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# An Attitudinal Analysis of Preventive Health Care Information Users: With Insights from Social Media

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**Abstract** – Although preventive health care information (PHCI) is widely available, the U.S. continues to lag in terms of life expectancy in world. Much of this can be attributed to poor utilization of health information among users. Based on previous studies and the growing number of social media (SM) users worldwide, this research explored social media (SM) as a channel for PHCI. Results indicate that online health forums were the most popular source of PHCI. The increasingly popular SM channels, Facebook and Twitter, were the least popular sources of PHCI.

**Keywords** – preventive health care information (PHCI), internet delivery systems (IDS), social media, facebook, twitter, attitudinal measures.

**Relevance to Marketing Educators, Researchers and/or Practitioners** - Previous research points to the internet as the single most important means of accessing PHCI. Health consumers are influenced most by personal sources of information, and sources with which they can interact. This study looked into social media (SM) as a channel for PHCI. SM is interactive in nature, and the list of different types of SM grows continually. The application of SM to provide different types of information has changed how consumers use this information. This study examined different types of SM including Facebook and Twitter, and how their can serve as a viable channel to usage of preventive health care information.

## Introduction

Preventive Health Care (PHC) is care resulting from the awareness and efforts a person undertakes to enhance and preserve physical, mental, and emotional health for today and the future (Cangelosi & Markham, 1994). At the broadest level, PHC includes everything from over-the-counter products to help users curb

smoking or overeating to advanced-genetic testing to identify a predisposition to certain cancers or other health problems (BCC Research, 2009).

As the US healthcare system continues to restructure itself, an increased emphasis on PHC will be a very important component. Prevention must be the cornerstone of a healthcare system rather than the traditional reactive or symptomatic approach that currently prevails. Prevention requires a fundamental change in the way individuals perceive and access the healthcare system as well as the way care is delivered. The new healthcare should promote a culture of wellness, and chronic diseases should be better managed and reduced (BCC Research, 2009).

For such a PHC system to work, preventive health care information (PHCI) must be readily available. Although PHCI is widely available, the U.S. ranks 45th in the world in terms of life expectancy (World Book Fact Book, 2007). Several factors account for why persons may seek or ignore PHCI. These include attitudes about preventive health, difference in age, income and educational level, and cultural background (Dutta-Bergman, 2005; Satcher & Higginbotham, 2008). In addition, consumers respond differently to the various ways in which PHCI is delivered (Bloch, 1984; Cline & Hayes, 2001; Dutta-Bergman, 2004; Thomas, 2009).

The Internet is rated as the single most important means of accessing PHCI (Cangelosi, Ranelli & Kim, 2012). Persons utilizing the internet for PHCI tend to be better informed and more-willing to ask their doctors questions (NPR, 2007). Although most acquire information from the Web to address symptomatic issues, the quest for PHCI is becoming increasingly more prevalent (Freudenheim, 2011). When one considers that almost 87% of the population in United States is now online, the power for delivering PHCI electronically cannot be underestimated (Internet Live Stats, 2014).

Traditional internet search and browsing has been greatly facilitated and expanded by social media (SM). SM is a vehicle for people to share ideas, content, thoughts, and relationships online. It differs from traditional print, audio and video media in that anyone can create, comment on, and add to SM content (Scott, 2013). Even though early efforts to document the impact of SM on the search for PHCI have not been encouraging, the potential for SM to deliver PHCI cannot be overlooked, if only for its sheer scale and unprecedented growth (Cangelosi, Ranelli & Kim 2013). It is estimated that the number of subscribers to Facebook, a SM network or channel, was near one billion worldwide by the end of 2012. Demographically, the greatest growth rates have come from users over age 35, with the growth in the 50-65 age range more than doubling from 2008-2010 (Finn, 2011). Long before the arrival of SM, research had suggested that purchase preferences would be affected much more by recommendations from personal networks (friends, family and peers) than by traditional advertising (Direct Marketing News, 2011).

Past research has examined people's ability to access and apply PHCI as a change agent in one's own life and that of others (Cangelosi, Ranelli & Markham, 2009; Fox & Rainee, 2000). Results suggest higher usage of passive IDS's for securing PHCI as well as information for symptomatic issues (Cangelosi, Ranelli & Kim, 2013). This study extends this research stream by looking into social media (SM) and other "active" IDS's. Specifically, it examines respondent attitudes toward the search for PHCI and how closely this is linked with the usage of active IDS. Emphasis is on social media (SM) as a vehicle of active IDS. This paper assesses the extent to which SM is considered an important channel for PHCI, and to associate their usage with various PHC attitudinal measures (Cangelosi, Ranelli & Kim, 2013).

## **Background Information**

Electronic delivery of PHCI is presently in two forms: passive and active. "Passive" Internet Delivery Systems (IDS) are traditional online sources that health care consumers access concerning their health care concerns. The communication flows one-way, from website to user. Examples include WebMD, Mayo Clinic and other trusted online information sources that can be accessed via traditional Internet search engines. Internet Delivery Systems (IDS) are "active" when there is a two-way flow of information between website and user. It is interactive in nature. Users may share information with other users. Examples include online health forums and social media (SM).

The downside of active IDS is the validity of the information being provided. In contrast, passive IDS like WebMD provide scientific opinions based on some of the best medical information available, and are the most frequently used PHCI sources (Cangelosi, Ranelli & Kim, 2013). Past studies suggest that people are generally more influenced by personal sources of information, especially sources with which they can interact (Direct Marketing News, 2011), hence the interest in active IDS.

The following list of active IDS, including SM networks is not exhaustive, as this list continually grows. However the list represents IDS that provides active access to PHCI. The active networks chosen for this study include Facebook, Twitter, Health-Related Blogs, Health-related Listserv's, Wiki Health Dictionaries, online health forum, and PODCasts. As a social media (SM) network, Facebook and Twitter are the most popular and hold promise for PHCI delivery.

Facebook is regarded as the most effective SM vehicle. The number of Facebook users worldwide is projected at 1 billion by the end of 2012 (Serrano, 2012). People utilize Facebook multiple times per day, perhaps more than any of the other social networks (Finn, 2011; Miniwatts Marketing, 2013). Twitter is rapidly becoming the SM of choice for many health care consumers. Recently, Twitter carried an announcement about a study on Celiac disease (Ruiz, 2009).

A listserv is an online meeting place where people meet to discuss topics of interest. Before an online meeting, registered persons of the listserv are sent messages informing of the upcoming discussion. Similar to a listserv, Online Health Forums provide a meeting place for the discussion of healthcare topics. These forums may be ongoing or may be one-time events focusing on a particular topic. Wikis are websites that anyone can edit and update. Wiki Health Dictionaries can be updated easily. Blogs are websites that consumers can go to and add content and reply to the content of others. Blogs are probably the most active of the IDS that are not SM. Podcasts are shows that have a creator who controls the content. They are probably the least “active” of the IDS’s examined in this study. Podcasts can specialize by topic depending upon audience interest, and have the potential of a worldwide audience, allowing anyone to create shows and listen to them (Scott, 2013; Rothman, 2009; Ruiz, 2009).

With respect to health care consumers, Fox & Jones (2009) note the following: 12% of healthcare subscribers used Twitter to pass along a healthcare update about them or somebody else; 41% that go online read comments from a blog, but only 5% ever post a comment on a healthcare blog site; 6% of online healthcare consumers have participated in listserv facilitated healthcare discussions; 6% have posted comments on online health forums; and 13% of online have listened to healthcare content via a podcast. Healthcare Institution blogs are becoming more common with the Mayo Clinic perhaps the most well-known (Ruiz, 2009). Since healthcare consumers are generally passionate about their health, it is easy to see the potential power of the healthcare blog for the dissemination of PHCI.

## **Attitudinal Characteristics and Preventive Health Care Information**

The following is a list of attitudinal characteristics and behaviors commonly associated with persons who have a stronger PHC orientation. Generally persons who are PHC-oriented:

- Are actively involved in their personal health (Dutta-Bergman, 2005);
- Desire to have some control over their physical well-being (Moorman & Matulich 1993; Plank & Gould, 1990);
- Have a keen interest in nutrition and PHC methods, including nutritional labeling, which not only includes nutritional information but information about how foods protect them against certain diseases like cancer, obesity and heart disease (Mokdad, 2004; Nayga, 2000);
- Believe that health care services, especially PHC services, are essential for good health (RTI International, 2003);

- Are predisposed to taking responsibility for their health, well-being, and physical fitness (Cangelosi, Ranelli, & Markham, 2009);
- Make greater use of their physicians and the Internet as source of PHCI, are more expressive and participative in their relationships with physicians, and follow their physician's regimen concerning preventive, symptomatic and chronic care (Dutta-Bergman, 2003; 2005).
- Are generally happier and experience less stress (Wilson & Schoeborn, 1989), and shop around for the best HC facilities and clinicians available (Dutta-Bergman, 2003).
- Believe that earlier detection of life-threatening diseases can lead to corrective action to minimize their impact and prevent them from happening again (Life Optimizer, 2012).

The above list is not exhaustive, but does represent a summary of some of the major findings concerning predispositions of persons having a stronger PHC orientation.

## **Method**

The target population for this study was the United States. The sample frame consisted of a two million member online panel from a database-email panel vendor. The questionnaire was posted by the online host and the online vendor downloaded the email addresses. The survey resulted in 404 usable responses. The demographics of the survey conformed closely to the demographics of a true national sample. Eighty-five (85%) percent of the respondents had health insurance; 51% of respondents were married; 67% Caucasian with 13% Hispanic and 12% African-American; and over 50% had some kind of degree, ranging from a two year to a doctoral degree.

The items from the comprehensive PHC questionnaire utilized for this study were eleven (11) PHC attitudinal statements, measuring extent of agreement on a 1-6 scale (1=definitely agree, 2=generally agree, 3=somewhat agree, 4=somewhat disagree, 5=generally disagree and 6=definitely disagree), and the importance of various active IDS in the acquisition of PHCI, measured on a four-point balanced itemized rating scale, where 1=Very Important, 2=Somewhat Important, 3=Somewhat Unimportant, and 4=Very Unimportant.

## **Data Analysis**

The eleven PHC attitudinal variables measure the respondent's PHC orientation. Frequencies for these variables are depicted in Table 1. The

attitudes in which respondents were in greatest agreement dealt with a person being responsible for his own physical well-being. This is good news for the medical industry, and an indication of the growing importance of PHCI. Average responses of greater than “3” are basically indications of disagreement with the attitudinal statement, and an indication of not being PHC-oriented.

**Table 1: Attitudes Toward Statements Indicating a More or Less Predisposition Toward PHC**

<b>PHC Attitude Statements</b>	<b>Percent Definitely Agree</b>	<b>Average Response</b>
I am responsible for taking steps to engage in regular exercise, fitness and weight control	52.7	1.74
Nutritional information and awareness is an important part of a healthy lifestyle	51.7	1.75
I am responsible for my own well-being	45.5	1.81
Stress management and reduction is an important part of a healthy lifestyle	43.1	1.92
I have a regular source of health care	39.9	2.25
When I go to the doctor, we regularly discuss the results of his/her diagnosis	34.2	2.43
I have a clear concern for the impact of the environment on my health	20.8	2.76
I consciously commit a portion of my income to pharmaceutical expenditures	13.1	3.75
It's the doctor's job to keep me healthy	5.4	3.83
A health savings account is an important part of my overall health care plan	10.1	4.12
My health is outside of my control	3.2	4.54

NOTE: Smaller means indicate greater PHC Orientation. Mean Responses of greater than “3” are indications of disagreement with the statement.

Table 2 provides a summary of the frequency distributions and mean values for the importance placed on active IDS’s. The results indicate that for the seven (7) active IDS’s, Online Health Forums are the most important for procuring PHCI. Facebook and Twitter were among those considered least important.

Factor analysis was performed on the eleven attitudinal variables to make the data more manageable. The varimax rotation option was invoked to group co-varying attitudinal variables together. For the PHCI Attitudinal Variables, the data meets the requirements of being suitable for principal component analysis, as the KMO coefficient was above 0.7 (.823). Bartlett’s test of sphericity was also significant (Chi-square=2382.509, df =55, p=.000) indicating sufficient correlation for factor analysis.

**Table 2: Active Internet Delivery Systems: Their Importance in Procuring PHCI**

<b>Active Source of PHCI</b>	<b>Percent Somewhat or Very Important</b>	<b>Average Response</b>
Online Health Forums	65.7	2.24
Health-related blogs	53.7	2.50
Wiki Health Dictionaries	43.5	2.74
Health-related Listserv's	40.0	2.84
Podcasts	31.8	3.02
FaceBook	27.0	3.12
Twitter	22.8	3.25

NOTE: Lower mean values indicate a greater importance of the Active IDS for procuring PHCI.

Factor analysis of the eleven PHC attitudinal variables resulted in three (3) component categories accounting for almost 70% of the variance in the varimax-rotated factoring process. See Table 3.

P1 (taking responsibility for their own emotional and physical health) accounted for the greatest amount of variance, and had the most PHC-oriented mean value score for the aggregated factored variables. Other components include P2 (taking financial responsibility, but not physical responsibility for one's health), and P3 (having a regular source of health care and proactive physician relations).

As expected, P2 had the least PHC orientation, with a mean value of over 4, which equates to a response of "somewhat disagreeing" with PHC attitudinal statements. This composite factored variable also had the lowest composite factor loading. P3, which emphasized having a regular source of health care and open dialogue with one's physician had a mean value of 2.34, which is almost half way between a "generally agree" and "somewhat agree" response.

**Table 3: Factor Analysis of PHCI Attitudinal Variables**

Factored Variables	Factored Rotated Component		
	P1	P2	P3
<b>P1: Taking Responsibility for one's own physical and emotional health</b>			
I am responsible for taking steps to engage in regular exercise, fitness and weight control	.915		
Stress management and reduction is an important part of a health lifestyle	.839		
Nutritional information and awareness is an important part of a healthy lifestyle	.918		
I have a clear concern for the impact of the environment on my health.	.529		
I am responsible for my own well-being.	.893		
<b>P2: Taking financial responsibility but not physical responsibility for one's health</b>			
A health savings account is an important part of my overall health care plan.		.766	
It's the doctor's job to keep me healthy.		.655	
My health is outside my control.		.739	
I consciously commit a portion of my income to pharmaceutical expenditures.		.562	
<b>P3: Regular source of Health Care and proactive Physician Relations</b>			
I have a regular source of health care.			.812
When I go to the doctor, we regularly discuss the results of his/her diagnosis.			.831
Composite Factor Loadings	.819	.681	.821
Percent Variance Explained by each Composite Factored Variable	34.01%	18.79%	16.81%
Mean Value for Composite Factored Variable	2.00	4.06	2.34

Correlation analysis was used to analyze the degree and direction of the association between the three factored attitudinal variables and the various SM variables. Table 4 summarizes the results of the correlation analysis.

P1 (Taking Responsibility for one’s health and well-being) had the greatest agreement with the PHC attitudinal statements and explained the greatest amount of variance in the factor analysis. Table 4 reveals that four (4) of the seven (7) active IDS variables had significant relationships with PHC attitudes. Online Health Forums and Health-Related Blog, were positively associated with PHC attitudes. Hence, respondents who considered these sources more important in their search for PHCI also had more positive attitudes towards PHC. The SM variables, Facebook and Twitter, were inversely related to positive PHC attitudes. That is, persons with more positive attitudes towards

PHC, did not consider Facebook or Twitter as important sources of PHCI, and vice-versa.

P2 (taking financial but not physical responsibility for one’s health) had the lowest factor loadings of the 3 composite PHC variables. The average response toward PHC attitudes was a dismal “somewhat disagree.” Though P2 was positively associated with all seven SM variables, these correlations are basically spurious at best. These respondents are basically disagreeing with PHC attitudes but indicating that all active IDS are important channels to PHCI. The two strongest relationships were with Twitter and Facebook, which overall are the two weakest channels for PHCI. These kinds of “spurious” correlations do not reveal anything significant about the relationship between persons who have insurance but think it is the doctor’s responsibility to keep them well, and being PHC oriented. A respondent saying “it is the doctor’s responsibility to keep them well” has little interest in PHCI or being PHC-oriented.

P3 (Regular health care and good doctor feedback) was positively related to two (2) active IDS variables, Online Health Forums and Health-Related Listserv’s. The average response to the PHC attitudes was between “generally agree” and “somewhat agree.” This basically means that persons with regular health care and good feedback from their physicians had positive PHC attitudes, and vice-versa.

**Table 4: Correlation Analysis of Composite Attitudinal Variables and Active Internet Delivery Systems**

Composite Factored Variables	Online Health Forums	Health-Related Blogs	Twitter	Health-Related Listserv's	Wiki Health Dictionaries	Pod-casts	Facebook
(P1) Responsible for my health & well-being	.270 .000 402	.135 .006 404	-.113 .023 404	.062 .211 402	.068 .177 400	-.046 .359 399	-.129 .010 404
(P2) Financially responsible but Not physically responsible for one’s health and well-being	.264 .000 402	.291 .000 404	.491 .000 404	.429 .000 402	.344 .000 400	.486 .000 399	.521 .000 404
(P3) Regular health care and proactive physician relationship	.178 .000 402	.092 .066 404	.006 .901 404	.103 .040 402	.057 .254 400	.044 .379 399	-.010 .849 404

## Discussion

This research explored the information and communication revolution as it pertains to PHC. This involves one's ability to access and apply PHCI for personal reasons or on someone else's behalf. It examined seven active IDS, including two SM channels, by specifically asking how important each was in searching for PHCI. It also examined the strength of the respondent's PHC orientation via their response to eleven PHC attitudinal statements. Lastly, this research examined the link between respondent PHC attitudes and the importance they placed on active IDS as sources of PHCI. Several conclusions are drawn.

- Online health forums, which are active in nature, were the most popular source of PHCI. Online health forums are sponsored by a trusted health care system, whereas interactive sources such as blogs can have content from completely unreliable sources. Health-related blogs and Wiki health-dictionaries were considered important in the search for PHCI.
- The increasingly popular SM channels, Facebook and Twitter, were the least popular of the active IDS in the respondent's search for PHCI. This is especially true for respondents with a stronger PHC orientation.
- Factor analysis grouped the PHC attitude variables into three composite factored variables, and revealed that the variables related to respondent's taking responsibility for their physical and emotional well-being had the strongest PHC orientation. Conversely and intuitively, respondents who trusted their well-being completely on doctors had the weakest PHC orientation.
- The SM channels, Facebook and Twitter, have not been adopted as vehicles for acquiring PHCI. However, there are active IDS that consumers are using. These results are consistent with the results of a Harris Poll which found that consumers, when searching for health care information, utilized traditional search engines 69% of the time, medical websites such as WebMD 62%, online forums 16%, and SM only 8% (Harris Interactive, 2011).
- One reason SM methods are not being used in the search for PHCI, is because of the desire to remain anonymous when seeking out health care issues (Direct Marketing News, 2011).
- On the whole, accessing PHCI via active IDS is very prevalent, is strongly associated with being PHC oriented, and will become increasingly a source of choice for PHCI. Various reports indicate as high as 80% of consumers utilize both active and passive IDS for health care information. No such numbers can be estimated at this time for PHCI, especially since at least 50% of the situations for search were symptomatic (Fox & Rainee, 2000).

## Summary and Limitations

This research is largely exploratory. Related literature of this study was mostly sponsored research or syndicated statistical compilation, which charted the trends of various social media. Getting people to practice PHC is a big challenge for marketers. Fundamental changes in behavior are required, usually having financial implications (Jayanti & Burns, 1998). However, the results indicate that there is some utilization of active IDS for the retrieval of PHCI and that this retrieval is associated with positive PHC attitudes. The results also suggest that either (1) SM is may never be a major vehicle for the dissemination of PHC information due to the healthcare consumer's desire for privacy and autonomy, or (2) it might be a matter of time before channels like Facebook or Twitter become a commonplace alternative for answering healthcare questions. The sheer number of people utilizing SM make a continuing analysis of it application in the procurement of PHCI a necessity.

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