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Internet and Social Media Use After Traumatic Brain Injury: A Traumatic Brain Injury Model Systems Study

Christina Baker-Sparr, MS,
Craig Hospital, Englewood, CO

Tessa Hart, PhD,
Moss Rehabilitation Research Institute, Elkins Park, PA

Thomas Bergquist, PhD, ABPP,
Mayo Clinic College of Medicine, Rochester, MN

Jennifer Bogner, PhD,
Ohio State University, Columbus, OH

Laura Dreer, PhD,
University of Alabama, Birmingham, AL

Shannon Juengst, PhD,
University of Pittsburgh, Pittsburgh, PA

David Mellick, MA,
Craig Hospital, Englewood, CO

Therese M. O'Neil-Pirozzi, ScD,
Spaulding Rehabilitation Hospital, Harvard Medical School; Northeastern University, Boston, MA

Angelle M. Sander, PhD,
Baylor College of Medicine, TIRR Memorial Hermann, and Harris Health System, Houston, TX

Gale G. Whiteneck, PhD
Craig Hospital, Englewood, CO

Abstract

Objectives: To characterize internet and social media use among adults with moderate to severe traumatic brain injury (TBI); to compare demographic and socio-economic factors associated with internet use between those with and without TBI.

Setting: Ten Traumatic Brain Injury Model System Centers

Participants: Persons with moderate to severe TBI (N=337) enrolled in the TBI Model Systems National Database and eligible for follow-up from April 1, 2014 to March 31, 2015.

Design: Prospective cross-sectional observational cohort study

Conflicts of Interest
None declared.

Main Measures: Internet usage survey

Results: The proportion of internet users with TBI was high (74%), but significantly lower than those in the general population (84%). Smartphones were the most prevalent means of internet access for persons with TBI. The majority of internet users with TBI had a profile account on a social networking site (SNS) (79%), with over half of the sample reporting multi-platform use of two or more SNS.

Conclusion: Despite the prevalence of internet use among persons with TBI, technological disparities remain in comparison to the general population. The extent of social media use among persons with TBI demonstrates the potential of these platforms for social engagement and other purposes. However, further research examining the quality of online activities and identifying potential risk factors of problematic use is recommended.

Keywords

Brain Injury; Social Media; Internet; Social Participation; Communication; Community Reintegration

INTRODUCTION

The internet and social media are dominant forces in our lives in this Age of Information. Time spent on the internet continues to grow steadily in the US and worldwide, with mobile technology and social media driving much of the expansion.^{1,2} Social media tools, including social networking sites (e.g. Facebook), blogs (e.g. Tumblr), online content communities (e.g. YouTube) and online forums (e.g. Google Hangouts), encourage multidimensional communication where users can exchange information, connect to resources and create social networks based on common interests.³ Such platforms can facilitate opportunities that would otherwise be limited by various barriers. Not only have the internet and social media transformed the ways that we seek and gather information, but they also appear to be changing the perception of communication and of what constitutes social support. For example, among college students, large and seemingly impersonal networks of Facebook friends are associated with greater perceived social support than smaller ones, and expressing one's feelings to such large networks may serve important needs for an evolving type of intimacy.⁴

People with disabilities may encounter obstacles to keeping up with these social trends and enjoying their advantages. A Pew survey in 2011⁵ revealed that Americans with disabilities are less likely to use the internet compared to their able-bodied counterparts (54% vs. 81%). This remained true even after controlling for factors such as lower income, lower education, and older age. Moreover, people with disabilities were less likely to use online access methods such as broadband service and mobile devices, both of which are advantageous for seeking work, finding health information, and communicating remotely with others. Lack of experience with these technologies creates a vicious cycle, as less experience predicts less favorable outcome in studies using web-based platforms to help mitigate the effects of disability.⁶ All of these trends are unfortunate, considering that internet and social media

may be seen as electronic curb cuts⁷—resources to help offset the reduced mobility and social isolation that affect many people with disabilities.

Reduced social network size and loneliness are particularly common for persons with traumatic brain injury (TBI).^{8–11} Social networking through the internet has the potential to alleviate this isolation. However, the cognitive impairments typical after TBI^{9,11} (e.g., impaired memory, attention and organization) may pose an obstacle to learning and utilizing rapidly changing technology. There have been recent studies exploring the use of mobile technology to help people with acquired brain injury compensate for cognitive impairments,^{12–14} and caregivers for such individuals to utilize online resources for support.^{15,16} A few studies have attempted to directly teach internet access¹⁷ or use of social media¹⁸ to people with TBI. Others have surveyed people with TBI on their habitual use of the internet¹⁹ or Facebook.²⁰ Such studies quickly become outdated and difficult to generalize as new technologies and online trends emerge. As a result, there is an ongoing need for updated information regarding the use of online technology after TBI that can guide future efforts to narrow the “disability divide”,²¹ encourage internet-based social participation, and develop online interventions to facilitate these novel forms of interaction.

In this study, we interviewed a large cohort of people at least 1 year after moderate or severe TBI to examine the current level of online activity among these individuals. Our aims were 1) to examine various aspects of internet use among adults with TBI, particularly focusing on activities involving communication and social participation through social media platforms; and 2) to compare certain online activities, as well as demographic and socio-economic factors associated with internet use, between those with and without TBI, the latter based on published surveys of the general population.²²

METHODS

Participants

Participants were a subset of persons with moderate to severe TBI enrolled in the Traumatic Brain Injury Model Systems (TBIMS) National Database, which is funded by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR). Inclusion criteria for the National Database define TBI as damage to brain tissue caused by an external mechanical force as evidenced by medically documented loss of consciousness or post-traumatic amnesia (PTA) or by objective neurologic findings on examination of physical or mental status attributed to the brain injury. Persons meeting this and other acute care criteria²³ are included for enrollment. Participation in the TBIMS National Database study involves prospective follow-up interviews at 1, 2, and 5 years post-injury, and every 5-year interval thereafter. For the present study, eligible individuals were National Database participants enrolled by any of the 10 TBIMS centers prospectively conducting the internet use survey, who were due for a routine follow-up during a one-year data collection period from April 1, 2014 through March 31, 2015. Individuals who were non-English speaking, lost to follow-up during the data collection period (including expired and incarcerated cases) or had a proxy complete their follow-up interview were ineligible to participate. A total sample of 530 participants was determined based on the calculation for any population parameter to be reported with 95% confidence²⁴ while also accounting for

the estimated number of cases potentially excluded due to deaths, incarcerations and proxy interviews for the given period. Each TBIMS center was assigned consecutive cases due for follow-up to minimize selection bias of respondents.

Measures

Demographics—Demographic variables assessed at the time of follow-up included age, gender, race/ethnicity, residence status, community type, education, employment status, and total family income for the previous year. Age was recorded as a categorical variable and grouped as 18–29, 30–49, 50–64 and 65+ years. Race/ethnicity was dichotomized as white and non-white, while current residence was categorized as private residence and other (e.g. adult home, nursing home). Education was categorized as less than 12th grade, high school diploma or GED, some college, and college degree which included bachelor's degree and higher. Employment status included employed, unemployed, student, retired and other (e.g. homemakers, volunteers). Total family income was grouped as less than \$25,000, \$25,000 to \$49,999, \$50,000 to \$99,999, and greater than \$100,000.

Injury characteristics—Various injury characteristics were included for analysis. Cause of injury was coded as vehicular, violence, falls and other (e.g. sports-related injuries, hit by falling or flying objects). Co-occurring spinal cord injury (SCI) was coded as yes or no. Time to follow commands was calculated as the number of days from injury to the first day the individual followed simple motor commands 2 out of 2 times within a 24-hour period.²⁵ Duration of PTA was calculated as days from injury until 2 consecutive Galveston Orientation and Amnesia Test scores above 76, Orientation-Log scores above 25, or other criteria defined by the TBIMS²⁵ were obtained.

Internet usage—An internet usage survey (available from the first author) was developed for this study. Topic areas were generated based on previously published studies exploring internet use and interest in persons with TBI^{19,20,26} and on general population surveys concerning internet usage.^{27–30} Survey items covered the following key domains: types of online activity; use of social media (including size of online community and intensity of use); modes of access; frequency and patterns of usage; barriers to online accessibility; assistive devices and compensatory strategies to facilitate online accessibility; and factors that prevent or deter non-users from engaging in online activity. The final survey included items adapted from general population surveys to allow for comparison with normative data but also new items generated by experts in TBI. Suitability of items for persons with TBI was assessed via cognitive interviews conducted with 10 persons with TBI in Denver, Colorado. The survey items were clarified, condensed, and reorganized based on feedback from the interviewees and were then re-reviewed by the investigators prior to finalizing the survey.

To measure the extent of social media use, the survey included the *Facebook Intensity Scale* (FBI), an eight-item questionnaire developed to assess extent of engagement with Facebook.²⁷ It contains questions on the total number of Facebook Friends, minutes per day spent on Facebook, and six Likert scale questions assessing emotional connectedness with

Facebook (Cronbach's alpha = .83). In this study, FBI items were modified to apply to the respondent's most visited social networking site, for cases where Facebook was not that site.

Procedure

The internet usage survey was administered immediately following completion of routine TBIMS follow-up or at another scheduled time within one month following the TBIMS interview. While some TBIMS follow-up data can be collected from the best available source (either the person with TBI or a proxy), the internet survey was only administered when the follow-up interview was completed by the individual with TBI. Trained research assistants at each of the 10 centers administered the survey, which was conducted via telephone, in-person or by mail. In light of rapid changes in technology and technology usage, all data collection was conducted within a one-year span. IRB approval for this study was obtained at each participating center.

Data analysis

Internet users were identified as participants who reported recent internet or email use; otherwise, they were classified as non-users. Users were then grouped into usage groups based on the total reported number of hours spent online in a typical day. Participants were classified as low users (less than 1 hour of use per day), medium users (1 to 2 hours of use per day), or high users (3 or more hours of use per day). These ranges were determined in order to obtain similarly sized sub-groups. Descriptive statistics (proportions, cross-tabulations, means, and standard deviations) were calculated, and possible statistically significant differences among user subgroups were assessed using chi-square for categorical variables and ANOVA for continuous variables. Selected demographic factors were compared between internet users and non-users with TBI as well as between internet users in the TBI sample and the general population using chi-square tests. For comparison of demographic variables between the present study's TBI cohort and the general population, a public dataset regarding internet use was obtained from a Pew Research Center population survey administered in January 2014 to a nationally representative sample²² and weighted to correct known demographic discrepancies. All analyses were conducted using SPSS Version 23 (SPSS Inc., Chicago, Illinois).

RESULTS

Among 530 TBIMS individuals due for follow-up within the selected year, 21 had expired, 7 did not speak English, and 6 were incarcerated and could not be interviewed. Sixty-six follow-up interviews were completed by proxy and thus were not eligible for the internet survey. Additionally, 81 were lost to follow-up, 5 refused the internet survey and 6 had withdrawn from the Model Systems national database. This left 338 cases with completed internet surveys. Of these, 93% were conducted by phone, 5% in-person and 2% by mail. One case was excluded from analysis due to missing data. Among the 337 remaining respondents, 87 (26%) were classified as non-users of the internet, while 250 (74%) were classified as internet users. Based on their extent of use, 103 individuals (30%) were classified as low users, 70 (21%) as medium users and 77 (23%) as high users.

Demographics & injury characteristics

Demographic and injury severity characteristics are presented in Table 1 for all 4 internet use groups. Age, community type, education, employment status, and total family income were all significantly associated with internet usage, while years since injury, race, and gender did not significantly vary among internet use groups. As shown in Table 1, particularly high proportions of individuals with TBI who were 65+ years old and those who were retired were non-users, as well as those who lived in either rural or urban areas, had no more than a high school education, or reported an annual family income less than \$25,000 per year. Conversely, high users included high proportions of individuals younger than 50, those who lived in the suburbs, those who had at least a college degree, and those who were employed. However, nearly a third of unemployed adults with TBI were also considered high users. Older adults who used the internet did so less frequently than those younger than 65. Other than cause of injury, there were no significant differences in injury characteristics between non-user and user groups, including time since injury and injury severity. Both falls and vehicular accidents were the leading causes of TBI among non-users, while the majority of all user groups reported TBI due to vehicular accidents.

Internet access

The most frequently reported means of accessing the internet was via smartphone (reported by 75% of users), followed by laptop computer (68%), desktop computer (57%), and tablet (49%). Access to new technology was high, with 65% reporting their newest device was less than a year old, and only 10% reporting it was more than 3 years old. Almost everyone (96%) reported using from home. Work and other public locations with Wi-Fi access, such as a coffee shop (45%) or someone else's house with internet access (49%), were other popular locations.

Type and frequency of internet usage

With nearly three-quarters of respondents with TBI reporting current internet use, types of online activities (social and nonsocial) were also examined (Table 2). Among internet users, 38% reported spending at least 7 hours per week engaged in social online activities, while 44% spent 1–6 hours per week online socially, and 18% reported less than an hour per week in social activities. Non-social activities were defined as online activities that didn't involve communication with another internet user, either in real-time or delayed time. Over one-third (36%) reported engaging in nonsocial online activities at least 7 hours per week, 52% reported 1–6 hours, and 12% reported less than an hour per week.

Social media use

Among respondents with TBI who reported using the internet, 79% had a profile account on a social or professional networking site; 27% reported using only 1 social networking site (SNS), while 42% used 2–4 sites, and 10% used 5 or more sites. Among those who use SNS, Facebook was the most popular, with 75% reporting most frequent use of this site. Nearly one-quarter (23%) of SNS users also reported having an account with LinkedIn, an online site used primarily for professional networking and job searching. Other sites

included Google Plus (27%), Instagram (21%), Twitter (19%), Pinterest (17%), Tumblr (2%) and Flickr (2%).

Mobile internet use

Fully 95% of respondents owned a mobile phone, and 75% reported accessing the internet with their smartphone. Among all respondents with mobile phones, 91% reported that they use their phone to send/receive text messages, with almost half (45%) sending and/or receiving texts 10 times or more in a typical day. Other common tasks completed by those with smartphones are shown in Table 3. Engaging in five or more of these mobile activities was positively associated with overall internet use. Among the low user group, 31% reported 5 or more activities via a mobile phone, while the percentage reporting 5 or more mobile activities was over half (55%) among the medium user group and two-thirds (66%) among the high user group.

Barriers and facilitators of internet use

A small proportion of the user sample (8%) reported using assistive devices such as voice recognition software or screen reading tools when using the internet. Three-quarters (73%) of respondents reported not needing any physical or technical assistance; 15% reported needing a little bit. Similar trends were noted when asked the extent to which TBI-related symptoms affected their ability to use the internet, with 72% reporting no effect and 15% reporting that their TBI affected their ability a little bit. Examples of TBI-related issues reported by respondents included memory problems (e.g. remembering passwords), general technical difficulties (e.g. website navigation, downloading files), visual difficulties that could induce headaches, and difficulty with concentration and focus.

Attitudes regarding social media use

Respondents were asked a series of Likert-scale questions regarding their confidence in navigating the internet. Two-thirds (66%) of internet users reported that they were confident in troubleshooting problems encountered when using the internet. Similarly, the majority of internet users (87%) endorsed that they were confident searching for information on the internet. However, when asked about seeking help or advice from an online discussion group, 45% felt that they would not be confident in doing so.

Additional attitudinal statements modified from the Facebook Intensity Scale²⁷ were administered to assess the extent of internet users' emotional connectedness to social networking sites and its assimilation into their daily lives. As noted above, Facebook was the most popular social media site reported, with three-quarters of social networking users reporting current use, and 63% having online social networks with 100 or more friends. Respondents generally had positive opinions of their use of social networking. They did not feel overly dependent on it, however, as there was a low rate of endorsement of items asking if they would feel sad or out of touch if access to the site were interrupted.

Respondents were divided regarding whether they considered their time spent online as being wasteful, with 45% agreeing, 45% disagreeing, and 10% neutral. Nearly two-thirds (66%) of the sample agreed that being online kept them connected, though 55% reported

that they would not feel isolated if they didn't use the internet. Overall, over 80% were satisfied with the amount of time they spent engaging in online social activities.

Internet non-users with TBI

Internet non-users among the sample with TBI were asked additional questions to ascertain internet availability within their household and the reasons for their non-use. Nearly 40% had internet available at home that was used by others in the same household. Primary reasons for not using the internet were also reported (Table 4).

Demographic comparisons with general population

General population data regarding internet use were used to compare various demographic and socio-economic factors between internet users with TBI and internet users in the general population (Table 5). Overall, the proportion of internet users with TBI was significantly lower than that in the general population, a finding reflected across all demographic comparisons, with the following exceptions: the proportion of internet users with TBI was not significantly different than those without TBI among 18–29 year olds, those who lived in suburban areas, those with a college degree, or those who were employed.

DISCUSSION

This study explored characteristics of internet usage and online social participation among adults with TBI, and compared demographic and socio-economic attributes of internet users with TBI to internet users in the general population. Within the TBI cohort, younger age, living in a suburban community, being employed, higher education, and higher family income were all significantly associated with internet use. The majority of non-users was older than 65, retired, lived in rural areas, or had a family income of less than \$25,000 per year. Neither injury severity nor time since injury differed significantly between internet users and non-users. The socio-economic factors associated with internet use in the cohort with TBI were quite similar to those observed in the general population.³¹ Notably, while there was a lower percentage of internet users in our sample of persons with TBI compared to the general population, these differences were not present among adults with TBI who were younger, more highly educated, employed, or living in a suburban setting (a possible proxy for socio-economic status). This suggests that the socio-economic factors affecting internet use in general—older age, lower income, rural residence—may disproportionately affect those with TBI.

Patterns of social media use among internet users with TBI were found to be similar to those reported in the general population. Not only was Facebook the most popular social networking site for both cohorts, but 51% of online adults with TBI also reported multi-platform use of two or more social networking sites, compared to 52% of online adults in the general population.² The prevalence of social media use, as well as the size of the corresponding networks of friends among internet users with TBI, demonstrates the potential to utilize these platforms not only for social engagement but also for access to information and other activities, despite the effects of brain injury. Still, given the relatively considerable use of social media among the TBI cohort, 45% of users reported not being

confident in seeking help or advice online, which may suggest underutilization of online support such as e-health resources. As the availability of such health resources would be beneficial to these individuals, educating persons with TBI about the potential benefits of online discussion forums and support groups, as well as tips for safeguarding privacy, may increase their comfort with use of these procedures.

Although this level of technological knowledge among the TBI cohort is promising, it is also important to acknowledge the potential pitfalls of excessive internet and social media use, as has been observed among the general population. Recent studies have examined issues related to problematic internet use, including excessive time spent online, perceptions of online friends that may prompt feelings of envy,³² links to depression and loneliness,^{33–35} and possible increased exposure to cyberbullying.^{36,37} An emerging literature suggests that some people may be more vulnerable to problematic internet use or internet addiction, with one of the most frequently cited risk factors being impaired behavioral regulation.^{38–42} Since persons with TBI are particularly prone to problems with self-regulation, they may be at increased risk for the development of problematic internet use. Future research should examine the implications of TBI-related social impairment on problematic internet use and factors that may mediate risk.

Mobile technology is a major facilitator of online activity, with nearly 75% of the TBI cohort reporting that they accessed the internet via smartphone to do a variety of interactive mobile tasks such as emailing, accessing social networking sites, and searching for information related to their current location. The prevalence of mobile internet use in the TBI sample, even among those who reported low overall internet use, illustrates the dependence on mobile technology to facilitate online access within this cohort, particularly for those disproportionately affected by non-injury related factors that influence use such as income. The emergence of smartphone technology may mitigate some of the socio-economic impact on internet use reported here and represents a potentially powerful resource for improving disparities in digital access after TBI.

Although the Digital Divide appears to have narrowed compared to earlier studies on this topic,²⁶ we still observed lower rates of internet use compared to the general population in persons with TBI who were over the age of 30, from minority backgrounds, or living in urban or rural (as opposed to suburban) areas. Only about half of non-users with TBI reported no need or interest in internet use, with technical knowledge (a factor potentially influenced by cognitive impairment) and motor/visual limitations noted as common barriers. In addition, the group reporting no interest may include people who would benefit from internet use if it were introduced to them. Thus, for at least some persons with TBI there may be a need for a person-centered approach in which the technology and training are tailored to the individual's needs versus a "one size fits all" process. Such an approach is in the best tradition of rehabilitating persons with chronic disabilities.⁴³

There were several limitations of this study. As the sample was composed of individuals who underwent inpatient rehabilitation and were capable of self-report, adults with either very severe or mild brain injuries were not included, potentially limiting the generalizability of the results. Additionally, pre-injury level of knowledge/familiarity with online technology

was not determined. The current study focused on quantity of internet usage, but quality of use was not assessed. This would be an important area for further research to identify potential vulnerabilities in this population, as cognitive impairments and behavioral factors in persons with TBI may result in decreased safety in internet usage and overall decreased quality of the social connections. As these are topics that were not investigated in the current study, the statistics presented about internet usage should not be interpreted as implying that online usage is associated with positive consequences for all persons with TBI.

CONCLUSION

As the internet and its features continue to evolve, it is important to examine access and use by people with disabilities in an ongoing fashion. This study of a large cohort of persons with moderate to severe TBI demonstrated a high rate of internet and social media use, primarily via smartphones. However, people with TBI may be disproportionately affected by factors associated with internet non-use in the general population such as older age, rural residence, and lower levels of education and income. Further study is needed to determine the specific advantages and risks of internet use for people with TBI and other disabilities.

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Table 1

Demographic & injury characteristics among internet non-users, low, medium, and high users

	Non-users n = 87 (25.8%)	Low users (<1hr/day) n = 103 (30.6%)	Medium users (1–2hr/day) n = 70 (20.8%)	High users (3+hrs/day) n = 77 (22.8%)
Age Groups **	%	%	%	%
18–29 years	2.9	32.4	23.5	41.2
30–49 years	24.5	28.2	20.9	26.4
50–64 years	26.3	32.6	24.2	16.8
65 years and older	54.2	32.2	10.2	3.4
Sex				
Male	26.5	31.9	20.2	21.4
Female	24.2	27.3	22.2	26.3
Race				
White	23.8	32.6	21.1	22.6
Non-white	32.9	23.7	19.7	23.7
Years Post-Injury				
1	20.4	33.0	23.3	23.3
2	23.5	32.7	16.3	27.6
5	30.6	30.6	26.4	12.5
10	52.6	21.1	5.3	21.1
15	23.3	23.3	23.3	30.2
20	50	50	0	0
Community Type *				
Rural	36.3	29.4	15.7	18.6
Suburban	13.8	36.2	25	25
Urban	30	26.4	20	23.6
Education **				
Less than HS	43.8	21.9	15.6	18.8
HS Diploma/GED	40.5	30.6	11.6	17.4
Some College/Associates	17	33	29.2	20.8
College degree	6.8	32.9	24.7	35.6
Employment Status **				
Employed	5.1	39	28	28
Unemployed	25	20.8	22.9	31.3
Student	0	0	50	50
Retired	45.4	29.1	10.6	14.9
Other	21.1	31.6	31.6	15.8
Total Family Income **				
Less than \$25K	38.6	27.2	15.8	18.4
\$25,000 – \$49,999	31.3	30	17.5	21.3
\$50,000 – \$99,999	10.1	39.1	26.1	24.6

	Non-users n = 87 (25.8%)	Low users (<1hr/day) n = 103 (30.6%)	Medium users (1–2hr/day) n = 70 (20.8%)	High users (3+hrs/day) n = 77 (22.8%)
\$100,000 or more	8.8	29.4	32.4	29.4
Cause of Injury **				
Vehicular	17.7	32.8	24.5	25
Violence	34.4	25	9.4	31.3
Falls	43.9	30.5	11	14.6
Other	19.4	22.6	35.5	22.6
Associated Injury - SCI				
No	25.5	30.8	21.2	22.4
Yes	33.3	26.7	13.3	26.7
Days to Follow Commands (mean, SD)	6.1 (11.2)	6.2 (9.8)	7.3 (21.9)	6.8 (11.7)
Days in PTA (mean, SD)	20.2 (18.2)	21.9 (20.2)	22.1 (30.6)	22.2 (19.3)

*
p<0.05

**
p<0.01

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Table 2

Social and non-social online activities among internet users with TBI

	n =250
SOCIAL ACTIVITIES	%
Send or read email	87.7
Use a social networking site	72.2
Make a video phone call	40.5
Post comments on message boards	35.7
Send photos to people using photo-sharing websites	32.1
Play games with other people online	30.6
Use an online dating website	11.5
NON-SOCIAL ACTIVITIES	%
Look online for general information (e.g. news, weather)	87.7
Search online for a map or driving directions	74.6
Shop for or purchase a product online	70.2
Go online for no particular reason	69.4
Look up information about a hobby or interest	69
Online banking (e.g. pay bills, check account balance)	64.7
Look up health information	64.3
Look up how-to or repair information online	63.1
Watch TV or movies online	61.5
Look up information about resources specific to brain injury	42.1

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Table 3

Mobile online activities among internet users with TBI

	n =250
	%
Send or read email	63
Get directions, recommendations related to your present location	57.6
Send a photo or video to someone	55.9
Access a social networking site	55.9
Watch a video, such as on YouTube	46.2
Post a photo or video online	45.4
Online banking (e.g. pay bills, check account balance)	41.6
Participate in a video call	24.8
Play a game with someone else online	22.7

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Table 4

Reasons for non-use of internet among persons with TBI

	n =250
	%
Don't need it/Not interested	46.4
No access to a computer	16.7
Lack of technical knowledge	16.7
Cost of internet service	7.1
Anticipated difficulty or negative experience	4.8
Other	3.6
Cost of device and/or other equipment	2.4
Motor limitations	1.2
Visual limitations	1.2

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Table 5

Demographic comparisons between internet users in TBI and general population groups

	Internet users with TBI n=250 (74.2%)	Internet users without TBI (general population) n=2583 (83.8%)
	%	%
Age Groups		
18–29 years	97.1	93.3
**30–49 years	77.3	90.2
**50–64 years	73.7	86.4
*65 years and older	45.8	59.3
Sex		
**Male	74.5	83.7
**Female	75.8	83.9
Race		
**White	76.6	83.8
**Non-white	68.8	84.1
Current Residence		
Private Residence	76.1	---
Other	41.7	---
Community Type		
**Rural	63.7	80
Suburban	87.1	83.7
**Urban	71.2	85.8
Primary person living with		
Alone	65.5	---
Spouse/SO	79.6	---
With Others	72.9	---
Education		
Less than HS	56.3	51.6
**HS Diploma/GED	61.2	76.4
*Some College/Associates	83	89.4
College degree	93.2	96.3
Employment Status		
Employed	95	92.1
Unemployed	77.1	72
Student	100	---
Retired	55.3	---
Other	78.9	---
Total Family Income		

	Internet users with TBI	Internet users without TBI
	n=250 (74.2%)	(general population)
		n=2583 (83.8%)
Less than \$25K	61.4	68.3
*\$25,000 – \$49,999	71.6	81.1
\$50,000 – \$99,999	89.9	94.1
**\$100,000 or more	91.2	97.8

*
p<0.05

**
p<0.01

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