Original Article

Social Media Use for Health Purposes by Chronic Disease Patients in the United States

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Abstract

Background: Social media can be a cost-effective instant tool for exchanging health information among those with chronic diseases. However, few studies have analyzed the nexus between chronic disease and patients' use of the internet for health-related purposes.

Objective: The objective of this study is to determine if chronic disease patients in the United States use social media platforms to share health information and/or join groups of similar condition.

Materials and Methods: This cross-sectional study conducted a secondary analysis of the Health Information Trends Survey dataset 5 (cycle 1 of 2017 and cycle 2 of 2018) ($N = 6650$), which is nationally representative of American adults. A series of chi-square tests was carried to examine the association between using social media by chronic disease patients and (a) sharing health information and (b) participating in relevant health groups. Logistic regression analysis was used to determine significant findings.

Results: In terms of sharing health information on social media sites, those who were aged 18–49 years ($P < 0.0001$) and underweight ($P = 0.04$) were more likely to share health information on social media, while males were less likely to do so ($P < 0.0001$). In terms of joining relevant health groups on social media, predictors were being aged 35–49 years ($P = 0.008$), having a Bachelor's or postbaccalaureate degree ($P < 0.02$) and having depression or anxiety disorder ($P = 0.004$); males were less likely to join such groups ($P = 0.0004$).

Conclusion: Individuals with chronic conditions, except depression or anxiety disorder, were not likely to participate in social media support groups. Future studies should explore how social media can be used to effectively engage those with chronic diseases, which may assist in disease management.

Keywords: Anxiety, chronic medical conditions, health information, online support groups, social media, underweight

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INTRODUCTION

In the Unites States, 6 of 10 adults in 2018 had a chronic disease, with 4 of 10 adults having two or more. Chronic diseases are major contributors and drivers of the annual health-care cost in the country.[1] The Internet is commonly used nowadays, and its use can have both detrimental and beneficial effects on general health. This, in turn, can influence the onset or status of chronic medical conditions.[2,3] In 2018, 7 in 10 Americans used social media, which refers to online applications that permit users to create and exchange content. The use of social media has seen rapid adoption: from 5% in 2005, 50% in 2011 and 69% in 2018 among adults.[4,5] In health care, there are many

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benefits of using social media, as it can be a cost-effective, instant tool for exchanging health information.[6]

Welch *et al*.[7] suggest that social media removes geographic and physical access barriers, and thus promotes health equity among disadvantaged populations. Free access to the vast online health information sources creates opportunities for empowerment, information exchange and engagement in health-promoting behaviors.[8] In addition, social media also provides interactivity between health-care providers and online health seekers, allowing open discussions, raising questions and allowing for spiritual and emotional support, and such interactions are of potential use in the management of the diseases.[9-12] In fact, in a systematic review that evaluated the clinical outcomes related to social media use among patients with chronic diseases, it was concluded that providing social and emotional support using social media helps improve care of patients with chronic diseases.[13]

Factors such as privacy have been shown to limit the use of social media for health-related purposes.[14] However, currently, there is a lack of evidence regarding the use of social media platforms by chronic disease patients to share health information and/or join support groups. Therefore, the current study was conducted with the aim of identifying this and assessing possible factors that may influence these decisions.

MATERIALS AND METHODS

Study design, setting and participants

This cross-sectional study carried out a secondary analysis of the Health Information Trends Survey (HINTS) dataset 5: Cycle 1 of 2017 and Cycle 2 of 2018. HINTS is a nationally representative survey administered by the National Cancer Institute. The data had been collected using a self-administered mail questionnaire. The database is free to researchers and is available for use without the need for permission, as it comprises de-identified information of the participants to ensure anonymity and confidentiality. This study was approved by the Institutional Review Board of Loma Linda University.

The inclusion criteria were civilian noninstitutionalized adults in the United States, and the exclusion criteria were children, homeless and institutionalized populations. Merging the two datasets resulted in a total of 6650 participants,[15] after deleting 186 surveys of participants with missing or invalid responses for the outcome measures.

Outcomes and classification of variables

Two outcomes were chosen for this study. The first outcome was sharing health information on social networking sites and the survey question was: "In the last 12 months, have you used the internet for any of the following reasons:" (with one of the possible responses being) "To share health information on social networking sites, such as Facebook or Twitter?" The answer choices were "yes" or "no." The second outcome was participation in an online forum for people with similar health issues and the corresponding survey question for this was: "In the last 12 months, have you used the Internet for any of the following reasons: To participate in an online forum or support group for people with a similar health or medical issue?" (with the answer choices being "yes" or "no").

The independent variables were body mass index (BMI) and chronic medical conditions included diabetes or high blood sugar, high blood pressure or hypertension, heart condition, chronic lung disease, arthritis and depression or anxiety. For BMI calculation, the self-reported weight and height of the study participants were used. The BMI categories included: Underweight (<18.5), normal (18.5–24.9), overweight (25–29.9), obesity 1 (30–34.5), obesity 2 (35–39.9) and obesity 3 (>40). For chronic medical conditions, the survey questions asked if the respondents had such conditions with a yes/no answer choice. Demographic measures included age, gender, race/ethnicity, education, household income and employment, with most measures being recoded to create fewer categories.

Statistical methods

A series of survey-adjusted Wald chi-square tests were conducted to examine the associations of demographics and health status with using social media to share health information and with participating in online support groups. Then, survey-adjusted logistic regression analysis was used to determine the demographic and health status measures that were significantly associated with using social media and participating in online support groups (i.e., "yes" in both cases). To improve model performance and reduce the likelihood of spurious findings, only measures with a $P < 0.2$ were included in the cross-tabulation to force into the associated regression. For each independent variable, the most frequent category was used as the reference. Records with missing values in any of the independent variables were removed from both regression models. Model strength was indicated by the C-statistic or area under the curve. SAS 9.4 software (SAS Institute, Cary, NC) was used for all analyses. $P < 0.05$ was considered statistically significant.

RESULTS

The included 6650 respondents represent an estimated annual population of 245.8 million adults in the United States, of which 20% used social media for health purposes. Of those who share health information on social media sites, 53.3% were aged 18–49 years ($P < 0.0001$), 71.4% were female ($P < 0.0001$), 53.6% were non-Hispanic White ($P = 0.15$), 81.5% had at least some college education ($P = 0.0008$), 61.6% were employed ($P < 0.0001$) and 52.3% had an annual household income of $50,000 or more ($P = 0.33$) [Table 1]. Of those who did not share health information on social media sites, 68.6% were at least 50 years or older. Only a minority of respondents, 34.3% and 31.6%, respectively, reported hypertension and depression or anxiety disorder, respectively, while 66.3% of those sharing health information on social media were overweight/obese.

As shown in Table 2, bi-variable analyses revealed that participants in online support groups with similar health issues were most commonly aged ≤49 years (54.5%; $P< 0.0001$), female (72.4%; $P < 0.0001$), non-Hispanic Whites (68.6%; $P = 0.0002$), had at least some college education (85.8%; $P < 0.0001$), had annual household income of $50,000 and above (57.6%; $P = 0.06$) and were employed (61.9%; $P < 0.0001$). Of those who do not use online support groups, 26% had an education level less than a college degree. There was a statistically significant difference between the users of online support groups and nonusers on all demographic variables ($P < 0.05$), except household income. Among all chronic health conditions and for BMI, only persons experiencing mental health conditions (depression or anxiety disorder) were more likely to participate in online support groups ($P = 0.0002$).

In the logistic regression, the total number of observations used in the models was 4862 owing to the list-wise deletion of those with missing data. Table 3 presents the data regarding those more likely to share health information on social media. In terms of age, respondents aged <49 years were at least twice more likely to share health information on social media platforms compared with those aged 50–64 years ($P < 0.0001$), while those aged ≥65 years were 43% less likely to share the same than those aged 50–64 years ($P = 0.0001$). Males were 54% less likely to share health information on social media sites than females ($P < 0.0001$). Underweight respondents were 2.5 times more likely to share health information on social media sites compared to normal weight respondents ($P = 0.04$). Among those who were underweight, 54.6% were aged 18–34 years, 65% were females, 3.9% had diabetes, 21% had high blood pressure, 8% had a heart condition, 13.1% had a lung disease, 17.1% had arthritis and 13.3% had depression or anxiety disorder. An additional regression was run to examine the linear effect of ordinal variables, as measured by the Wald chi-square statistic. The observed trend for age groups was $P < 0.0001$, education $P = 0.1733$ and for BMI $P = 0.5639$.

In terms of participating in online support groups for similar health issues, it was found that those aged 35–49 were 1.8 times more likely to join than those aged 50–64 years ($P = 0.008$), males were 50% less likely to participate than females ($P = 0.0004$) and those with a Bachelor's or postbaccalaureate degree holders were 2.1 times more likely to participate than high school graduates ($P < 0.02$). Respondents with depression or anxiety disorder were 1.7 times more likely to participate in such online support groups ($P = 0.004$) [Table 4].

Table 1: Survey-weighted characteristics of Health Information Trends Survey respondents, 2017-2018, (*n*=6650), stratified by respondents who use social media to share health information

Characteristic	Yes (*n*=892), *n* (%)	No (*n*=5758), *n* (%)	*P*
Age (years)			
18-34	181 (20.3)	584 (10.1)	<0.0001
35-49	294 (33)	1010 (17.5)	
50-64	282 (31.6)	1867 (32.4)	
65-74	89 (10)	1286 (22.3)	
≥75	24 (2.7)	819 (14.2)	
Missing	22 (2.4)	192 (3.33)	
Gender			
Male	243 (27.2)	2405 (41.8)	<0.0001
Female	637 (71.4)	3252 (56.4)	
Missing	12 (1.3)	101 (1.8)	
Race/ethnicity			
Non-Hispanic white	478 (53.6)	3331 (57.85)	0.15
Non-Hispanic black	128 (14.35)	706 (12.26)	
Hispanic	148 (16.6)	719 (12.49)	
Non-Hispanic other	81 (9.1)	423 (7.35)	
Missing	57 (6.4)	579 (10)	

Contd...

Table 1: Contd...

Characteristic	Yes (*n*=892), *n* (%)	No (*n*=5758), *n* (%)	*P*
Education			
Less than high school	35 (3.9)	433 (7.52)	0.0008
High school graduate	114 (12.8)	1096 (19)	
Some college	287 (32.2)	1658 (28.8)	
Bachelor's degree	274 (30.7)	1447 (25.1)	
Postbaccalaureate	166 (18.6)	995 (17.3)	
Missing	16 (1.8)	129 (2.2)	
Household income ($)			
0-19,999	141 (15.81)	962 (16.71)	0.33
20,000-49,999	235 (26.3)	1375 (24)	
50,000-99,999	241 (27)	1569 (27)	
100,000 or more	226 (25.3)	1202 (21)	
Missing	49 (5.5)	650 (11.3)	
Employment			
Employed	545 (61.1)	2709 (46.83)	<0.0001
Retired	128 (14.35)	1898 (32.8)	
Other	194 (21.7)	914 (15.8)	
Missing	25 (2.8)	237 (4.1)	
Diabetes/high blood sugar			
Yes	175 (19.6)	1172 (16.5)	0.66
No	698 (78.3)	4465 (81.9)	
Missing	19 (2.1)	121 (1.6)	
Hypertension/high blood pressure			
Yes	306 (34.3)	2658 (46)	0.003
No	573 (64.2)	2977 (51.46)	
Missing	13 (1.4)	123 (2.12)	
Heart condition			
Yes	74 (8.3)	579 (10)	0.71
No	805 (90.2)	5084 (87.88)	
Missing	13 (1.45)	95 (1.64)	
Chronic lung disease			
Yes	136 (15.24)	753 (13)	0.15
No	744 (83.4)	4908 (84.9)	
Missing	12 (1.34)	97 (1.7)	
Arthritis			
Yes	215 (24.1)	1803 31.16)	0.11
No	664 (74.43)	3850 (66.86)	
Missing	13 (1.4)	105 (1.8)	
Depression or anxiety disorder			
Yes	282 (31.6)	1232 (21.29)	0.009
No	598 (67.04)	4406 (76.16)	
Missing	12 (1.3)	120 (2.1)	
BMI			
Underweight	16 (1.8)	69 (1.2)	0.04
Normal	266 (29.8)	1700 (29.4)	
Overweight	275 (30.8)	1955 (33.79)	
Obesity 1	165 (18.5)	1057 (18.27)	
Obesity 2	89 (10)	458 (7.91)	
Obesity 3	62 (7)	325 (5.61)	
Missing	19 (2.1)	194 (3.35)	

BMI categories: Underweight (<18.5), normal (18.5-24.9), overweight (25-29.9), obesity (30-34.5), obesity 2 (35-39.9), obesity 3 (>40). *P* values based on survey-adjusted Wald Chi-square test. BMI — Body mass index

Table 2: Survey-weighted characteristics of respondents from Health Information Trends Survey 2017-2018, stratified by respondents who use online support groups (*n*=6650)

Characteristic	Yes (*n*=399), *n* (%)	No (*n*=6251), *n* (%)	*P*
Age (years)			
18-34	82 (20.55)	683 (10.9)	<0.0001
35-49	136 (34)	1168 (18.7)	
50-64	124 (31)	2025 (32.39)	
65-74	35 (8.77)	1340 (21.43)	
75+	12 (3)	831 (13.29)	
Missing	10 (2.5)	204 (3.26)	

Contd...

Table 2: Contd...

Characteristic	Yes (*n*=399), *n* (%)	No (*n*=6251), *n* (%)	*P*
Gender			
Male	104 (26.1)	2544 (40.69)	<0.0001
Female	289 (72.4)	3600 (57.59)	
Missing	6 (1.5)	107 (1.71)	
Race/ethnicity			
Non-Hispanic White	234 (68.64)	3575 (57.19)	0.0002
Non-Hispanic Black	63 (15.8)	771 (12.3)	
Hispanic	49 (12.28)	818 (13.1)	
Non-Hispanic other	32 (8)	472 (7.6)	
Missing	21 (5.26)	615 (9.8)	
Education			
Less than high school	17 (4.26)	451 (7.2)	<0.0001
High school graduate	31 (7.76)	1179 (18.86)	
Some college	124 (31)	1821 (29.1)	
Bachelor's degree	128 (32)	1593 (25.48)	
Postbaccalaureate	91 (22.8)	1070 (17.1)	
Missing	8 (2)	137 (2.19)	
Household income ($)			
0-19,999	55 (13.78)	1048 (16.76)	0.06
20,000-49,999	86 (21.55)	1524 (24.38)	
50,000-99,999	111 (27.81)	1699 (27.17)	
100,000 or more	119 (29.82)	1309 (20.94)	
Missing	28 (7)	671 (10.73)	
Employment			
Employed	247 (61.9)	3007 (48)	<0.0001
Retired	51 (12.78)	1975 (31.59)	
Other	87 (1.8)	1021 (16.33)	
Missing	14 (3.5)	248 (3.96)	
Diabetes/high blood sugar			
Yes	71 (17.79)	1276 (20.41)	0.77
No	319 (79.94)	4844 (77.49)	
Missing	9 (2.25)	131 (2.1)	
Hypertension/high blood pressure			
Yes	131 (32.83)	2833 (45.32)	0.43
No	260 (65.16)	3290 (52.63)	
Missing	8 (2)	128 (2)	
Heart condition			
Yes	36 (9)	617 (9.87)	0.73
No	356 (89.22)	5533 (88.51)	
Missing	7 (1.75)	101 (1.61)	
Chronic lung disease			
Yes	68 (17)	821 (13.1)	0.15
No	324 (81.2)	5328 (85.2)	
Missing	7 (1.75)	102 (1.6)	
Arthritis			
Yes	108 (27.1)	1910 (30.5)	0.95
No	284 (71.17)	4230 (67.6)	
Missing	7 (1.7)	111 (1.7)	
Depression or anxiety disorder			
Yes	143 (35.83)	1371 (21.9)	0.0002
No	248 (62.15)	4756 (76.1)	
Missing	8 (2)	124 (2)	
BMI			
Underweight	6 (1.5)	79 (1.26)	0.89
Normal	119 (29.82)	1847 (29.5)	
Overweight	125 (31.32)	2105 (3.7)	
Obesity 1	66 (16.54)	1156 (18.49)	
Obesity 2	44 (11)	503 (8)	
Obesity 3	29 (7.26)	358 (5.7)	
Missing	10 (2.5)	203 (3.2)	

BMI categories: Underweight (<18.5), normal (18.5-24.9), overweight (25-29.9), obesity (30-34.5), obesity 2 (35-39.9), obesity 3 (>40). *P* values based on survey-adjusted Wald Chi-square test. BMI – Body mass index

Table 3: Regression model for respondents who shared online health information on social media and chronic medical conditions (*n*=4862)

Characteristic	OR	95% CI	*P*
Age (years)			
18–34	2.0	1.34–3.03	0.0007
35–49	2.2	1.58–2.94	<0.0001
50–64	Reference		
65–74	0.43	0.28–0.66	0.0001
75+	0.13	0.04–0.39	0.0003
Gender			
Male	0.46	0.35–0.59	<0.0001
Female	Reference		
Race/ethnicity			
Non-Hispanic white	Reference		
Non-Hispanic black	1.26	0.87–1.83	0.22
Hispanic	1.23	0.88–1.71	0.22
Non-Hispanic other	1.09	0.68–1.76	0.71
Education			
Less than high school	0.69	0.32–1.46	0.33
High school graduate	Reference		
Some college	1.46	1.00–2.19	0.07
Bachelor's degree	1.19	0.79–1.79	0.41
Postbaccalaureate	1.16	0.77–1.75	0.47
Employment			
Employed	Reference		
Retired	1.36	0.86–2.16	0.19
Other	0.91	0.65–1.27	0.57
High blood pressure			
Yes	0.93	0.67–1.30	0.68
No	Reference		
Lung disease			
Yes	1.34	0.93–1.93	0.11
No	Reference		
Arthritis			
Yes	1.16	0.84–1.60	0.36
No	Reference		
Depression or anxiety			
Yes	1.34	0.96–1.88	0.08
No	Reference		
BMI			
Underweight	2.52	1.06–6.02	0.04
Normal	Reference		
Overweight	0.87	0.62–1.22	0.43
Obesity 1	0.95	0.62–1.44	0.80
Obesity 2	1.06	0.68–1.67	0.79
Obesity 3	0.68	0.41–1.11	0.12

Area under the curve or C-statistic of regression model=0.704.
OR – Odds ratio; CI – Confidence interval

DISCUSSION

This study found that in adults with chronic diseases in the United States, being underweight or having depression/anxiety were most important variables that predict sharing health information and joining relevant health support groups on social media. Low BMI among adults has been found to be associated with decreased levels of physical and emotional well-being,[16] which may be factors that explain the increased likeliness of underweight adults sharing health information on social media. Nonetheless, this is an interesting finding, especially considering that more research is focused toward obese individuals.

Social media use itself can have detrimental effects, especially among females. Studies have shown that the use of social media use by females is associated with body image issues, eating disorders and concerns about weight and body shape resulting in anxiety.[17,18] Another study found that viewing and commenting on others' social media profiles was significantly correlated with the drive to become slimmer in both genders.[19] Moreover, maladaptive social media use was found to result in bulimic symptoms among undergraduate females[20] and was correlated with decreased weight satisfaction and endorsement of the thin appearance.[21] We speculate that some proportion of the underweight respondents in HINTS may possibly have suffered from the above-stated detrimental effects and their sharing of health benefits could be linked with the time spent on these platforms. However, the present study is limited in its design to extract this information, but is suggestive of further exploration.

Social media use can also have positive influences and may be a meaningful tool in the management of chronic diseases,[22] despite some arguing that is not inherently empowering.[23] Studies have shown that using social media with a focus on diet can result in significant weight loss in long-time users as well as can positively impact behavior change and, consequently, could help in mitigating the effects of associated chronic diseases.[24,25] Similarly, it can also motivate to increase physical activity, which is a major preventive factor for chronic diseases.[22] Using data of the current study, future studies should not only seek to focus social media health content more specifically toward target audiences that have shown to be open to receiving content through this modality including groups of users with identified needs (such as mental health and being underweight), but also be aware of the potential risk involved and actively seek to mitigate this. Given the potential promise of social media for health promotion, more studies should seek to have health professionals collaborate to produce quality content and then rigorously evaluate such efforts, especially as many are using social media already but do so mostly without content oversight. Offering content to high-need groups is exciting, but its intended positive influence on the individual should be more rigorously monitored.[26]

Of all chronic diseases studied in this study, only those with depression or anxiety were significantly more likely to join groups on social media that have similar people or provide support. Previous studies have shown that individuals with mental illness often use social media for sharing their experiences, reaching out to receive and provide support to others in similar state and for exploring treatment

Table 4: Regression model of Health Information Trends Survey 2017–2018 respondents who joined online support groups and chronic medical conditions, *n*=4862

	OR	95% CI	*P*
Age (years)			
18-34	1.49	0.90-2.46	0.12
35-49	1.79	1.16-2.76	0.008
50-64	Reference		
65-74	0.78	0.47-1.28	0.33
75+	0.50	0.17-1.47	0.21
Gender			
Male	0.50	0.34-0.73	0.0004
Female	Reference		
Race/ethnicity			
Nonhispanic white	Reference		
Nonhispanic black	1.62	0.85-3.11	0.14
Hispanic	0.73	0.39-1.36	0.32
Nonhispanic other	0.75	0.40-1.39	0.36
Education			
Less than high school	0.92	0.30-2.80	0.88
High school graduate	Reference		
Some college	1.74	0.95-3.19	0.07
Bachelor's degree	2.07	1.20-3.59	0.01
Postbaccalaureate	2.43	1.18-4.91	0.02
Employment			
Employed	Reference		
Retired	0.65	0.41-1.04	0.07
Other	1.23	0.84-1.79	0.30
Household income			
0-19,999 USD	Reference		
20,000-49,999 USD	1.41	0.73-2.72	0.31
50,000-99,999 USD	1.45	0.72-2.95	0.30
100,000 or more USD	1.67	0.83-3.36	0.15
Lung disease			
Yes	1.67	1.00-2.78	0.05
No	Reference		
Depression or anxiety			
Yes	1.72	1.19-2.50	0.004
No	Reference		

Area under the curve or C-statistic of regression model=0.708.
OR – Odds ratio; CI – Confidence interval

options;[27,28] our study findings are in line with these, however, social media use itself can be a factor influencing depression and anxiety. Positive interactions and social support on these platforms are associated with lower levels of depression and anxiety, whereas maladaptive use, negative interaction and social comparisons are associated with higher levels of depression and anxiety.[29,30]

Our study found that respondents <49 years of age, females and those with Bachelor's degree were more likely to use social media sites for health-related purposes. These findings mirrored those of other studies that suggest females, adults aged <65 years as well as those who have higher levels of education (some college and above) and are well-acquainted with technology are more likely to seek health information on the Internet.[31,32] The current study did not find any significant difference across race or ethnicity in both its studied outcomes, which is coherent with the general trends of social media use.[33]

Limitations

The cross-sectional nature of this study limits our ability to establish directionality or infer causal relationships. Secondary analysis restricted us from asking more detailed questions about social media use such as frequency of use, social media sites, type of health information seeking/sharing and chronic diseases (severity and diagnosis date). In addition, the survey was self-administered, which can cause a reporting bias, especially in the BMI and chronic medical conditions categories. It would be beneficial for future research to use longitudinal designs to provide evidence of directionality between chronic diseases and social media use. More research on social media use for health-related purposes is needed to better understand the magnitude of its effectiveness.

CONCLUSION

This study demonstrates that underweight individuals use social media for sharing health information. In addition, having depression or anxiety disorder was significantly associated with joining social media support groups. The willingness by individuals in these sub-categories to use social media for information and/or support suggests that tailored social media groups may provide a more acceptable, private way to seek such support. However, future research also needs to determine how to more broadly recruit persons with other chronic conditions to social media channels for additional support, and to explore the effectiveness of such online platforms in managing, controlling and even preventing chronic diseases.

Ethical considerations

This study was approved by the Institutional Review Board of Loma Linda University (Ref. no.: 5180287) in August 2018. Consent was not required as the study was a secondary analysis of de-identified data.

Peer review

This article was peer-reviewed by three independent and anonymous reviewers.

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Conflicts of interest

There are no conflicts of interest.

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