

Title:

In-Home Internet Use Increases as the Number of Internet Users in the Household Increases

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Session Title:

Utilizing Technology in Communication

Slot:

F 22: Monday, 30 October 2017: 9:30 AM-10:15 AM

Scheduled Time:

9:30 AM

Keywords:

Information and Communication technology, health inequities and technology champion

References:

Lockwood, M. B., Saunders, M. R., Lee, C. S., Becker, Y. T., Josephson, M. A., & Chon, W. J. (2013). Kidney transplant and the digital divide: Is information and communication technology a barrier or a bridge to transplant for African Americans? *Progress in Transplantation*, 23(4), 302-309. doi: 10.7182/pit2013869

Lockwood, M., Saunders, M., Josephson, M. A., Becker, Y. T., & Lee, C. (2015). Determinants of frequent Internet use in an urban kidney transplant population in the United States: characterizing the digital divide. *Prog Transplant*, 25(1), 9-17. doi: 10.7182/pit2015957

Neuner, J., Fedders, M., Caravella, M., Bradford, L., & Schapira, M. (2015). Meaningful use and the patient portal: patient enrollment, use, and satisfaction with patient portals at a later-adopting center. *American Journal of Medical Quality*, 30(2), 105-113. doi: 10.1177/1062860614523488

Abstract Summary:

In a cross-sectional study of 240 pre- and post-kidney transplant patients at an urban transplant center in the United States we found that Internet use increased as the number of Internet users in the household increased. In previous work we had shown only 1/3 of patients used the Internet >5hrs/week

Learning Activity:

LEARNING OBJECTIVES	EXPANDED CONTENT OUTLINE
to describe Internet use trends at an urban transplant center from 2012 to 2016 in a sample of pre and post-kidney transplant patients	1) Discuss 2012 technology assessment of 254 pre- and post kidney transplant patients at an urban transplant center in the United States. 2) Present figures demonstrating trends in information and communication technology use including internet use 3) Describe smartphone trends and implications from 2012-2016

To describe potential facilitators and barriers to in home Internet use	1) Describe results from 2016 Internet assessment in 240 pre- and post kidney transplant patients. 2) Discuss finding that internet use increases as number of Internet users in the household increases (contrary to our hypothesis that the more Internet users in the household would result in LESS Internet use) 3) Discuss the potential role of technology champion (identifying family member who is tech savvy to assist with health technology adoption)
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Abstract Text:

Purpose:

In a 2012 technology assessment of 254 pre- and post-kidney transplant patients we found only one-third of patients reported using the Internet more than 5 hours per week (infrequent Internet user). The specific aim of the 2016 study was to determine if competition for Internet enabled devices/Internet access within the household was a barrier to Internet use.

Methods:

We conducted a cross-sectional survey of 240 pre- and post-kidney transplant patients at an urban transplant center in the United States. A consecutive sample of all English speaking adult patients who presented to the transplant center for the pre-kidney transplant evaluation or post-kidney transplant clinic visit we offered the opportunity to participate in the study. Of note, this was not a longitudinal study. Participants in the 2016 sample were not the same as the participants from the 2012 technology assessment, however, the 2016 sample was drawn from the same population.

To assess barriers to in-home Internet use a technology survey was developed by a multidisciplinary team of experts along with pre- and post-kidney transplant patients. The survey consisted of five demographic questions, five disease specific questions, and eight technology/Internet questions. All questions were in yes/no and Likert-type responses. The survey was written at the 4th grade reading level. Content validity was established by content experts and pre and post kidney transplant patients. The reliability statistic was adequate (Cronbach's $\alpha=0.74$).

Descriptive statistics including means and proportions were used to characterize the sample. We set out to test three hypotheses: H01: there will be no difference in the number of people in the household between frequent Internet users (more than 5 hours/week) and infrequent Internet users (5 hours or less /week); H02: there will be no difference in the number of Internet enabled devices in the household between frequent Internet users and infrequent Internet users, and H03: there will be no difference in the number of Internet users in the home between frequent Internet users and infrequent Internet users. Three hypotheses were tested using Wilcoxon rank sum (Mann-Whitney U tests). In addition, predictors of frequent Internet use were determined using multivariable logistic regression analysis.

Results:

A majority of the sample were African American (56%), men (67%), with a mean age of 51 years (SD=13.48), and a self-reported median household income of \$53,800/year. Most participants reported having kidney disease for greater than 5 years (75%), and were on dialysis (86%). Education was evenly divided among high school or less, some college and college and beyond. A Smart phone was the most

frequently used device used to access the Internet followed by laptop computer, desktop computer, and tablet computer (49%, 19%, 17%, 12% respectively).

Wilcoxon (Mann Whitney U) test

HO1: A two sample Wilcoxon rank-sum (Mann Whitney) test indicated there was no difference in the number of people living in the household between those who reported being frequent Internet users compared to those who reported being infrequent Internet users ($z=-0.871$, $p=0.3835$).

HO2: A two sample Wilcoxon rank-sum (Mann Whitney) test indicated the number of Internet enabled devices was greater for those who reported being frequent Internet users compared to those who reported being infrequent Internet users ($z=-5.050$, $p<0.001$).

HO3: A two sample Wilcoxon rank-sum (Mann Whitney) test indicated the number of Internet users in the household was greater for those who reported being frequent Internet users compared to those who reported being infrequent Internet users ($z=-3.190$, $p<0.0014$).

Logistic Regression

There were no differences seen in frequency of Internet use by gender, income, dialysis status (on dialysis versus not yet on dialysis), or transplant status (pre-transplant versus post-transplant). Those who reported being African American or Hispanic/Latino were significantly less likely to report being frequent Internet users compared to those who reported being Caucasian (OR: 0.27, 95%CI: 0.12-0.60), $p=0.001$; OR: 0.28, 95%CI: 0.09-0.91, $p=0.035$, respectively). Those who reported an education of college and beyond were three times more likely to be frequent internet users compared to those with an education of high school or less (OR: 4.07, 95%CI: 1.80-9.17, $p=0.001$). Those who reported owning a Smartphone were nearly five times as likely to report being a frequent Internet user compared to those who did not (OR: 4.72, 95%CI: 2.24-9.93, $p<0.001$). For each additional Internet user in the household, holding all other variables constant, the odds of being a frequent Internet user increased by 28%.

Conclusion:

The digital divide among African Americans and Hispanic/Latinos in urban areas in the United States remains a problem despite a significant increase in Smartphone ownership. The finding that Internet use increases as the number of Internet users in the household increases may indicate that identification of a "technology champion", a family member in the household who is technologically savvy who can assist the patient, may aid with patient's adoption of health technology. Nurses are uniquely positioned to advocate for patients and develop patient centered health technologies.