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Joseph D. Cangelosi
University of Central Arkansas, joec@uca.edu

Edward Ranelli
University of West Florida, eranelli@uwf.edu

David Kim
University of Central Arkansas, davidk@uca.edu

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Joseph D. Cangelosi, Jr., D.B.A.: University of Central Arkansas
joec@uca.edu

Edward Ranelli, Ph.D.: University of West Florida
eranelli@uwf.edu

David Kim, Ph.D.: University of Central Arkansas
davidk@uca.edu

Abstract

Preventive health care (PHC) is the awareness and efforts a person undertakes to enhance and preserve physical, mental, and emotional health for today and future. Although PHC information is widely available, people are not utilizing the information to improve their health. We examine PHC information sources utilized by persons who are more health-oriented vs. less health-oriented. The less health-oriented individuals were identified as: low educational attainment, low income, men, younger age, unmarried, and non-White. A factor analysis produced three primary sources of PHC information sources: print, institutional, and electronic and audio-visual delivery systems. An ANOVA compared how more health-oriented individuals differed from less health-oriented individuals regarding the importance of PHC information sources.

As expected, men and unmarried individuals placed less importance on PHC sources information. Younger individuals placed greater importance on institutional and electronic sources of PHC information. Furthermore, non-Whites considered institutional sources of PHC to be more important than Whites, and those without college degrees considered print sources to be more important than those with college degree. There were no differences among income groups.

Relevance to Marketing Educators, Researchers and/or Practitioners: The high cost of health care is a concern for both public policy makers and businesses. Identifying health consumers who are more "at-risk" may provide a better understanding as to why many neglect to use the available PHC information. Previous research suggests that those identified as low income, low education attainment, younger, and non-White would be less health-oriented. Our findings suggest otherwise and point to other factors that determine people's attitudes toward preventive health.

Introduction

Preventive health care (PHC) is the awareness and efforts a person undertakes to enhance and preserve physical, mental, and emotional health for today and future (Cangelosi and Markham, 1994). The process of seeking PHC information or any type of health care information is a challenge for customers because of the difficultly in comparing the quality of health care providers (Thomas, 2009). Also many simply fail to utilize the available PHC information.

A recent 20-year study revealed four major habits that cause premature aging: smoking, excessive alcohol consumption, poor diet and lack of exercise. A person with these four habits is four times more likely to die prematurely from heart disease or cancer compared to the person who has kicked these age-accelerating habits (RealAge.com, 2011). Although PHC information is widely available, people are not utilizing the information to improve their health. This may largely explain why the U.S. ranks 45th in the world in terms of life expectancy (World Fact Book, 2007).

There may be a myriad of reasons why individuals seek or ignore preventive health information. These reasons may include attitudes about preventive health, level of trust regarding different sources of PHC information, and differences in age, income levels, and cultural background (Dutta-Bergman, 2005; Satcher and Higginbotham, 2008). Also, health consumers respond differently to various PHC information sources such as print media, television, radio, and internet (Bloch, 1984; Cline and Haynes, 2001; Dutta-Bergman, 2004; Thomas, 2009).

We extend this research stream by examining PHC information sources utilized by persons who are more health-oriented vs. less health-oriented. Identifying health consumers who are more "at-risk" may provide a better understanding as to why many neglect to use the available PHC information.

Background Information

As stated earlier, different demographic groups respond differently to PHC information. Based on previous findings we identify individuals that are "more health-oriented" vs. those "less health-oriented." We then compare the two segments on how much importance they place on different sources of PHC information. Given the exploratory nature of this study, only a select list of demographic variables was examined: educational attainment, income, gender, age, marital status, and ethnic orientation. For PHC information sources, print media, television and radio, and internet were selected.

Demographic Variables

Educational Attainment and Income

Education is a predictor of health service and information usage, types of services utilized, and circumstances of the usage (Thomas, 2009). Persons with higher educational attainment are more likely to engage in fitness activities (Cangelosi, Ranelli, and Markham, 2009; Doyle, 1989; National Center for Health Statistics, 2005) while those with lower educational attainment are more likely to smoke, consume alcohol, use drugs, and remain sedentary, especially with respect to watching television. Also, better-educated persons perceive health care information and services as more beneficial than those less-educated (Cangelosi, Ranelli and Voss, 2009; Thomas, 2009). With respect to income, those with higher income are more likely to apply nutritional label information (Nayga, 2000; Cangelosi, Ranelli and Markham, 2009), make greater use of PHC information (Cangelosi and Markham, 1994), and more likely to have joined a wellness center and engaged in stress reduction exercises (Cangelosi, Ranelli and Markham, 2009).

Gender and Age:

Women feel they are less in control of their physical well-being than men, but take responsibility for their well-being and seek help more often, part of which involves greater use of PHC methods. They are more likely to participate in a community preventive health program (VanDevanter et al., 2005) and apply PHC information to improve sleep habits, weight loss, and stress reduction (Cangelosi, Ranelli and Markham, 2009; Cangelosi, Ranelli and Voss, 2009).

While the need for health care information increases with age, there is a pro-active PHC movement among younger cohorts. They seek alternatives to in-patient care and are less likely to have a family doctor, but will shop around for health care alternatives when needed (Thomas, 2009). They are more oriented toward wellness centers or health clubs, and are more likely to attend health fairs and seminars (Cangelosi, Ranelli and Markham, 2009). However, they also tend to engage in unhealthy activities such as partying, alcohol consumption and smoking compared to their older cohorts (Cangelosi, Ranelli and Voss, 2009).

Marital Status And Ethnic Orientation:

Married individuals tend to be healthier and thus require fewer services. They utilize more preventive care due to a greater level of knowledge concerning its importance. Married persons exercise more, drink and smoke less, are less prone to illness and experience less stress than widows, divorcees or singles (Cangelosi, Ranelli, and Markham, 2009; Thomas, 2009).

With respect to ethnic orientation, Whites tend to use physicians at a higher rate and take more responsibility for their own health, while a disproportionate number of Native Americans, Asians, and Hispanics report few or no health care visits of any type. Hispanics are least likely to take responsibility for their own health (Cangelosi, Ranelli and Voss, 2009). African-Americans make much greater usage of emergency room services than other ethnic groups, while Native Americans and Hispanics are more likely utilize nontraditional or alternative types of care (Thomas, 2009).

PHC Information Sources

Print Media: Print media sources require the active engagement of an information seeker. Consumers not actively engaged in the search for health information tend to be less health conscious, therefore less likely to seek PHC information (Block, 1984; Dutta-Bergman, 2004).

Television and Radio: These are basically passive mediums for the dissemination of health care information. These passive sources upstage and glorify unhealthy behaviors such as unsafe sex, drinking, and smoking. Persons learning about health issues from television and radio tend to be less health information-oriented (Dutta-Bergman, 2004).

Internet: As a source of PHC information the internet is replacing most traditional sources as the information of first resort (Thomas, 2009). It requires active engagement of the health information seeker and is thus suited for consumers who are more health-conscious. Those less concerned about their health will not utilize the internet for PHC information (Dutta-Bergman, 2004, and Cline and Haynes, 2001).

Hypothesis Development

Based on the literature review, the following hypotheses are developed:

H1: Compared to less educated consumers, better educated consumers will place more importance on various sources of PHC information.

H2: Compared to lower income consumers, higher income consumers will place more importance on various sources of PHC information.

H3: Compared to men, women will place more importance on various sources of PHC information.

H4: Compared to older consumers, younger consumers will place more importance on various sources of PHC information.

H5: Compared to unmarried individuals, married consumers will place more importance on various sources of PHC information.

H6: Compared to non-Whites, Whites will place more importance on various sources of PHC information.

Method

The target population for this study was the United States. The sample frame was a 19 million member online consumer panel owned by an online database vendor. The questionnaire was posted by the online host, and the online database vendor downloaded the email addresses. The online database vendor continued the data collection process until the sample produced demographics that closely conform to the demographics of a true national sample, which resulted in 550 usable responses.

Of the 550 sample respondents, 59 percent were female and 56 percent were married. 35 percent had a bachelor's degree or more and 40 percent had household incomes above $50,000. The ethnic background of respondents conforms closely to national norms where 67 percent were Caucasian, followed by 14 percent Black, 15 percent Hispanic, and 4 percent categorized as "other." The age distribution was evenly divided into four age categories: 19-34, 35-44, 45-64 and 65 and over.

Measures

The PHC questionnaire contains items referring to the awareness and efforts a person undertakes to enhance and preserve his/her health. The items in this study were taken from this questionnaire which was used in a previous preventive health care study (Cangelosi, Ranelli, and Markham, 2009).

This questionnaire identified twenty-five (25) information sources: nutrition labels, pamphlets, magazines, newsletters, reference books, nutrition books and magazines, medical encyclopedias, newspapers, mental health books, medical journals, monthly print health reports, how-to-quit books, health fairs, employer-sponsored wellness program information, health-related seminars, television, health videos, radio, internet, hospital provided information, health insurance provider publications, public health service publications, health association publications, wellness center printed pamphlets, and employer-provided print information.

Respondents were asked to rate the importance of each information source. The scale ranged from 1 to 4 where 1=very important, 2=somewhat important, 3=somewhat unimportant, and 4=very unimportant.

Data Analysis

To provide for a meaningful data analysis the 25 PHC delivery systems sources were reduced to a smaller number using factor analysis. To test the data for its suitability for factor analysis the KMO and Bartlett's tests were run. The KMO value of .954 is above the minimum of .7 regarding the data's suitability for principal components analysis and Bartlett's test was significant with 100% confidence, hence there is sufficient correlation between the variables for factor analysis (Meyers, Gamst and Guarino, 2006).

The varimax rotation method of factor analysis produced 3 significant components or composite PHC delivery system variables which are detailed in Table 1, along with a composite factor loading. They are C1 (print media), C2 (institutionally sponsored systems), and C3 (electronic and audio-visual delivery systems). The 3 components explained over 65 percent of the variance with C3 having the highest correlations among its components (.7223) and C1 showing the greatest amount of variance (29.8%).

Table 1. Summary of composite variables from factor analysis

Composite Variable	Factors in the Composite Variable	Factor Loading	Variance Explained (%)
C1: Print Media	Health books, newsletters, nutrition books and magazines, medical encyclopedias, pamphlets, health association publications, public health service publications, health magazines, newspapers, medical journals, nutritional labels, health insurance provider information, mental health books	.6663	29.8

C2:Institutional	**Health videos, hospital-provided information, health seminars, how-to-quit books, health fairs, wellness center information, employer-provided information, employee-sponsored wellness programs**	**.6963**	**25.9**
C3: Electronic and audio-visual	Television, radio, Internet	.7223	9.7

The six demographic variables were tested using ANOVA, which tests for differences across the groups in each demographic variable (e.g., gender: men vs. women) for each of the three sources of PHC information without significant linear association. Table 2 summarizes more health-oriented vs. less health-oriented toward PHC information sources.

Household income, educational attainment and marital status produced only two significant relationships out of six possible measures. Educational attainment produced one significant difference, and the same result was true for married respondents. Eight (8) out of eighteen (18) relationships were significant. These results are summarized in Table 2.

Educational attainment H₁: Respondents with college degrees placed significantly less importance on the usage of print sources of PHC information (C1: F=3.43, p=.017). Since persons with college degrees are considered "better educated," H₁ is rejected. *Income H₂*: There were no significant differences across income categories for the importance placed on any of the three sources of PHC information. Therefore H₂ is rejected. *Gender H₃*: Women placed greater importance on print (C1: F=32.53, p=.000), institutional (C2: F=24.14, p=.000) and electronic/audio-visual (C3: F=4.87, p=.028) sources of PHC information than men. Therefore H₃ is accepted. *Age H₄*: Compared to older consumers (age >45) younger consumers (age <45) placed more importance on both institutional (C2: F=4.09, p=.001) and electronic/audio-visual (C3: F=5.01, p=.000) sources of PHC

information. Therefore H_4 is accepted. *Marital Status H_5*: Married persons placed more importance on print sources of PHC information (C1: F=4.38, p=.037). Therefore H_5 is partially accepted. *Ethnic Orientation H_6*: Non-Whites (Blacks and Hispanics) placed greater importance on institutional sources of PHC information (C2: F=32.72, p=.000). Because we expected Whites to place more importance on PHC information sources, we reject H_6.

Table 2. ANOVA: More health-oriented vs. less health-oriented[a]

(C1) Importance of Print Sources of PHC			
More Health-oriented	Less Health-oriented	F-Ratio	p-value
No College (2.36)[b]	College (2.59)	3.43	.017
Women (2.35)	Men (2.64)	32.53	.000
Married (2.26)	Unmarried (2.49)	4.38	.037
(C2) Importance of Institutional Delivery Systems of PHC			
More Health-oriented	Less Health-oriented	F-Ratio	p-value
Age <45 (2.68)	Age >45 (2.92)	4.09	.001
Women (2.65)	Men (2.98)	24.14	.000
Non-White (2.52)	White (2.92)	32.73	.000
(C3) Importance of Electronic and Audio-visual Sources of PHC			
More Health-oriented	Less Health-oriented	F-Ratio	p-value
Age <45 (2.13)	Age >45 (2.37)	5.01	.000
Women (2.19)	Men (2.32)	4.87	.028

[a]Only significant results shown
[b]Mean values in parentheses

The preceding analysis identified the "less health-oriented" group to be college educated, men, unmarried, older, and White. The "more health-oriented" groups were those without college degrees, women, married, younger, and non-White. For further analysis, we identified the top five sources of PHC

information considered important by the more vs. less health-oriented groups. This is summarized in Table 3.

Table 3. Top five (5) PHC information sources for more health-oriented vs. less health-oriented

Five (5) Most Important Source of PHC Information	Less health-oriented Mean(Rank)	More health-oriented Mean(Rank)
Internet	1.90(1)	1.64(1)
Nutritional labels	2.28(2)	2.05(2)
Television	2.34(3)	2.20(5)
Health pamphlets	2.34(4)	2.06(3)
Health magazines	2.47(5)	2.19(4)

The Internet was the most important choice with nutritional labels ranking second. However, for the less health-oriented, TV was ranked 3rd vs. 5th for more-health oriented. The difference in rank for TV is supported by literature, which has found that persons with less orientation toward PHC tend to obtain their PHC information from passive sources such as TV.

Discussion

Compared to men, women placed more importance on PHC sources of information including print media (e.g., health newsletters, magazines, and nutritional labels), institutional (e.g., hospital-provided information), and electronic and audio-visual (e.g., television, radio, and internet). These results are consistent with previous research that finds women being more involved in self-care than men (Cangelosi, Ranelli and Markham, 2009; VanDevanter et al., 2005).

Married individuals placed greater importance on print sources of PHC information. This is consistent with existing literature suggesting that married persons are more PHC-oriented and more responsible about their health (Cangelosi, Ranelli and Voss, 2009; Thomas, 2009).

Younger consumers (age <45) placed greater importance on institutional and electronic sources of PHC information. This is in contrast with findings suggesting that older consumers are more concerned about PHC information (Thomas, 2009). Instead our results are in line with recent studies showing younger consumers being more attuned to wellness issues and more willing to use PHC information as treatment and cure for health problems (Cangelosi, Ranelli and Markham, 2009; Cangelosi, Ranelli and Voss, 2009).

Given their generally better economic and educational statuses, we expected Whites to attach greater importance to PHC information sources than other ethnic groups. We also expected those with higher educational attainment and higher incomes to place greater importance on PHC information sources.

Instead we found that non-Whites considered institutional sources of PHC to be more important than Whites, and those without college degrees considered print sources to be more important than those with college degree. Finally, we found no differences among income groups. Although higher income consumers are more oriented to PHC information and activities (Cangelosi, Ranelli and Markham, 2009), they do not place greater *importance* to them as sources of information

Implications

Women and married persons consider PHC information sources to be more important, and should therefore be easier to reach. For married persons and those without college degrees, print sources of PHC information may be most effective.

Hospitals, wellness and fitness centers and other institutional providers of PHC information should consider the importance of attractive and relevant websites that target younger consumers, as well as minorities, or those of lower socioeconomic status. These demographic groups may be more dependent on these websites, than other sources, for PHC information (Dutta-Bergman, 2003; Musa et al., 2009).

The internet was considered the most important source of PHC information for all demographic groups. Its importance cannot be overlooked. Nutritional labels, television, health pamphlets, and health magazines were also ranked at the top in terms of importance. These media channels deserve critical

consideration when disseminating PHC information. For instance, those exhibiting unhealthy lifestyles spend considerable time watching TV (Cangelosi, Ranelli and Voss, 2009), and therefore the television is an important channel to distribute PHC information.

Those with high educational attainment, high income, and White ethnicity did not place higher importance on PHC sources of information. This can be attributed to many factors such as one's current health and lifestyle, family health history, and confidence about one's health and lifestyle. Furthermore, attitudes about utilizing PHC information is largely dictated by needs or benefits sought by health consumers. This may cut across all demographic groups including education, income levels, and ethnicity (Best, 2009; Musa et al., 2009). Subsequent studies should explore these factors.

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