

UCSF

UC San Francisco Previously Published Works

Title

Social Media as a Tool to Promote Health Awareness: Results from an Online Cervical Cancer Prevention Study.

Permalink

<https://escholarship.org/uc/item/62h1x9nm>

Journal

Journal of cancer education : the official journal of the American Association for Cancer Education, 34(4)

ISSN

0885-8195

Authors

Lyson, Helena C
Le, Gem M
Zhang, Jingwen
et al.

Publication Date

2019-08-01

DOI

10.1007/s13187-018-1379-8

Peer reviewed



Published in final edited form as:

J Cancer Educ. 2019 August ; 34(4): 819–822. doi:10.1007/s13187-018-1379-8.

Social media as a tool to promote health awareness: results from an online cervical cancer prevention study

Helena C. Lyson¹, Gem M. Le¹, Jingwen Zhang², Natalie Rivadeneira¹, Courtney Lyles¹, Kate Radcliffe¹, Rena J Pasick³, George Sawaya⁴, Urmimala Sarkar¹, Damon Centola⁵

¹University of California San Francisco, Center for Vulnerable Populations, Division of General Internal Medicine

²University of California Davis, Department of Communication

³University of California San Francisco, Helen Diller Family Comprehensive Cancer Center

⁴University of California San Francisco, Department of Obstetrics and Gynecology

⁵University of Pennsylvania, Annenberg School for Communication

INTRODUCTION

Cervical cancer is highly preventable, yet more than 4,000 women will die of cervical cancer each year in the US [1]. Papanicolaou (Pap) tests and human papillomavirus (HPV) vaccines are important cervical cancer prevention measures. However, only 83% of women in the U.S. reported receiving appropriate Pap test screening—well below the national target of 93% [2], and only 43% of girls aged 13 to 17 are up to date on all the recommended vaccine doses for their age [3].

Online social media platforms like Twitter and Facebook represent a promising opportunity for public health promotion [4]. Research is limited, however, on the effectiveness of social media at improving knowledge and awareness of certain health topics and motivating healthy behavior change [4, 5]. The aim of this study is to evaluate whether participating in an online Twitter-like social media platform and receiving brief messages, or “tweets,” focused on HPV and cervical cancer prevention is effective at increasing knowledge, awareness, and prevention behaviors related to cervical cancer.

METHODS

Study design

Study investigators designed an anonymous online platform (“Health Connect”) for sharing and discussion of brief messages regarding HPV and cervical cancer prevention. Nine hundred unique messages based on actual tweets from Twitter were created. Messages included a balanced mix of factual information and personal experiences from organizations and individuals (e.g. “WHO recommends #HPV vaccination for girls aged 9-13 years as this

is the most cost-effective public health measure against cervical #cancer” and “My sisters and I just got our last round of injections to keep HPV and cervical cancer at bay! Every woman should ask their doc about it!”)

Study participants were recruited online using an advertising-based strategy through posts to popular social media sites and targeted email lists [6-9]. Individuals were eligible to participate if they were female, 18 years or older, lived in the U.S., spoke English as their primary language, and did not have cervical cancer. A total of 985 individuals completed the eligibility screening; 44 were ineligible, and 862 consented to participate. Of the 862 who consented to participate, 80 failed to respond to the enrollment invitation, resulting in a total of 782 participants enrolled in the study.

Enrolled participants completed a baseline survey assessing sociodemographic information, knowledge and awareness of HPV and cervical cancer, and behaviors related to getting the HPV vaccine and Pap tests. Out of the 782 enrolled participants, 765 completed the baseline survey (97.8% completion rate).

Throughout the enrollment period, participants were consecutively assigned to nine-person groups on the Health Connect platform. The 900 tweets were then randomly distributed to the nine women in each online group over five days. Each participant was shown a unique random set of 20 tweets per day in a personalized message feed. Participants could select and share her messages to her online group and everyone could then comment on the shared messages. At the end of the study, participants were asked to complete a post survey. A total of 569 participants completed the post survey (72.7% completion rate). Participants received \$15 upon completion of the post survey.

Institutional review boards at the University of California San Francisco and the University of Pennsylvania approved all study procedures.

Measures

On the baseline and post surveys, HPV awareness was assessed by one question: “Have you ever heard of HPV? HPV stands for Human Papillomavirus.” Knowledge on HPV was assessed by four questions: 1) “Do you think HPV can cause cervical cancer?” 2) “Do you think you can get HPV through sexual contact?” 3) “Do you think HPV causes AIDS?” and 4) “Do you think HPV can go away on its own without treatment?” HPV vaccine awareness was assessed by one question: “Have you ever heard of the HPV vaccine or shot to prevent cervical cancer?” If the answer was yes, then respondents were asked “Did you receive all three doses of the HPV vaccine?” Vaccine interest was assessed by one question: “Would you be interested in getting the vaccine?” Vaccination behaviors were assessed by two questions: 1) “Have you ever received the HPV vaccine or HPV shots?” and if the answer was yes, 2) “Did you receive all three doses of the HPV vaccine?” Finally, Pap test behavior was assessed by one question: “Sometimes, when a woman has a routine pelvic exam, she also has a Pap smear to test for cancer of the cervix. A doctor takes a cell sample from the cervix with a small stick or brush and sends it to the lab. Have you ever had a Pap test to check for cervical cancer?”

Analytic strategy

Baseline and post survey responses were compared using McNemar's test. All analyses were conducted in SAS 9.4. P values < 0.05 were considered statistically significant.

RESULTS

Study participants were predominately White (71%) and college educated (64%). Most participants were over 26 years old (79%), and nearly a third of the sample reported an annual household income of \$75,000 or higher (Table 1). While we did not find statistically significant changes in any knowledge or behaviors related to HPV or cervical cancer prevention from the baseline to post survey, our results do demonstrate a statistically significant change in response to whether participants had ever heard of HPV, increasing from 90% to 94% ($p=0.003$) from the baseline to the post survey (Table 2). Within specific demographic subgroups, the change in response to ever heard of HPV between the surveys was statistically significant among those older than 26 years old ($p=0.002$), Asians ($p<.001$), and Other race/ethnicity ($p=0.001$). The percentage of participants answering 'yes' to the question increased by 5%, 9%, and 8% respectively. Awareness of HPV also increased for individuals at all education and income levels, but we did not observe statistically significant increases within specific education or income subgroups (Table 3).

DISCUSSION

Our online study was designed to examine the effectiveness of disseminating tailored messages in an online social media platform to improve knowledge, awareness, and behaviors related to HPV and cervical cancer prevention. While we did not find significant increases in knowledge or behaviors among study participants at the conclusion of the study, we did detect a small, statistically significant change in awareness of HPV. Our findings reveal that most study participants already had substantial knowledge, awareness, and engagement in positive behaviors related to cervical cancer prevention at the start of the study, leaving little room for improvement as a result of study participation due to a high ceiling effect. What is more, the duration of the study period—five days—was likely not long enough to substantially change behaviors. Nevertheless, our results show that HPV awareness can be increased through brief participation in an online social media platform and receipt of short, tailored health messages.

CONCLUSIONS

Our findings suggest that brief messages on social media can positively influence awareness of health information. By connecting individuals with one another, organizational information, and personal experiences, social media can be leveraged to promote awareness of specific health topics [10]. Public health organizations may find social media an effective tool to raise awareness of health information through dissemination of brief messages to targeted populations. More research is needed, however, to explore how social media can be used to improve health knowledge and adoption of healthy behaviors.

Acknowledgements

This work was supported by the National Cancer Institute (grant R01CA17885).

REFERENCES

1. Society, AC; Cancer Facts & Figures 2018. Jan 4, 2018. 2018. [cited 2018 January 24]; Available from: <https://www.cancer.org/cancer/cervical-cancer/about/key-statistics.html> - references
2. White A T. T White MC Sabatino SA Moor J Doria-Rose PV Geiger AM Richardson LC Cancer Screening Test Use - United States, 2015 Morbidity and Mortality Weekly Report 2017 2017 201–206 10.15585/mmwr.mm6608a1
3. Walker TY E.-E. L Singleton JA et al. National, Regional, State, and Selected Local Area Vaccination Coverage Among Adolescents Aged 13-17 Years-United States, 2016 MMWR Morb Mortal Wkly Rep 2017 66 874–882 [PubMed: 28837546]
4. Korda H Itani Z Harnessing social media for health promotion and behavior change Health promotion practice 2013 14 1 15–23 [PubMed: 21558472]
5. Chou W.-y.S. et al. Web 2.0 for health promotion: reviewing the current evidence American journal of public health 2013 103 1 e9–e18
6. Fox E et al. Birth control connections: the effect of online social communication on contraceptive attitudes Contraception 96 4 290–291
7. Becker J Brackbill D Centola D Network dynamics of social influence in the wisdom of crowds Proceedings of the national academy of sciences 2017 114 26 E5070–E5076
8. Zhang J et al. Efficacy and causal mechanism of an online social media intervention to increase physical activity: results of a randomized controlled trial Preventive medicine reports 2015 2 651–657 [PubMed: 26844132]
9. Zhang J et al. Support or competition? How online social networks increase physical activity: a randomized controlled trial Preventive medicine reports 2016 4 453–458 [PubMed: 27617191]
10. Xu S. et al. Leveraging social media to promote public health knowledge: example of cancer awareness via Twitter. JMIR public health and surveillance. 2016; 2(1)

Table 1

Characteristics of study population

Study Participants, n (%)		
	Baseline Survey (N=782)	Post Survey (N=569)
Age (%)		
18-26 years	161 (21)	121 (21)
>26 years	621 (79)	448 (79)
Education (%)		
Below Bachelor's	263 (33.6)	192 (33.7)
Bachelor's Degree	277 (35.4)	203 (35.7)
Master's degree or higher	223 (28.5)	170 (29.9)
Decline to answer	19 (2.4)	4 (0.70)
Income (%)		
\$75,000 and higher	244 (31.2)	180 (31.6)
\$50,000-\$74,999	155 (19.8)	122 (21.4)
\$35,000-\$49,999	102 (13.0)	80 (14.1)
<\$35,000	181 (23.1)	126 (22.1)
Decline to answer	100 (12.8)	61 (10.7)
Race/Ethnicity (%)		
White	552 (70.6)	408 (71.7)
Black	60 (7.7)	45 (7.9)
Asian	42 (5.4)	34 (6.0)
Hispanic	88 (11.3)	66 (11.6)
Other	40 (5.1)	16 (2.8)

Table 2

Comparison of survey responses

	Survey response		Yes	No	p value
	Baseline n (%)	Post n (%)			
Awareness (%)	Yes	No	Yes	No	
Ever heard of HPV	504 (90)	59 (10)	592 (94)	34 (6)	0.003*
Ever heard of HPV vaccine	526 (94)	31 (6)	530 (95)	27 (5)	0.450
Knowledge (%)					
HPV causes cervical cancer	503 (98)	9 (2)	496 (97)	16 (3)	0.090
Get HPV from sexual contact	507 (96)	23 (4)	505 (95)	25 (5)	0.670
HPV causes AIDS	36 (8)	438 (92)	29 (6)	445 (94)	0.127
HPV can go away without treatment	119 (25)	355 (75)	117 (25)	357 (75)	0.782
Behaviors (%)					
Ever received HPV vaccine	144 (26)	401 (74)	146 (27)	399 (73)	0.670
Received all three doses	105 (85)	18 (15)	108 (88)	12 (12)	0.083
Ever had Pap test	503 (90)	53 (10)	508 (91)	48 (9)	0.380

* Significant at $p < 0.05$

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 3

Ever heard of HPV survey response by demographic subgroups

	Survey response				p value
	Baseline n (%)	No	Post n (%)	No	
Age	Yes	No	Yes	No	
18-26 years	107 (89)	13 (10)	109 (91)	11 (9)	0.564
>26 years	397 (90)	46 (10)	420 (95)	23 (5)	0.002 *
Education (%)					
Below Bachelor's	166 (86)	26 (14)	176 (92)	16 (8)	0.068
Bachelor's Degree	183 (91)	18 (9)	190 (95)	11 (5)	0.127
Master's degree or higher	155 (91)	15 (9)	163 (96)	7 (4)	0.059
Decline to answer	-	-	-	-	-
Income (%)					
\$75,000 and higher	166 (92)	14 (8)	172 (96)	8 (4)	0.157
\$50,000-\$74,999	104 (85)	18 (15)	112 (92)	10 (8)	0.088
\$35,000-\$49,999	70 (89)	9 (11)	71 (90)	8 (10)	0.739
<\$35,000	115 (91)	11 (8)	120 (95)	6 (5)	0.132
Decline to answer	-	-	-	-	-
Race/Ethnicity (%)					
White	374 (92)	33 (8)	387 (95)	20 (5)	0.053
Black	39 (87)	6 (13)	41 (91)	4 (9)	0.414
Asian	30 (91)	3 (9)	33 (100)	0 (0)	<0.001 *
Hispanic	50 (76)	16 (24)	56 (85)	10 (15)	0.109
Other	11 (92)	1 (8)	12 (100)	0 (0)	0.001 *

* Significant at $p < 0.05$