Risk Factors	11	(7)
	Association with genital warts	8	(5)
	Transmission	6	(4)

prevented. It is noteworthy that, in this small sample, there was an anti- HPV vaccine sentiment on Instagram, but it was less prevalent than the pro-vaccine sentiment which aligns with government recommendations for vaccination. Posts that were anti-vaccine, however, had a higher average number of Instagram likes. Future studies should focus on larger sample sizes to garner a better picture of the sentiment of messages geared toward HPV vaccines. It is important for health professionals to monitor popular internet and social media platforms to stay informed about the information that their patients might be accessing.

A study of YouTube, the popular video sharing platform suggests that information on the internet is not necessarily aligned with government recommendations to promote HPV vaccinations.¹² In addition, information can be difficult to read, which may influence decisions.¹³ Researchers studied the readability of material on the internet related to HPV vaccination and determined that that general public would likely have trouble understanding this information based on literacy rates.¹³ One study used Facebook, another popular platform to provide information on HPV and, subsequently, opportunities for HPV

Table 2. Comparison of posts with fisher's exact tests.

Mentions...		Number of Likes				Vaccine Opinion				p
		0–15		16+		Pro-Vaccine		Anti-Vaccine		
		(n = 75)		(n = 75)		(n = 42)		(n = 11)		
		n	(%)	n	(%)	n	(%)	n	(%)	
Treatment	Yes	17	(23)	10	(13)	1	(2)	0	(0)	0.605
	No	58	(77)	65	(87)	41	(98)	11	(100)	
Transmission	Yes	2	(3)	4	(5)	1	(2)	0	(0)	0.605
	No	73	(97)	71	(95)	41	(98)	11	(100)	
Risk Factors	Yes	4	(5)	7	(9)	5	(12)	0	(0)	0.229
	No	71	(95)	68	(91)	37	(88)	11	(100)	
Prevention	Yes	19	(25)	30	(40)	37	(88)	0	(0)	<0.001
	No	56	(75)	45	(60)	5	(12)	11	(100)	
Genital warts	Yes	5	(7)	2	(3)	4	(10)	0	(0)	0.287
	No	70	(93)	73	(97)	38	(90)	11	(100)	
Cancer	Yes	19	(25)	33	(44)	25	(60)	0	(0)	<0.001
	No	56	(75)	42	(56)	17	(40)	11	(100)	
Screening	Yes	7	(9)	16	(21)	3	(7)	0	(0)	0.361
	No	68	(91)	59	(79)	39	(93)	11	(100)	
Diagnosis	Yes	6	(8)	9	(12)	2	(5)	0	(0)	0.461
	No	69	(92)	66	(88)	40	(95)	11	(100)	

*Chi square

Bold: $p < 0.05$

vaccination for adolescents.¹⁴ While thousands of adolescents accessed the information, only two received vaccination, thus suggesting that there is work to be done to gauge how to best use social media in health promotion.¹⁴ As new technology emerges and is widely adopted, there is opportunity for health professionals to become adept at using what is popular to influence given audiences. This is the case for adolescents in particular, who by and large are frequent users of technology for communication.

One major limitation of this study is the cross-sectional design. In attempt to give a wider picture of the contents on Instagram, data was collected at three different points in time. However, this still does not allow for widespread generalizability as contents on social media are constantly changing. Second, the time frame of the study was short. Third, the sample size was small. Nevertheless, this study offers new insight on the content of a widespread health problem on a social media platform with a vast user platform.

Acknowledgments

The authors would like to thank Danna Ethan, Associate Professor at Lehman College for voluntarily coding images in order to establish inter-rater reliability.

Disclosure of potential conflicts of interest

No potential conflict of interest was reported by the authors.

Funding

This research was unfunded.

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