Use of YouTube to watch health-related videos and participation in online support groups among US adults with heart disease, diabetes, and hypertension

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Abstract

Objective: Social media use has grown over time. However, it is unclear how people with a self-reported history of cardio-vascular disease or cardiovascular disease-related risk factors such as diabetes and hypertension use social media.

Methods: Data from the 2020 Health Information National Trends Survey (HINTS 5, Cycle 4) were analyzed (N = 3865). Only respondents with complete data for all variables of interest were included in the analyses, resulting in 306 respondents with a heart condition, 1291 with hypertension, and 608 with diabetes. We explored associations between two dependent variables: (1) participated in an online forum or support group and (2) watched a health-related video on YouTube, and socio-demographic factors and patient-provider communication. Analyses were conducted separately by medical condition. Odds ratios, 95% confidence intervals, and *p*-values were calculated.

Results: In respondents with a heart condition, hypertension, or diabetes, 5.4%, 8.4%, and 10.3% had participated in an online support group and 29.6%, 40.4%, and 36.6% had watched health-related videos on YouTube, respectively. Univariately, the odds of using online support groups was associated with younger age (vs. > = 65) in people with a heart condition and hypertension, but not diabetes. Regarding YouTube, younger age was associated with watching health-related videos across all three medical conditions, with additional gender and education associations observed in those with hypertension. There were no associations between social media use and patient-provider communication.

Conclusions: These findings may inform the selection of social media platforms for behavioral interventions depending on the intended patient population and goals (e.g. social support vs. video-based health education).

Introduction

Social media use has increased over the last decade.[1] According to Pew Research Center, YouTube and Facebook were the most used social media platforms by the US adults in 2021 at 81% and 69%, respectively.[1] The use of online support communities such as Inspire and Patients Like Me have also expanded over time.[2,3] Online social support communities help individuals with

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similar health conditions connect with each other, offer social support, and share experiences.[2,3,4] Some individuals use social media for health-related purposes.[5] With regard to YouTube, health-related videos can be beneficial for individuals with chronic disease, although some studies have shown that health-related videos on YouTube contain biased and misleading information.[6,7]

Despite the increase in social media use over time, it is unclear how adults with cardiovascular disease (CVD) or CVD-related risk factors such as hypertension and diabetes use certain types of social media. In the present study, we explored associations between social media use and socio-demographic factors and patient-provider communication.

Methods

Overview of the Health Information National Trends Survey (HINTS)

HINTS is a probability-based, nationally representative cross-sectional survey of noninstitutionalized US adults aged 18 and over. HINTS has collected nationally representative data that tracks changes in health communication and information technology since 2003. More specifically, HINTS collects data on various aspects of digital health including the use of (a) computers, smartphones, or other electronic means to find health information, (b) "apps" related to health and wellness, (c) electronic wearable devices to monitor or track health (e.g. Fitbit, Apple Watch), (d) online medical records, and (e) social media for health-related purposes. Full details about HINTS methodology can be seen on the HINTS website.[8]

For the present study, cross-sectional data from HINTS 5, Cycle 4 were analyzed. Data were collected from February to June 2020.[8] The sample design for HINTS 5, Cycle 4 consisted of a single-mode mail survey, using the Next Birthday Method for respondent selection.[8] There were 3865 responses in the full HINTS 5, Cycle 4 dataset; only respondents with data for all the variables of interest to this study were included in the analyses.

Measures

Main outcome: Social media use

Participants were asked, "Sometimes people use the internet to connect with other people online through social networks like Facebook or Twitter. This is often called "social media". In the last 12 months, have you used the Internet for any of the following reasons?" Response options were yes/no. Four options were given, but we only evaluated the following responses: (1) To participate in an online forum or support group for people with a similar health or medical issues and (2) To watch a health-related video on YouTube.

Covariates

Medical history. Participants were asked if a doctor or other health professional ever told them they had (a) diabetes or high blood sugar, (b) high blood pressure or hypertension, and (c) a heart condition such as heart attack, angina, or congestive heart failure. Response options were yes/no.

Patient-provider communication. Participants were asked, "The following questions are about your communication with all doctors, nurses, or other health professionals you saw during the past 12 months. How often did they do each of the following: (a) Give you the chance to ask all the health-related questions you had, (b) Give the attention you needed to your feelings and emotions, (c) Involve you in decisions about your health care as much as you wanted, (d) Make sure you understood the things you needed to do to take care of your health, (e) Explain things in a way you could understand, (f) Spend enough time with you, and (g) Help you deal with feelings of uncertainty about your health or health care." A patient-provider communication total score was created by summing the seven communication-related questions, where each question was reverse scored as $4 =$ always, $3 =$ usually, $2 =$ sometimes, $1 =$ never. Total communication scores ranged from 7 to 28.

Sociodemographic factors. Age in years, male and female sex, race/ethnicity, and education were assessed.

The abovementioned HINTS survey items were chosen for analysis because there is a paucity of research on these relationships in patients with a history of heart disease, hypertension, and diabetes.

Data analysis

Analyses were conducted separately within subgroups defined by a medical condition—heart condition, hypertension, and diabetes. Odds ratios, 95% confidence intervals, and p-values were calculated using SAS proc surveylogistic with jackknife weighting, including the overall weight and 50 replicate weights, and the Newton–Raphson algorithm.[9] Results are presented as the odds ratio [95% confidence interval] for the odds of using social media and p-value. Confidence intervals that do not include the value 1 are considered significant. Data were analyzed using SAS v9.4 and SAS/STAT 14.1.

Results

Heart condition

In the set of 306 respondents with a heart condition, 5.4% (weighted percentage) had participated in an online forum or support group and 29.6% had watched health-related videos on YouTube (Table 1). Online support group participation was associated with younger age (OR 0.1 for age >= 65 vs. <65) and female birth gender (OR 8.9 for female vs. male).

Table 1. Univariate associations between social media use, sociodemographic characteristics, and patient-provider communication among respondents with a history of a heart condition.

No. of respondents (weighted % of all respondents)	Participate in an online forum or support group			Watch health-related video on YouTube		
	Yes	No		Yes	No	
	18 (5.4)	288 (94.6)		89 (29.6)	217 (70.4)	
	% of row (SE)	% of row (SE)	Odds ratio [CI] p-value	% of row (SE)	% of row (SE)	Odds ratio [CI] p-value
Age						
>= 65 years	1.3 (0.8)	98.7 (0.8)	0.1 [0.0, 0.8] $p=0.03$	21.3 (3.5)	78.7 (3.5)	0.5 [0.2, 1.0] $p=0.05$
< 65 years	9.3 (3.4)	90.7 (3.4)	ref	37.4 (7.2)	62.6 (7.2)	ref
Birth gender						
Female	10.5 (3.8)	89.5 (3.8)	8.9 [1.1, 74.6] $p=0.04$	29.3 (6.3)	70.7 (6.3)	1.0 [0.4, 2.4] $p=0.96$
Male	1.3 (0.9)	98.7 (0.9)	ref	29.8 (5.9)	70.2 (5.9)	ref
Race/Ethnicity						
Non-White	6.6 (2.8)	93.4 (2.8)	1.4 [0.4, 4.2] $p=0.59$	37.6 (10.9)	62.4 (10.9)	1.7 [0.5, 5.2] $p=0.38$
White	5.0 (1.9)	95.0 (1.9)	ref	26.6 (4.6)	73.4 (4.6)	ref
Education						
College graduate	4.1 (2.6)	95.9 (2.6)	0.7 [0.1, 4.9] $p=0.71$	41.8 (11.2)	58.2 (11.2)	2.0 [0.7, 5.8] $p=0.21$
Not college grad	5.7 (2.0)	94.3 (2.0)	ref	26.8 (4.5)	73.2 (4.5)	ref
Patient-provider communication total score (mean, SE)	22.7 (1.5)	24.0 (0.4)	0.93 [0.80, 1.09] $p=0.37$	23.9 (1.0)	23.9 (0.4)	1.00 [0.88, 1.13] $p=0.98$

SE is the weighted standard error. P is *p*-value. CI is 95% confidence interval. Ref is reference category of the independent variable.

Younger respondents were more likely to watch YouTube than older respondents (OR 0.5 for >= 65 vs. <65).

Hypertension

In the set of 1291 respondents with hypertension, 8.4% had participated in an online forum or support group and 40.4% had watched health-related videos on YouTube (Table 2). Online support group participation was associated with younger age (OR 0.4 for >= 65 vs. <65) and college graduate (OR 2.5 for college vs. not college). Watching YouTube was associated with younger age (OR 0.3 for >= 65 vs. <65), male birth gender (OR 0.6 for female vs. male), and college graduate (OR 1.5 for college vs. not college).

Table 2. Univariate associations between social media use, sociodemographic characteristics, and patient-provider communication among respondents with a history of hypertension.

	Participate in an online forum or support group			Watch health-related video on YouTube		
	Yes	No		Yes	No	
No. of respondents (weighted % of all respondents)	95 (8.4)	1196 (91.6)		446 (40.4)	845 (59.6)	
	% of row (SE)	% of row (SE)	Odds ratio [CI] p-value	% of row (SE)	% of row (SE)	Odds ratio [CI] p-value
Age						
>=65 years	4.4 (1.3)	95.6 (1.3)	0.4 [0.2, 0.9] p = 0.02	23.5 (1.9)	76.5 (1.9)	0.3 [0.2, 0.4] p < 0.001
< 65 years	10.4 (1.9)	89.6 (1.9)	ref	48.8 (2.8)	51.2 (2.8)	ref
Birth gender						
Female	10.6 (1.6)	89.4 (1.6)	1.7 [0.8, 3.9] p = 0.18	33.4 (3.1)	66.6 (3.1)	0.6 [0.4, 0.9] p = 0.01
Male	6.5 (2.0)	93.5 (2.0)	ref	46.5 (3.2)	53.5 (3.2)	ref
Race/Ethnicity						
Non-White	9.4 (2.3)	90.6 (2.3)	1.2 [0.5, 2.8] p = 0.66	43.3 (3.7)	56.7 (3.7)	1.2 [0.8, 1.7] p = 0.34
White	7.9 (1.8)	92.1 (1.8)	ref	39.2 (2.4)	60.8 (2.4)	ref
Education						
College graduate	14.3 (2.7)	85.7 (2.7)	2.5 [1.2, 5.0] p = 0.01	48.0 (3.4)	52.0 (3.4)	1.5 [1.1, 2.1] p = 0.01
Not college grad	6.4 (1.5)	93.6 (1.5)	ref	37.8 (2.4)	62.2 (2.4)	ref
Patient-provider communication total score (mean, SE)	24.0 (0.8)	24.1 (0.2)	0.99 [0.91, 1.09] p = 0.99	23.9 (0.4)	24.2 (0.2)	0.98 [0.93, 1.03] p = 0.98

SE is the weighted standard error. P is p-value. CI is 95% confidence interval. Ref is reference category of the independent variable.

Diabetes

In the set of 608 respondents with diabetes, 10.3% had participated in an online forum or support group and 36.6% had watched health-related videos on YouTube (Table 3). Younger respondents were more likely to watch YouTube videos (OR 0.3 for >=65 vs. <65).

Discussion

The purpose of the present study was to explore associations between participating in an online support group and watching health-related videos on YouTube, and sociodemographicfactors and patient-provider communication using a nationally representative sample of US adults

Table 3. Univariate associations between social media use, sociodemographic characteristics, and patient-provider communication among respondents with a history of diabetes.

No. of respondents (weighted % of all respondents)	Participate in an online forum or support group			Watch health-related video on YouTube		
	Yes	No		Yes	No	
	46 (10.3)	562 (89.7)		195 (36.6)	413 (63.4)	
	% of row (SE)	% of row (SE)	Odds ratio [CI] *p*-value	% of row (SE)	% of row (SE)	Odds ratio [CI] *p*-value
Age						
>= 65 years	5.4 (2.4)	94.6 (2.4)	0.4 [0.1, 1.6] *p* = 0.18	19.3 (3.2)	80.7 (3.2)	0.3 [0.2, 0.5] *p* < 0.001
< 65 years	12.7 (4.0)	87.3 (4.0)	ref	45.1 (5.0)	54.9 (5.0)	ref
Birth gender						
Female	9.2 (2.0)	90.8 (2.0)	0.8 [0.3, 2.4] *p* = 0.67	31.5 (4.4)	68.5 (4.4)	0.7 [0.3, 1.2] *p* = 0.18
Male	11.3 (4.8)	88.7 (4.8)	ref	41.4 (5.5)	58.6 (5.5)	ref
Race/Ethnicity						
Non-White	7.9 (2.6)	92.1 (2.6)	0.6 [0.2, 2.1] *p* = 0.45	31.4 (5.6)	68.6 (5.6)	0.7 [0.4, 1.3] *p* = 0.25
White	11.8 (4.2)	88.2 (4.2)	ref	40.0 (4.2)	60.0 (4.2)	ref
Education						
College graduate	20.0 (9.1)	80.0 (9.1)	3.0 [0.7, 13.7] *p* = 0.15	45.1 (7.8)	54.9 (7.8)	1.6 [0.8, 3.3] *p* = 0.22
Not college grad	7.6 (2.3)	92.4 (2.3)	ref	34.3 (3.8)	65.7 (3.8)	ref
Patient-provider communication total score (mean, SE)	25.2 (1.0)	23.7 (0.4)	1.1 [0.9, 1.3] *p* = 0.28	23.7 (0.7)	24.0 (0.4)	1.0 [0.9, 1.1] *p* = 0.71

SE is the weighted standard error. P is *p*-value. CI is 95% confidence interval. Ref is reference category of the independent variable.

with chronic conditions. In summary, we found significant associations between the use of online support groups and younger age in people with a history of heart disease and hypertension, but not diabetes. Additionally, watching a health-related video on YouTube was associated with younger age in people with a history of heart disease, hypertension, and diabetes. In those with hypertension,

additional gender and education associations were observed.

Our results are consistent with prior studies showing that many young people are turning online to find a place where they can discuss their sentiments without fear of being judged or labeled.[10,11,12] One study examined associations between participating in social or online forums for people

with diabetes and their level of self-care management and potential health issues associated with type 1 and type 2 diabetes.[13] Key findings were that patients with type 2 diabetes who take part in online support groups have reduced levels of diabetes-related self-care management and other health issues caused by the condition.

YouTube can serve as a platform for enhancing awareness about diseases, treatments, and prevention strategies.[14] A recent study suggested that more than one-third of adults watch health-related videos on YouTube.[15] In another study, Eshah found that younger age, more education, lower income, viewing health education programs on television, having a positive family history of CVDs, and having a job were all associated with a preference for social media.[16]

A strength of this study is that we used population-based data from HINTS, a national survey of US adults conducted approximately every 2 years. Limitations are that we do not know if participants were newly diagnosed with a chronic condition or how well controlled their health condition was at the time they took the survey. Future research should explore to what degree YouTube may affect patients with CVD in their decision making about CVD management. For example, some individuals may avoid taking medication because of false content on YouTube.

YouTube can be a valuable resource for patients seeking information about CVD.[17] At the same time, there is also inaccurate information in YouTube videos about CVD (e.g. heart attack, arteriovenous malformations).[18,19] Moving forward, our findings may help in the selection of social media platforms for behavioral or social support interventions for people with heart disease, hypertension, and diabetes. These findings may also shed light on non-clinic-based supports that people use outside of health care settings. It may be helpful for clinicians to ask individuals about where they get their health information and social support. If needed and desired by the patient, such conversations may result in connections to reputable social support groups and recommendations about how to assess the quality of health information online.

Conclusion

Use of online support groups and watching health videos on YouTube differs from chronic disease and sociodemographic factors. Future work should explore ways social media can be used to promote CVD risk reduction and management.

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