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RESEARCH ARTICLE

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Using Social Media Engagement to Raise Pre-Diabetes Awareness for Rural Idaho Hispanics/Latinos

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ABSTRACT

Background: Pre-diabetes is a condition that usually has no symptoms, which can lead to decreased awareness of its presence. Like other chronic diseases, pre-diabetes disproportionately affects Hispanic/Latinos populations and places them at greater risk for severe consequences. Latinos are not fully aware of what pre-diabetes is or how it differs from diabetes. This represents a healthcare disparity that requires engagement with the Latino population to address it. Complications of diabetes could be dramatically reduced by increasing awareness of pre-diabetes through engagement with Latinos, health care providers, and pre-diabetes awareness for Latinos.

Objective: The purpose of this study was to understand how effective the use of a targeted social media campaign could increase awareness of prediabetes.

Design and sample: A two-week long Facebook campaign was conducted with four ads targeted to Idahoans aged 18 plus. These messages involved awareness of prediabetes. The amount of engagement was tracked including shares, reactions, and views. Paid boosts were used to evaluate the natural reach of the messages versus reach with a paid boost.

Results: Combined reach of all four posts was 36,578. Organic reach was 7,416 or 20.2% of views while paid reach comprised 29,162 or 79.7% of views. Total reactions totaled 627 with 538 or 85.8% being "like." The second highest reaction was sad with 37 or 6.7%; all the sad reactions were limited to post one and post three.

Conclusion: Use of Facebook appears appropriate to reach individuals with health-related messages, though it is clear that the use of paid boosts improves reach.

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Introduction

Prevention with emphasis on early detection of prediabetes has been hailed as important, especially given that 9 of the 10 Americans with prediabetes are not aware of their condition [1]. Hispanics/Latinos face a noted disparity regarding their risk for prediabetes and diabetes. Not only does this group have a more than 50% chance of developing type 2 diabetes compared to the 40% chance overall for US adults, they also are more likely to get the illness younger and face more serious complications like kidney failure, vision loss, and blindness [2].

Background

Prediabetes is a serious and covert condition where blood sugar levels are higher than normal though just below diagnostic criteria for type 2 diabetes [3]. Pre-diabetes is usually an asymptomatic condition diagnosed by an A1C of 5.7% to 6.4% or a fasting blood sugar of 100 mg/dl to 125 mg/dl [4].

This condition affects roughly 96 million American adults and 80% of those do not even realize they have prediabetes [3]. In Idaho, 35% of adults are estimated to have this condition. Like other chronic illnesses, racial/ethnic groups can be affected disproportionately [5]. The Latino population, in fact, has 12.1 percent higher rates of diagnosed diabetes, making them a high-risk group [5].

Managing prediabetes and preventing the development of diabetes requires extensive self-care and awareness [6]. Long-term control relies on patients having required skills and shifts management responsibilities from the health care providers to the patients [7].

Growing use of social media coupled with continued advances in technology have enhanced access to health data, increased ability for patient engagement in their health decisions, and provided a way for wide-based reach via Internet-based platforms [8,9]. A range of blogging platforms and engagement sites like Twitter, Facebook, and YouTube are included in social media [10].

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Social media via platforms like Facebook and Twitter have been used to reach users and share health-related messages, provide support, fundraise, and created targeted messaging campaigns related to breast cancer [11]. Similar platforms have been used with other conditions as they can provide cost-effective and unique recruitment opportunities, particularly for highly stigmatized topics like sexual health and for hard-to-reach populations like those with rare diseases [12].

Materials and methods

The University Institutional Review Board approved the "Using Social Media Engagement to Raise Pre-Diabetes awareness for Rural Idaho Latinos." Prior work completed related to this project was reported previously [13]. This project involved implementing and evaluating a social media campaign to increase awareness of pre-diabetes.

Selected ad posts from a pre-developed campaign from the American Medical Association (AMA) and the Center for Disease Control and Prevention was used with permission to create the posts. Their joint campaign, "Do I have Prediabetes" focused on key concepts like the ability of pre-diabetes to be reversed, prevention of type-2 diabetes, and key healthy actions like losing weight, eating healthier, and being more physically active [14].

The four selected ad posts were used to reach Facebook users. A two-week long Facebook campaign was conducted with the four ads targeted to Idahoans aged 18 plus. These posts each ran consecutively over unique two-day periods. Each post cost $200. Facebook posts were boosted to reach adults 18 or older who were Hispanic/Latinos.

Facebook Ads Manager was used to gain a summary of outcome measures including reactions, shares, and reach. Table 1 describes the glossary of terms used in the project. For example, reach is the total of Facebook users who look at the post. This is further delineated by whether it was organic reach, meaning it reached them without a boost, or paid reach, meaning people were reached as part of the paid boost.

Table 1: Glossary of terms.

Post	An ad posted as part of the study
Post reactions	The number of reactions on the posted ads. These reactions include like, love, ha-ha, wow, sad, angry, or hug.
Reach	Total of Facebook users who look at a post(s)
Organic reach	People reached without a boost
Paid reach	People reached because of the boost
Cost of engagement	Calculated amount spent divided by post engagement
Impressions	Number of times a post is viewed or displayed

The first three posts were in English while the fourth post was in Spanish. Table 2 lists the content of each post.

Table 2: Content of posts.

Post 1	**Reversing prediabetes will lower your risk for significant health complications like heart disease and stroke. Visit www.DoIHavePrediabetes.org to learn more.**
Post 2	It's not too late. Fortunately, prediabetes can be reversed. To maintain a healthy future, take a minute to visit www.DoIHavePrediabetes.org and learn more.
Post 3	**#Prediabetes** often has no symptoms, but it's important to know where you stand. Visit www.DoIHavePrediabetes.org to find out if you're at risk.
Post 4	Más de 1 cada 3 estadounidenses tienen prediabetes. Pero con un poco de ejercicio y un cambio en su dieta, se puede revertir. Tome una pequeña prueba en línea visitando www.DoIHavePrediabetes.org para ver si usted puede estar en riesgo. Translation: More than 1 in 3 Americans have prediabetes. But with a little exercise and a change in your diet, it can be reversed. Take a short test online by visiting www.DoIHavePrediabetes.org to see if you may be at risk.

Results

Overall, post three had the highest total reach of 11,912 with an organic reach of 2,096 and a paid reach of 9,816. Meanwhile, post one had a total reach of 10,000 with organic reach of 1,920 and paid reach of 8,080. Figure 1 show cases the reach totals for all posts.

Cost of engagement varied among the posts. Post one had the lowest cost of engagement at $0.31while post 2 was $0.35, and post 3 was $0.34. Post four had the highest cost per engagement at $0.38.

The level of engagement was stratified into three analysis components: Observation and Reaction, 2) Connection, 3) Conversation. Similar analysis levels were previously used in a prior study [11]. Each level will be described in more detail.

Observation and Reaction

Observation refers to the reach of the content. The combined reach of all four posts was 36,578. Organic reach made up 7,416 or 20.2% of views while paid reach comprised 29,162 or 79.7% of views.

There were 627 total reactions with 538 or 85.8% being "like." The second highest reaction was sad with 37 or 6.7%; of note, all the sad reactions were limited to post one and post three. Overall, post one and three also had the most diversity of reactions with post three spanning all 7 reaction types and post one having all but "hug." The reaction results are displayed in Table 3.

Table 3: Reaction type by post.

	Total reactions	Like	Sad	Wow	Ha-ha	Angry	Hug	Love
Post 1:	215	169	25	14	4	2	0	1
Post 2:	190	181	0	0	2	0	1	6
Post 3:	152	121	17	3	4	2	3	2
Post 4:	70	67	0	0	1	0	0	2

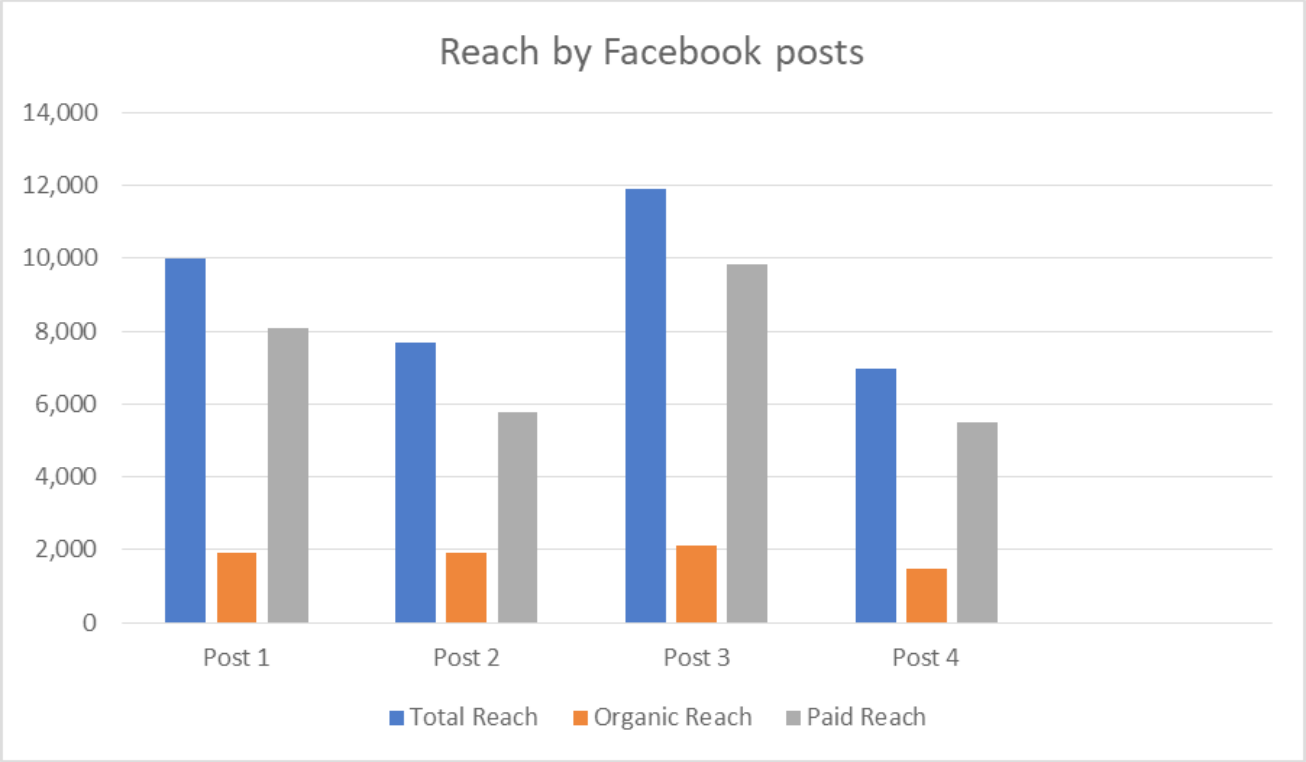

Figure 1

Connection

Connection includes the number of times the posts were shared. The campaign posts were shared a total of 91 times. Post one had the most shares of 30 or 32.9% while post 2 had 25 shares or 27.5% and post 3 had 29 or 31.9%. The lowest number of shares was with post 4 with only 7 or 7.7%.

Conversation

There were 22 comments across all four posts. Post three had the highest comments of 9 while post one had 7, post two 4, and post four 2. The content of the comments was highly variable with one posted message that was seemingly unrelated, such as "Seek Jesus DILIGENTLY *[caps in the original comment]*." This accounted for 4.5% of messages.

There were several who talked about the high costs of treatment, big pharma, and lack of affordable care. There was one mention of "scare, scare, scare" and another asking why no further details about how the condition happens was posted. These types of messages encompassed 9 of the comments or 41%.

Twelve people or 54.5% agreed with the message and talked about changes like diet and exercise or simply making statements like "Very true!" and "I have prediabetes that I have been struggling with for years. Thanks for bringing it to the public's attention."

Discussion

Due to the self-care requirements, diabetes management requires information and knowledge to be had by those affected with the illness [15,16]. Successful management reduces mortality and morbidity of diabetes [16]. Social media and the internet are being used as a way to gain access to important health information and engagement [8,11,16,17]. Social media platforms like Facebook, Instagram, and Twitter have been utilized to provide supportive information and communication between providers and patients managing chronic diseases [17]. Several studies have noted that the use of social media can improve patient outcomes, such as lowering HbA1c levels using a blogging approach [16] and significantly decreasing HbA1c levels for those ≥ 10% HbA1c level via virtual live gaming platform and social networking [18].

This study demonstrates the effect of Facebook ads to reach individuals. It is also clear that organic reach is limited compared to boosted reach. This is demonstrated by the 20.2% organic reach versus the 79.9% paid reach. This aligns with the fact that Facebook optimizes boosted posts based on the audiences' interest [19].

Future studies should try various posts and boosts over a longer period of time and attempt to collect demographics so it can be determined what demographic groups are responding to the various posts. Facebook may help transcend the social determinants of health factors such as socioeconomic status and engage social support networks for health care education.

Limitations

A limitation is that this project sought to boost awareness of prediabetes for rural Idahoans and Latinos/Hispanics. However, participant demographics were not collected. While the study was able to track engagement, it is unclear if the desired population was reached.

Further, the study has limitations affecting generalizability. This study tracked voluntary engagement with the posts. It could be that people who posted may have different perceptions, motivations, and insight into the topic than those who did not interact with the messages. In addition to this, the study only looked at opinions at one point in time and not at trends of messages over time. A person's perception and reaction could vary over time and thus affect their interactions with the material.

The study also collected reaction types and posts as part of the collection and analysis process. Some of these were ambiguous or did not seem to align with the originating post. There was no way to seek clarification or delve further into the reactions or posts; being able to communicate with individuals would allow for better clarity.

Conclusion

The use of Facebook appears to be a valid way to reach individuals with health-related messages, though the use of paid boosts provides more reach.

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