12-Month Impact Analysis of Countryside Diabetes: A Social Media Diabetes Education Tool

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Abstract

Many people with diabetes lack access to health care, adequate insurance, access to educational tools, and a supportive network. In May 2012, a Facebook page titled Countryside Diabetes (CSD), was established to provide a social network and access to education tools for individuals affected by and caring for those with diabetes. A year following the implementation of Countryside Diabetes a systematic assessment was conducted to identify topics of interest in this study population. This study was conducted to determine the population's topic area of greatest interest provided through a multi-disciplinary team approach provided via a social media platform. Data was retrospectively collected from April 1, 2013 through March 30, 2014 using the Facebook analysis software, Insights. Posts were allocated to one of six categories: health, medications, diet and nutrition, personal challenges, physical activity, and current events. Tracking of Facebook activity determined which categories and posts had the highest Impact and Reach. Activity was determined by Impact and Reach, which was standardized to post frequency as Impact Rate and Reach Rate. The study sample included 229 Facebook followers. The majority were females (76%) age 25-34 (43%). More than three hundred posts were analyzed over a 12-month study period with an average impact rate of 2.4 and reach rate of 78 individuals per post. While 'personal challenges' had the highest amount of responses per post (Impact Rate, 3.4), 'medications,' 'exercise,' and 'current events' scored the lowest (1.8). Alternatively, 'current events' was seen by the most individuals (Reach Rate, 92) while 'exercise' had the lowest (63). Topics regarding personal challenges, health, diet, and nutrition garnered more Facebook activity than medications and exercise.

Key Words: diabetes, social media, Facebook, education

Introduction

In 2014 the Centers for Disease Control and Prevention estimated that 9.3% of American have diabetes (Centers for Disease Control and Prevention, 2014; 2011 National Diabetes Fact Sheet 2014). Diabetes negatively affects nearly every organ system, especially if chronically uncontrolled (National Diabetes Fact Sheet 2014). Despite medical intervention, patients

continue to struggle in managing their condition. Incidents of uncontrolled glucose levels resulted in more than 450,000 emergency room visits in 2011 (National Diabetes Fact Sheet 2014). Uncontrolled blood glucose is often paired with uncontrolled comorbid conditions such as high blood pressure and hypercholesterolemia. In fact, 71% of adults diagnosed with diabetes had uncontrolled high blood pressure and 65% had uncontrolled high cholesterol (National Diabetes Fact Sheet 2014). Many factors influence patients' ability to effectively manage chronic diseases. Some examples of these are limited access to health care, inadequate insurance, financial constraints, physical distance, poor insight about their condition, and lack of a supportive network (Collins, 2014; Fox, 2014; Hawn, 2009; Farmer, Bruckner Holt, Cook & Hearing 2009). As a result, patients are increasingly seeking alternative venues such as the Internet for additional education and support (Fox, 2014; Hawn, 2009; Farmer, Bruckner Holt, Cook & Hearing 2009). Patient education and empowerment is a cornerstone of therapy to gain control of diabetes and prevent development of co-existing conditions. Therefore, social media has the potential to address some of these barriers by providing disease-specific health education to supplement face-to-face interactions with health care providers.

Social networking has become one of the most prominent uses of the Internet (Prinz, 2011). A recent survey conducted at an outpatient family practice clinic found that Facebook was the third most utilized form of social media (66.3%) behind e-mail (96.7%) and text messaging (84.8%) (Fisher & Clayton, 2012). With a reported 665 million active Facebook users per day in the month of March 2013, Facebook is at the forefront of social networking (Walsh, 2013). As the number of adults 50 years and older who utilize social media is on the rise, one can presume that as the young and middle-aged populations continue to age, Facebook will become the primary medium of the general population (Nielsen Wire, 2009). Several studies have already reported modest success with social media usage to enhance patient education (Webb, Joseph, Yardley & Michie, 2010), disease management (Webb, Joseph, Yardley & Michie, 2010), and health outcomes for patients with smoking cessation and heart failure (Sayers, Riegel, Pawlowski, Coyne & Samaha, 2008). This provides a different route of communication for healthcare providers and organizations to provide disease-specific patient education, support, and engagement. In May 2012, the Facebook page, Countryside Diabetes, was established to provide a network for individuals affected by and caring for those with diabetes. The page is sponsored and administered through a multidisciplinary collaboration of various healthcare students under the advisement of a registered dietician, exercise physiologist, and clinical pharmacist. Most of the diabetes-related information provided on Countryside Diabetes contributes to weekly topics. Medication Mondays focuses on drug-related education specific to diabetes and related conditions provided by a clinical pharmacist; Tasty Tuesdays focuses on dietary information provided by a registered dietician; and Fitness Fridays focuses on material related to physical activity provided by an exercise physiologist. The majority of daily posts are often inspired or result from comments and questions to posts or private messages. The development process, quality assurance, and legal considerations of Countryside Diabetes were previously outlined in detail (Lee & Whitley, 2014).

Despite the successes of other health websites (Webb, Joseph, Yardley & Michie, 2010; Sayers, Riegel, Pawlowski, Coyne & Samaha, 2008), few have systematically attempted to extract influence of their populations of interest. The purpose of this retrospective study is to articulate the population's topic area of greatest interest as observed through social media page Countryside Diabetes by topic area over a 12-month period. This will provide a point of extrapolation to the general diabetes-minded public regarding their interest in health information, and contribute to a small body of literature that discusses the potential impact of social media on chronic disease management.

Methods

Facebook Insights is a software analysis provided by Facebook for moderators and administrators to review page activity and demographics of users who access content. This feature was used to retrospectively gather data from the Countryside Diabetes page from April 2013 to March 2014 from individuals who followed the page ('Fans') and non-followers (People Reached). Demographics obtained included age, gender, and location. All posts within the time frame were assigned to one of six categories: current events, diet and nutrition, health, medication, personal challenges, and physical activity. Activity frequency reported from Facebook Insights was collectively added in each category and was analyzed to demonstrate Impact or Reach of each category. Impact was defined as the summation of "Likes," "Shares," and comments in a category while Reach was defined as the total number of Facebook users that viewed the content. Since the number of posts per category varied, the value was standardized by frequency of activity. Impact Rate and Reach Rate were calculated by total 'Impact' or 'Reach' divided by total posts made over time. This transformed frequencies into percentages to standardize analysis measures and

prevent bias induced by differences in posts category frequency.

Results

By March 2014 Countryside Diabetes had accumulated 229 Facebook followers. The majority was female (76%) and between 25 and 34 years old (43%), followed by 35-44 years (15%) and by 45-54 years (14%). The majority of followers resided in Alabama (67%) and other Southeastern States, but spanned across the United States and 6 countries. Similarly, non-follower demographics closely mirrored followers with the majority being female (78%) and in the age range of 25-35 years (43%).

Throughout the 12-month analysis time frame, 23,875 Facebook users were exposed to Countryside Diabetes content through 308 different posts. On average, each post, regardless of category, had an Impact Rate and Reach Rate of 2.4 and 78 respectively. (Table 1)

Table 1 *Impact Rate and Reach Rate of Categorized Facebook Posts*

	Impact Rate	Reach Rate
Personal Challenges	3.4	84
Diet and Nutrition	2.9	69
Health	2.3	87
Current Events	1.8	92
Medications	1.8	90
Exercise	1.8	63

'Personal challenges' and 'diet and nutrition' had the most profound Impact Rate of 3.4 and 2.9, respectively. 'Current events' and 'medications' had the greatest Reach Rate (92 and 90 per post) over the 12-month interval, while 'exercise' had the lowest (63).

Discussion

Countryside Diabetes was developed and implemented to provide valuable information to viewers while providing a platform for social support and promoting conversation among users. This is the first study to date that has evaluated the effects of a multi-disciplinary healthcare team's approach, using Facebook, to influence the diabetes population in terms of post Impact and Reach.

The majority of individuals reached by Countryside Diabetes was females between the ages of 25 and 34. This is consistent with the demographic base that utilizes social networking. In January of 2014 it was found that 76% of women, 89% of people between the ages of 18 and 29, and 82% of people 30-49 use social networking sites (Pew Research Internet Project, 2014a).

Analysis of overall and individual activity was essential to gauge the interests of Countryside Diabetes followers and determine where greater education is desired. Based on Impact Rate, Countryside Diabetes followers and non-followers were most involved when posts were directed towards 'personal challenges' and 'diet and nutrition.' 'Personal challenges' had the highest 'Impact Rate' (3.4), which suggests social networking can be used as a social support platform. This supports the Countryside Diabetes objective to provide an avenue where users can offer and gain support and encouragement on diabetes related issues. Similarly, a high Impact Rate associated with 'diet and nutrition' (2.9) suggests that this predominantly female group were interested in receiving information on healthy eating and that users are generally willing to discuss and participate in dietary changes to improve diabetes control.

The Reach Rate was high for posts related to medications (90) and health (87), which suggests greater interest in information pertaining to medication and overall health. In 2012, 72% of Internet users accessed online resources to obtain health information. The majority of people use search engines, such as Google and Yahoo. Only 13% report using a source that specializes in health information, such as WebMD, for their initial search (Pew Research Internet Project, 2014b). This suggests that there is a need for easily accessible, high-quality healthcare information online, to help bridge the gap between healthcare appointments.

Consistently, 'exercise' proved to be the greatest challenge in garnering interest with the lowest Impact Rate (1.8) and Reach Rate (63). The difference in Impact Rate between 'diet and nutrition' and 'exercise' implies that people would prefer to change their eating habits rather than initiate an exercise plan. Higher use of computer screen time consistently relates to lower levels of physical activity (Pearson & Biddle, 2011). The possible sedentary nature of participating in social media may correspond with lower levels of physical activity. Methods to increase interest in physical activity may

involve tailoring posts to individuals' specific exercise needs. This has shown greater modifications in physical activity behaviors, which is difficult to accomplish with a universal "post" intervention strategy (Gell & Wadsworth, 2015).

Studies show that non-conventional methods (e.g. social media, internet programs), rather than face-to-face encounters, are effective methods for aiding patients in managing diabetes. A randomized study found that patients with diabetes experienced an improvement in their hemoglobin A1C 6 months after actively participating in a 6-week long online self-management program as compared to patients who received conventional care. The program provided assistance with diet, exercise, and glucose monitoring and provided an interactive board for discussion and social support (Lorig, Ritter, Laurent, Plant, Green, Jernigan & Case, 2010). Another study found that patients with diabetes who accessed the Internet and cell phone based diabetes self-management information system over a 6-month period had a change in A1C from 9.0 +/- 2.3% to 7.5 +/- 1.4% (P = 0.031), compared to patients who did not have access to this online resource (Noh et all., 2010). Because Facebook proves to be widely accessible, Countryside Diabetes is an opportune platform to reach those who are affected by diabetes.

The full impact of incorporating enhanced health education through social media on patients' health is yet to be determined. Although various studies identify the potential benefits of online networking to encourage moral support in managing chronic diseases, there is insufficient information to suggest whether or not health information can improve specific health outcomes such as self-monitoring of blood glucose in a patient with diabetes or monitoring weight loss and nutrition with a patient facing obesity (Samoocha, Bruinvels, Elbers, Anema & Van der Beek, 2010; Russell-Minda, Jutai, Speechley, Bradley, Chudyk & Petrella, 2009; Enwald & Huotari, 2010). Limitations such as quality assurance and patient confidentiality, as well as, inappropriately replacing patient-specific medical advice with online information are obstacles that will have to be addressed (Fisher & Clayton, 2012; Greene, Choudhry, Kilabuk & Shrank, 2011).

Conclusion

Disease-specific Facebook groups are successsful platforms for providing disease-related information to individuals and online social support group. This is evident by Impact Rates and Reach Rates in this study. Furthermore, the intervention delivery is low cost and accessible to a large population. It appears that patients are most receptive to information regarding personal challenges, health, and diet and nutrition. Future investigations should attempt to extract objective impacts on health to measure actual influence on disease parameters to determine if support groups such as Countryside Diabetes positively impact the individual.

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