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Using *Facebook Ads* for blindness prevention among people living with diabetes in the United States: A descriptive study

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Abstract

Introduction: Early detection and treatment can prevent or delay blindness due to diabetic retinopathy in 90% of people with diabetes. However, 50% or more of them do not get their eyes examined or diagnosed too late for effective treatment. An online health campaign was administered to promote regular eye exams.
Methods: The Blindsighted (BS) health campaign administered from May 2019 to August 2019 included Facebook advertisements, Facebook posts, and an online blog article. The Facebook advertisements included learn more ads, like page ads, and a web-based survey ad. These ads were delivered to three target audiences: 1) at least 18 years old, located in the U.S., 2) at least 18 years old, located in the U.S., with special interests related to diabetes, and 3) 18-55 years of age, located in the U.S. A web-based survey was used to ask Facebook users' opinions about the BS Survey ad.
Results: The total number of people reached through all 7 Facebook ads was 64,636. There were 88,425 impressions and 1,793 clicks. All ads cost US $ 923.91. The best performing ad campaign was BS Learn More with the BS 2-Diabetes being the best performing ad. When reviewing the correlation of reach and clicks for all ads, there was a strong positive correlation (r =.90, *P* =.006) with a slightly more positive correlation when looking at just general audience ads (r = 0.95, *P* = .047). However, there was no significant correlation when analyzing all ads for the amount spent and results (r = .65, *P* =.112), amount spent and cost per result (r = .49, *P* = .262), or amount spent and reach (r =.59, *P* = .167). There were 11 Facebook posts published which reached 1302 users.
Conclusion: The Blindsighted health campaign highlights that Facebook is favorable to share health information.

KEY WORDS: Advertising as topic; eye; blindness; internet; social media.

INTRODUCTION

Regular eye examinations can have a life-changing impact on preserving the vision of millions of people. However, of the estimated 61 million US adults who are at high risk for vision loss, only half visited an eye doctor in the past 12 months [1]. Diabetes is the most frequent cause of preventable blindness in working-aged adults [2]. Refractive errors, age-related macular degeneration, cataract, and glaucoma are other common causes of blindness and low vision in adults [2]. Diabetes increases the risk of a range of eye diseases with diabetic retinopathy being the major cause of blindness. In the United States, around 4.1 million persons age 40 and older have diabetic retinopathy and an estimated 899,000 persons in this age range have vision-threatening diabetic retinopathy [2].

Early detection and treatment can prevent or delay blindness due to diabetic retinopathy in 90% of people with diabetes [1]. However, 50% or more of them do not get their eyes examined or diagnosed too late for effective treatment. The combination of a lack of awareness and the asymptomatic nature of early treatable disease leads to delayed diagnoses and treatment, which leads to a greater risk of developing blindness [3]. Thus, promoting awareness about regular eye examinations among people with diabetes should be included in diabetes care and education.

Health promotion campaigns delivered through the internet can increase knowledge about the disease, encourage screening, and help reduce risky behaviors [4]. With over 1.5 billion Facebook users globally, this channel may provide opportunities for reaching diverse target populations at low cost and increased sustainability to promote awareness and support for embracing healthier behaviors [5]. Around seven-in-ten U.S. adults (69%) use Facebook according to a research survey conducted in 2019 [6]. In addition to its popularity, Facebook is an attractive platform for health promotion as it fosters inte-

TAKE-HOME MESSAGE

The Blindsighted social media campaign highlights that Facebook is a favorable platform for diabetes interest groups to communicate and share health information on eye health promotion and blindness prevention. With the increasing rates of diabetes among all age groups, the use of Facebook for diabetes eye education by diabetes care and education specialists may be a viable option.

Competing interests - none declared.

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ractivity among users and encourages content creation [7].

The use of social media campaigns continues to expand opportunities to promote awareness about blindness and educate the public about the importance of vision health. However, data on the impact of the awareness campaigns related to eye health are limited and little academic research exists on the use and efficacy of social media to educate the public and increase awareness concerning blindness and vision health. Patients are more likely to receive annual eye examinations if they understand that examinations can detect eye diseases to prevent blindness and other maladies [8].

Social media campaigns for blindness awareness have the potential of advancing blindness prevention forward in the online environment. The purpose of this study was to evaluate the use of Facebook ads and posts for an online health campaign to promote regular eye exams and blindness prevention among people with diabetes in the United States.

METHODS

Study overview

An online health campaign titled *Blindsighted* was designed to raise awareness about blindness prevention in both the general and people with diabetes populations. The campaign consisted of Facebook ads, Facebook posts, and an online blog article.

The Blindsighted health campaign was part of a larger research study that consisted of 11 social marketing health campaigns. The aim of the original study was to evaluate the effectiveness of digital volunteering for public health community service [9]. The health campaign launched from May 08, 2019, to August 26, 2019. For digital branding and tracking, the hashtag #Blindsighted was included on all Facebook ads and posts.

Study design and procedure

This study used a cross sectional, descriptive research design and data were collected primarily through Facebook Ads Manager.

Study participants and sampling

The study participants were Facebook users who were reached through Facebook ads and posts. There were three target audiences used for the Facebook ads. Target Audience-1 included individuals that were at least 18 years old and located in the U.S.; Target Audience-2 included individuals that were at least 18 years old, located in the U.S., with special interests related to diabetes mellitus, diabetes awareness, diabetes research, or diabetes association; and Target Audience-3 included individuals that were 18-55 years of age and located in the U.S. All Facebook ads labeled *General* used Target Audience-1, ads labeled *Diabetes* used Target Audience-2, and ads labeled *Age* used Target Audience-3. The *Diabetes* and *Age* groups are the tailored audiences in this study.

Study instruments and measures

Like previous studies, "Facebook ads were used to evaluate the differences between interaction of health campaign ads and determine the variations of engagement or user demographics. Facebook Ads Manager was used to measure the ads' performance including reach, impressions, unique clicks, costs, and cost per results" [9]. Pearson correlation was used to analyze the correlation between reach and clicks, amount spent and results, amount spent and cost per result, and amount spent and reach. A web-based survey was administered using the survey tool SurveyMonkey to determine Facebook users' opinions about the BS Survey advertisement.

Ethical aspects

Facebook Ads Manager does not provide any identifying information in ad accounts; only aggregate data are available for all metrics. Facebook users can engage with the ads through likes, shares, or comments, and their username information is available for these interactions only. The web-based survey was anonymous. The first page of the survey was the informed consent where participants had to agree to continue. This study was reviewed

and approved by the APUS Institutional Review Board.

Facebook ads

Facebook ads are paid messages from organizations or businesses displayed to members of a predefined audience [10]. Paid Facebook ads appear throughout the social network [10]. The health campaign ads were created using Facebook Ads Manager. Facebook advertisements comprised of the campaign hashtag, an image, and main text up to 135 characters in length. The ads adhered to Facebook's requirements at the time of ad development, including character limits and image restrictions (e.g., images used could not include more than 20% text) [11]. All ads were designed to appear in the News Feed on Facebook, which is a streaming list of updates from the user's connections (e.g., friends) and advertisers [12].

There were seven Facebook ads which consisted of learn more advertisements (n = 4), like page advertisements (n = 2), and a recruitment advertisement (n = 1) for a web-based survey.

Facebook ads-Learn more

The Blindsighted (BS) ad, BS 1-General (Figure 1) Learn More, directed individuals to the National Eye Institute website (https://nei.nih.gov/healthyeyes/eyehealthtips) when they clicked on the learn more action button. The BS 2-Diabetes Learn More ad (Figure 1) provided an external web link to the National Eye Institute of Diabetic Eye Diseases website (https://www.niddk.nih.gov/health-information/diabetes/overview/preventing-problems/diabetic-eye-disease) which provided health information about preventable blindness, preventive steps to avoid vision loss, and maintaining good vision health.

Facebook ads-Like page

The Blindsighted Like Page ads (Figure 2) promoted the AMU & APU Public Health Facebook page to increase page likes. The text and images were the same as the Learn More ads (Figure 1). The target audience for both ads were individuals aged 18 years and older and located in the United States.

Facebook ad-Web-based survey recruitment

The BS Survey advertisement (n = 1) was used for online recruitment of a web-based survey. The BS Survey ad (Figure 3) included the same image as BS 1 and similar content. The ad linked directly to the web-based survey.

With reference to previous studies, the cost-per-click advertising model was used for the campaign [13]. This model utilizes a bidding method, which is the maximum the advertiser will pay for each click on the advertisement. Limits were set to control the cost per day for the three ad campaigns. Facebook stops delivering the advertisement when the limit is reached [13]. The daily budget for the ads ranged from $5 to $10 per day.

Facebook posts and blog article

Facebook posts (n =11) were published on the AMU & APU Public Health Facebook Page. The health campaign posts were distributed from May 08, 2019, to August 26, 2019. Facebook posts included eye health tips and external links to health resources such as the American Academy of Ophthalmology, American Optometric Association, and YourSightMatters.com.

An online blog article was created to maximize social marketing and promotion. The article, "Don't Be #Blindsighted: Preserve Vision with Regular Exams" was published on June 26, 2019, in the Emergency and Disaster Management Digest. The blog article continued the social media campaign message emphasizing that regular eye examination is essential for early detection of eye diseases when treatment to prevent blindness is most effective. The blog article was distributed through APUS Marketing, which publishes content on various media blogs. The blog article was not included in results.

Web-based survey: Facebook users' opinion about Facebook ad

To better understand Facebook users' opinions about the BS Survey advertisement, a web-based survey was administered using the

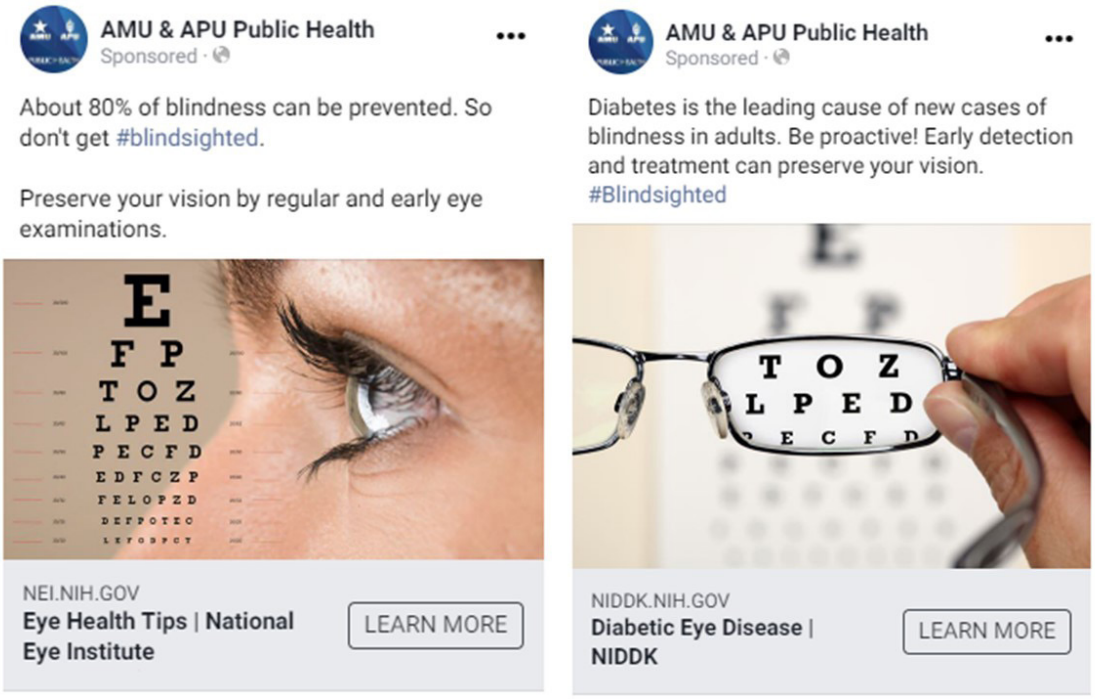

Figure 1. Facebook ads-Learn more, (Blindsighted) BS 1-General and BS 1-Age (left), and BS 2-General and BS 2-Diabetes (right).

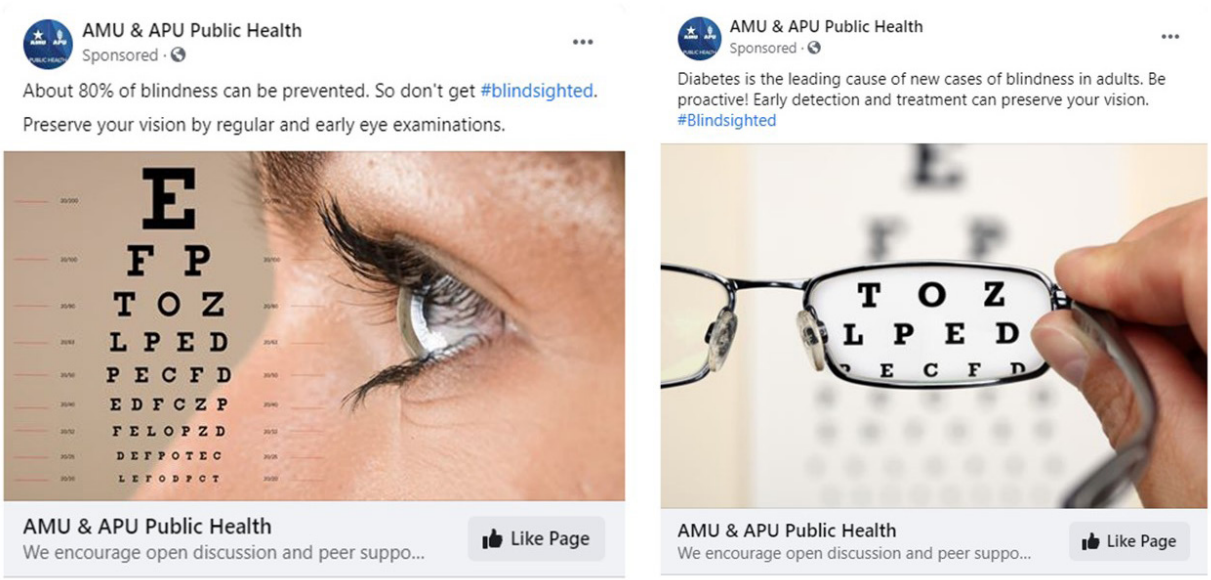

Figure 2. Facebook ads-Like page, (Blindsighted) BS 1-General and BS 2-General.

survey tool SurveyMonkey. The survey consisted of 10 questions including 4 Likert scale questions about the BS Survey ad, 3 demographic questions, and 3 social media or internet usage questions. The inclusion criteria were Facebook users at least 18 years of age and located in the U.S.

Measures and statistical analysis

Facebook offers data for paid ads delivered using their platform. These data are easy to access and signify a concurrent response, making them useful for monitoring responses to campaigns, patterns of communication, and audience interest.

Figure 3. Facebook ad-Web-based survey recruitment, (Blindsighted) BS Survey.

Assessment of campaign ad performance was through standard social media metrics [14–16] collected from Facebook Ads Manager including reach, impressions, likes, clicks, costs, cost per result, duration (number of days), and descriptive statistics including frequency and percentage. Reach is the total number of Facebook users who view the ad and impression is the number of views of a particular ad by Facebook users on viewing their timeline and can include multiple views by the same person [17]. A click refers to a unique Facebook user clicking the web link embedded in the Facebook advertisement to redirect to the advertised website [17]. Likes are the number of viewers who liked the content of the campaign ad. Click through rate is the percentage of users who view the ad and then click the ad. It determines the rate of clicks or interest an ad is receiving [18]. For this campaign, the click through rate and cost per click were used as indicators of overall success and users' interests in the campaign ad message. Impressions were also a key indicator since the purpose of the health campaign was to increase awareness. Pearson correlation was used to analyze the correlation between reach and clicks, amount spent and results, amount spent and cost per result, and amount spent and reach.

RESULTS

Facebook ads

The total number of people reached through all 7 Facebook ads was 64,636. There were 88,425 impressions and 1,793 clicks. All ads cost US $ 923.91. Most of the clicks to the campaign ads were from women (n = 1,223, 68.21%), or individuals aged 45 and above (n = 1,307, 72.89%). The best performing ad campaign was BS Learn More with the BS 2-Diabetes being the best performing ad. Table 1 exhibits the advertisements' performance data. When comparing the ads between the general audience and tailored audiences, there was no significant difference for reach (P = 0.270), results (P = 0.676), or cost per result (P = 0.303). When reviewing the correlation of reach and clicks for all ads, there was a strong positive correlation (r =.90, P =.006) with a slightly more positive correlation when looking at just general audience ads (r = 0.95,

P =.047). However, there was no significant correlation when analyzing all ads for the amount spent and results (r = .65, *P* =.112), amount spent and cost per result (r = .49, *P* = .262), or amount spent and reach (r = .59, *P* =.167). The BS Learn More ads were the overall best performing advertisements which had a reach of 36,256 people, 51,302 impressions, 961 clicks, and $ 0.37 cost per result. The Learn More BS 2-Diabetes was the best performing ad based on clicks (*n* = 360) and cost per result ($ 0.26), but the BS 2-General reached the most users (*n* = 13,248).

The Like Page Facebook advertisements were less successful in their performance. The BS Like Page ads were the least performing advertisements which had a reach of 10,000 Facebook users, 13,966 impressions, 389 clicks, and $ 0.87 cost per result. The BS Survey advertisement had a reach of 18,380 people, 23,157 impressions, 443 clicks, and $ 0.52 cost per result.

Social media platforms such as Facebook, hold a benchmark standard click-through rate which ranges from 0.5% to 0.9% [3]. The Blindsighted campaign had a click-through rate of 2.03% which is above industry standards. The Learn More BS 2-Diabetes ad that included the diabetes interest groups (i.e., Target Audience 2) gained more unique clicks (*n* = 320) and higher click-through rate of 2.69% (320/13,394). The Learn More BS 2-General had 321 unique clicks and click-through rate of 1.66 % (321/19,317). Although the Like Page ad campaign was not the best performer, the Like Page BS 1-General had the best click-through rate of 3.59% (261/7,262).

Facebook posts

There were 11 Facebook posts published to the APUS Public Health Facebook page. Most posts were distributed in May (*n* = 4) or June (*n* = 4) of 2019, which was also when the Facebook ads were being delivered. The Facebook posts reached 1302 users with the best performing post reaching 208 people (sunglasses provide great protection to your eyes from ultraviolet (UV) light with link to WebMD), and the least performing post reaching 34 people (August is Children's Eye Health and Safety Month with link to Your Sight Matters).

Web-based survey: Facebook users' opinion about Facebook ad

Out of the 443 clicks received from the BS Survey ad, there were 27 people who consented to the survey but only 20 completed the web-based survey. Since there was a small number of survey respondents and it only included Facebook users, the survey results cannot be generalized. Most respondents were Caucasian (*n* =12), aged 45-74 years (*n* =11). The BS Survey ad was distributed to the United States, but only 13 states were represented (Table 2).

The web-based survey included questions about the respondents' opinion of the BS Survey health campaign ad. The participants were asked about their feelings about the ad and its main message, if the content was relevant, and their personal search habits for health information.

The survey respondents were asked what they thought about the BS Survey ad overall; 20.0% liked it very much (*n* = 2) or liked it somewhat (*n* = 2), whereas 70.0% felt neutral (*n* = 14) and 20.0% disliked it somewhat (*n* = 2). Twenty five percent of respondents believed the health ad communicated the main message extremely well (*n* = 1) or very well (*n* = 4), whereas almost half (45.0%) believed it was somewhat relevant (*n* = 9). There was only a slight majority (55.0%) of respondents who agreed the health ad was somewhat relevant (*n* = 8), very relevant (*n* = 1), or extremely relevant (*n* = 2) to their wants and needs; whereas 45.0% (*n* = 9) responded that it was, not so relevant (*n* = 6), or not at all relevant (*n* = 3) to their wants and needs.

Most (70%) respondents accessed Facebook multiple times a day. Almost half (45.0%) searched for health information online at least once a week, and 75% (*n* = 15) reported searching for health information online at minimum once a year. Table 3 includes the web-based survey responses.

Table 1. Facebook advertisement metrics for the Blindsighted (BS) online health campaign.

Facebook Ads	Clicks	Reach	Impressions	Cost per Result, US $	Cost, US $	Duration, Days
BS Learn More	961	36 256*	51 302	0.37	354.89	21
BS 1-General	116	3448	4467	0.29	33.67	21
BS 1-Age	164	9402	14 124	0.52	84.48	21
BS 2-General	321	13 248	19 317	0.45	144.67	21
BS 2-Diabetes	360	10 526	13 394	0.26	92.07	21
BS Like Page	**389**	**10 000***	**13 966**	**0.87**	**337.88**	**38**
BS 1-General	261	7262	9930	0.83	217.53	38
BS 2-General	128	3059	4036	0.94	120.35	38
BS Survey	**443**	**18 380**	**23 157**	**0.52**	**231.14**	**26**

*Reach of Facebook ad campaigns is not cumulative of all Facebook ad sets—this metric is determined by Facebook Ads Manager.

Table 2. Descriptive characteristics of web-based survey respondents.

Variables	Frequency (*n*= 20)
Age (years)	
18-24	5 (25.0%)
25-34	2 (10.0%)
35-44	2 (10.0%)
45-54	4 (20.0%)
55-64	4 (20.0%)
65-74	3 (15.0%)
75+	0 (0.0%)
Race/Ethnicity	
American Indian or Alaskan Native	1 (5.0%)
Asian/Pacific Islander	3 (15.0%)
Black or African American	1 (5.0%)
Hispanic	2 (10.0%)
White or Caucasian	12 (60.0%)
Multiple ethnicity/Other	1 (5.0%)
States (where respondents live)	
Arizona	2 (10.0)
California	1 (5.0%)
Florida	3 (15.0%)
Iowa	1 (5.0%)
Louisiana	3 (15.0%)
Massachusetts	1 (5.0%)
Minnesota	1 (5.0%)
Missouri	1 (5.0%)
North Dakota	1 (5.0%)
Oklahoma	1 (5.0%)
Pennsylvania	2 (10.0%)
South Carolina	1 (5.0%)
Texas	1 (5.0%)
Did not answer	1 (5.0%)

Table 3. Web-based survey responses about (Blindsighted) BS Survey Facebook ad.

Survey Questions	Survey Answers	Frequency (n = 20)
About how often do you view or access Facebook?	Multiple times a day	14 (70.0%)
	Once a day	1 (5.0%)
	A few times a week	3 (15.0%)
	A few times a month	2 (10.0%)
	Less than once a month	0 (0.0%)
	Not at all	0 (0.0%)
Thinking about the #Blindsighted ad overall, which of the following best describes your feelings about it?	Like it very much	2 (10.0%)
	Like it somewhat	2 (10.0%)
	Feel neutral about it	14 (70.0%)
	Dislike it somewhat	2 (10.0%)
	Dislike it very much	0 (0.0%)
How well does the health ad communicate the main message?	Extremely well	1 (5.0%)
	Very well	4 (20.0%)
	Somewhat relevant	9 (45.0%)
	Not so relevant	3 (15.0%)
	Not at all relevant	2 (10.0%)
	Did not answer	1 (5.0%)
How relevant is the health ad to your wants and needs?	Extremely relevant	2 (10.0%)
	Very relevant	1 (5.0%)
	Somewhat relevant	8 (40.0%)
	Not so relevant	6 (30.0%)
	Not at all relevant	3 (15.0%)
About how often do you search for health information online?	More than once a week	4 (20.0%)
	Once a week	5 (25.0%)
	2-3 times a month	2 (10.0%)
	Once a month	1 (5.0%)
	Once every 3 months	1 (5.0%)
	Once every 6 months	0 (0.0%)
	Once a year	2 (10.0%)
	Less than once a year	0 (0.0%)
	Not at all	5 (25.0%)

DISCUSSION

This study described the social media health campaign #Blindsighted for the prevention of blindness through regular eye examinations in people living with diabetes. The study assessed the use of Facebook for the dissemination of public health awareness about preventable blindness. The principal findings suggest that Facebook is a feasible platform for the delivery of a public health campaign promoting awareness about blindness among adults and people living with diabetes. The results extend findings of previous research studies on the benefit of using social media campaigns to educate patients about diabetes and its related complications [19].

The ability of Facebook to provide dynamic and tailored messages to an audience in real time makes it a promising platform for the dissemination of public health messages [20].

The total number of likes and impressions that were achieved on the ad sets in a short time (38 days) suggests that Facebook stimulated equitable engagement within the target audience and can promote awareness among the population. The study findings not only augment the rising body of literature that demonstrates Facebook ads are convenient and cost-efficient [12], but also substantiates its ability to target specific study groups by demographic variables and keywords in the Facebook users' profile. For this study, targeting by age, location, and keywords related to diabetes and diabetes awareness provided a potential reach of 27,000,000 unique Facebook users. Ads targeting ages 18-55 had a potential reach of 180,000,000, and the general audience had a potential reach of 230,000,000. This approach would be helpful in reaching larger target audiences. However, how many users may see the ad is dependent on budget and performance of the ad.

Facebook provides the opportunity to reach older individuals through their mobile devices. Most of the responses to the campaign ads were from individuals aged 45 and above (n = 1,307, 72.89%). Most Facebook campaign advertisements were seen in an individual's mobile newsfeed (n = 1,681, 93.86%) suggesting that many individuals aged 45 years and older are accessing internet-based health content using their smartphones or tablet devices. The greater proportion of views of mobile newsfeeds for the campaign ads is consistent with previous research which showed a higher responsiveness to ads from mobile device users when compared to desktop users [21]. As the rates of diagnosed diabetes increases with age [22], this new trend should be considered further for potential diabetes education and diabetes awareness campaigns by diabetes care and education specialists, healthcare professionals, and other stakeholders with interests in this population.

It is important to note that the campaign was particularity attractive to diabetes interest groups. Campaign advertisements tailored to Facebook users who were included diabetes interest groups had more reach and clicks when compared to the campaign advertisements for the general population. Another interesting finding is users' responses to the different campaign ad sets. Campaign ads that incorporated a learn more option to link to health websites appear to achieve the highest engagement by gaining more clicks than ads for page likes. This finding has practical implications for informing campaign developers to consider incorporating a learn more, call-to-action button to provide additional information, especially when the campaign is customized for diabetes interest groups. The text included in Facebook ads also affected ad performance. Ads with main text mentioning diabetes had a higher click through rate compared with ads mentioning general eye health. An interesting finding was in the survey results where 25% of respondents indicated that they do not search for health information online and 10% indicated only once per year that they use the internet for researching health information (Table 3). Only 45% indicated that they regularly (weekly) use the internet to search for health information. This indicates that ads may be a way to reach a population that is not actively seeking health information. Studies have indicated that health information seeking via the internet is associated with positive health and wellness [23]. Further, concerns have been raised whether the internet is effective for health promotion and disease prevention since studies have shown a large percentage of participants do not use the internet to seek health information [23, 24]. By using Facebook ads, those who do not normally seek health information may be actively engaged in health promotion.

Study strengths and limitations

Social media is an inexpensive method for promoting public health messages; however, social media research has various limitations. This study's limitations include accessing only those with social media accounts during the specified timeframe, May 08, 2019, to August 26, 2019. Also, it could not be determined if the Facebook users included in the diabetes interest groups are people living with diabe-

tes, family members or health practitioners of people living with diabetes, or others interested in diabetes-related topics.

Another limitation relates to the evaluation of success. Traditional evaluation methods may not be suitable for social media. This study used the standard Facebook metrics data for reach, impressions, clicks, and cost per result to rank the Facebook ads in terms of their performance over the campaign duration. The desired action of the Blindsighted health campaign was the use of the recommended resources to learn more about the ways to promote eye health and blindness prevention. The measure for identifying this action is determined by conversions based on the links to the recommended resources. It could not be determined whether the user benefited from the resource. Similarly, the study was unable to assess reasons why some Facebook users saw the ad but did not click on an ad to learn more. Future studies should explore the extent of behavior change because of health campaigns including the change of attitudes and knowledge.

Implications for diabetes care and education specialists

Previous studies have revealed that the use of web-based content and information technology continues to grow as a tool for increasing education support in diabetes [25]. With the increasing rates of diabetes among all age groups, the use of Facebook for diabetes eye education by diabetes care and education specialists may be a viable option. More people access web-related health information, [26] which provides more opportunities for public health outreach.

People with diabetes are at a heightened risk for eye complications and blindness. According to the Centers for Disease Control and Prevention, someone with diabetes loses visual function every 15 minutes [27]. More than 8 million Americans have diabetes-related retinopathy, the leading cause of blindness in adults [28]. Those numbers are projected to sharply increase in the future by 35% to 10.9 million by 2032 [28]. However, early symptoms are usually reversible with lifestyle (nutrition and activity) and medication interventions [27]. Hence communicating the importance of regular comprehensive eye exams may provide a patient with a lifetime of vision and improved quality of life. As essential health care partners for patients with diabetes, diabetes care and education specialists have both the capacity and responsibility to increase patient awareness about eye complications of diabetes.

Affordable and available educational resources play a significant role informing the population of the risks associated with diabetes. Early intervention through social media could help prevent blindness by emphasizing the importance of good glycemic control, a healthy diet, and regular eye examinations. Facebook offers significant advantages such as cost effectiveness, broader scope of reach, and accessibility. Diabetes care and education specialists can use this platform to promote awareness, motivate, and encourage adults with diabetes to protect their vision.

As Facebook use has grown dramatically among ages 50 and older [29], Facebook may be an effective method for outreach to this demographic, which coincides with this study where more responses came from individuals aged 45 years and older. Thus, diabetes care and education specialists could use Facebook to increase their reach for blindness prevention among people with diabetes as well as other areas of diabetes health promotion.

CONCLUSION

The Blindsighted social media campaign highlights that Facebook is a favorable platform for diabetes interest groups to communicate and share health information on eye health promotion and blindness prevention. The greater response for the campaign ads from individuals aged 45 years and older indicate the benefit of using Facebook for raising public health awareness about preventable blindness among this demographic population. Incorporating a learn more (i.e., call-to-action) button leads to a higher number of clicks than a page-like ad, which may result in

a more efficient use of a campaign's daily budget. Using diabetes interest groups for Facebook-targeted campaign advertisement offers an effective strategy for eye health promotion that was successful in this cross-sectional, descriptive study.

References

1. Centers for Disease Control and Prevention. About Diabetic Retinopathy [cited 2021 Aug 19]. Available from: https://www.cdc.gov/features/healthyvision/index.html.
2. Kempen JH, O'Colmain BJ, Leske MC, Haffner SM, Klein R, Moss SE, et al. Eye Diseases Prevalence Research Group. The Prevalence of Diabetic Retinopathy among Adults in the United States. Arch Ophthalmol. 2004; 122(4):552. doi:10.1001/archopht.122.4.552.
3. Alexander R. Factors That Influence the Receipt of Eye Care. Am J Health Behav. 2008; 32(5). doi:10.5993/ajhb.32.5.10.
4. DeHaven M, Hunter I, Wilder L, Walton J, Berry J. Health Programs in Faith-Based Organizations: Are They Effective? Am J Public Health. 2004; 94(6):1030–1036. doi:10.2105/ajph.94.6.1030.
5. Abroms LC, Lefebvre RC. Obama's Wired Campaign: Lessons for Public Health Communication. J Health Commun. 2009; 14(5):415–423. doi:10.1080/10810730903033000.
6. Facebook: Emerging market countries surge into the top 10 - Memeburn. Memeburn [cited 2021 Aug 19]. Available from: https://memeburn.com/2011/01/top-10-countries-on-facebook/. Published 2019.
7. Loss J, Lindacher V, Curbach J. Online social networking sites—a novel setting for health promotion. Health Place. 2014; 26:161–170. doi:10.1016/j.healthplace.2013.12.012.
8. Sheppler C, Lambert W, Gardiner S, Becker T, Mansberger S. Predicting Adherence to Diabetic Eye Examinations. Ophthalmol. 2014; 121(6):1212–1219. doi:10.1016/j.ophtha.2013.12.016.
9. Polak KJ, Sapp JLC, Sedillo JL. Using Facebook Ads to Promote Blood Pressure Checks Among African Americans in the United States: A Descriptive Study. J Health Soc Sci. 2020;5(3):343–354. doi:10.19204/2020/sngf6.
10. Reiter P, Katz M, Bauermeister J, Shoben A, Paskett E, McRee A. Recruiting Young Gay and Bisexual Men for a Human Papillomavirus Vaccination Intervention Through Social Media: The Effects of Advertisement Content. JMIR Public Health Surveill. 2017;3(2):e33. doi:10.2196/publichealth.7545.
11. Redirecting... Facebook.com [cited 2021 Aug 19]. Available from: https://www.facebook.com/business/products/ads.
12. Carter-Harris L, Bartlett Ellis R, Warrick A, Rawl S. Beyond Traditional Newspaper Advertisement: Leveraging Facebook-Targeted Advertisement to Recruit Long-Term Smokers for Research. J Med Internet Res. 2016;18(6):e117. doi:10.2196/jmir.5502.
13. Information, Overview, Problems. Diabetic Eye Disease | NIDDK. National Institute of Diabetes, Digestive, and Kidney Diseases [cited 2021 Aug 19]. Available from: https://www.niddk.nih.gov/health-information/diabetes/overview/preventing-problems/diabetic-eye-disease.
14. Ayers JW, Westmaas JL, Leas EC, Benton A, Chen Y, Dredze M, et al. Leveraging Big Data to Improve Health Awareness Campaigns: A Novel Evaluation of the Great American Smokeout. JMIR Public Health Surveill. 2016;2(1):e16. doi:10.2196/publichealth.5304.
15. Thackeray R, Neiger B, Hanson C, Mckenzie J. Enhancing Promotional Strategies within Social Marketing Programs: Use of Web 2.0 Social Media. Health Promot Pract. 2008:9(4):338–343. doi:10.1177/1524839908325335T.
16. Fenner Y, Garland SZ, Moore EE, Jayasinghe Y, Fletcher A, Tabrizi SN, et al. Web-Based Recruiting for Health Research Using a Social Networking Site: An Exploratory Study. J Med Internet Res. 2012;14(1):e20. doi:10.2196/jmir.1978.

17. Kofinas J, Varrey A, Sapra K, Kanj R, Chervenak F, Asfaw T. Randomized Controlled Trial of Adjunctive Social Media for More Effective Contraceptive Counseling. Obstet Gynecol. 2014; 123:107S. doi:10.1097/01.aog.0000447049.82019.cb.

18. Subasinghe A, Nguyen M, Wark J, Tabriz S, Garland S. Targeted Facebook Advertising is a Novel and Effective Method of Recruiting Participants into a Human Papillomavirus Vaccine Effectiveness Study. JMIR Res Protoc. 2016;5(3):e154. doi:10.2196/resprot.5679.

19. Dehlin J, Stillwagon R, Pickett J, Keene L, Schneider J. #PrEP4Love: An Evaluation of a Sex-Positive HIV Prevention Campaign. JMIR Public Health Surveill. 2019;5(2):e12822. doi:10.2196/12822.

20. da Silva E, de Freitas Campos L The Potential Role of Social Media and Interactive Technologies in Diabetes Education. J Dia Res Ther. 2016; 2(2). doi:10.16966/2380-5544.e103.

21. Reiter P, Katz M, Bauermeister J, Shoben A, Paskett E, McRee A. Recruiting Young Gay and Bisexual Men for a Human Papillomavirus Vaccination Intervention Through Social Media: The Effects of Advertisement Content. JMIR Public Health Surveill. 2017;3(2):e33. doi:10.2196/publichealth.7545.

22. Birnbaum M, Garrett C, Baumel A, Rizvi A, Muscat W, Kane J. F120. Using Digital Media Advertising in Early Psychosis Intervention. Schizophr Bull. 2018;44(suppl_1):S267–S267. doi:10.1093/schbul/sby017.651.

23. Centers for Disease Control and Prevention. *National Diabetes and Statistics Report 2020: Estimates of Diabetes and Its Burden in the United States*. 2020 [cited 2021 Aug 19]. Available from: https://www.cdc.gov/diabetes/pdfs/data/statistics/national-diabetes-statistics-report.pdf.

24. Weaver JB, Mays D, Weaver SS, Hopkins GL, Eroglu D, Bernhardt JM. Health information-seeking behaviors, health indicators, and health risks. Am J Public Health. 2010;100(8):1520–1525. doi:10.2105/AJPH.2009.180521.

25. Jacobs W, Amuta AO, Chan Jeon KC, Alvares C. Health information seeking in the digital age: An analysis of health information seeking behavior among US adults. Cogent Soc Sci. 2017;3(1). doi:10.1080/23311886.2017.1302785.

26. Bach RL, Wenz A. Studying health-related internet and mobile device use using web logs and smartphone records. PLoS ONE. 2020;15(6):e0234663. https://doi.org/10.1371/journal.pone.0234663.

27. Kaufman Internet and information technology use in treatment of diabetes. Int J Clin Pract. 2010; 64:41–46.

28. CDC Press Releases. CDC [cited 2021 Aug 19]. Available from: https://www.cdc.gov/media/releases/2017/p0718-diabetes-report.html.

29. Kiger P. Older Adults' Use of Facebook Continues to Grow. AARP [cited 2021 Aug 19]. Available from: https://www.aarp.org/home-family/personal-technology/info-2018/facebook-older-americans-privacy.html.