

Understanding social networking use for social connectedness among rural older adults

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Background: As a growing number of older adults are using social networking technologies, understanding the uses and activities associated with it are critical for designing interventions to maintain social connectedness and promote healthy aging. The purpose of this study was to examine the characteristics and perceptions of rural older adult social network site (SNS) users and nonusers, and the relationship between them in regards to social connectedness.

Methods: A convenience sample of 350 rural older adults age 65 years and older in Southeast Idaho rural counties participated in this quantitative cross-sectional descriptive study. Data were collected using a structured questionnaire including a demographic survey, the Social Networking Site survey, and the Social Connectedness Scale -Revised. Quantitative data were analyzed by descriptive and inferential statistics and correlational and hierarchical regression.

Results: Controlling for demographics, social connectedness was not an indicator of SNS use. Rural older adults who had home Internet, felt comfortable using the Internet, and viewed SNSs as important were more likely to use SNSs. Younger-old adults, married, with college education and/or higher income, were more likely to be SNS users. Lack of interest and lack of access and knowledge about SNSs were the main reasons nonusers chose not to use SNSs.

Conclusion: Overcoming negative perceptions of SNSs and having access and ability to use SNSs may increase likelihood of use, and offer an interventional strategy for social connectedness.

Keywords: Rural, Older adults, Social connectedness, Social networking sites, Social media

Background

Adults age 65 years and older currently comprise 13% of the US population, over 35 million people, and their numbers are expected to double by the year 2030 to 72 million as baby boomers approach old age^[1]. An increasing proportion (17%) reside in rural areas, and on average, have social and economic disadvantages that place them at risk for poor health outcomes^[2]. These disparities combined with physical and mental decline, changes in social roles, and diminishing peer networks can limit opportunities for social engagement^[3,4], and may lead to social isolation^[5]. A growing body of evidence demonstrates a significant positive association between social interaction and health and well-being among older adults^[6], and significant adverse effects of social isolation on mortality^[7], physical inactivity^[8], depression^[9], and suicide^[10], in older adults. A majority of rural older adults experience some degree of loneliness and

depression^[3,4], and are even more likely to experience social isolation than urban older adults^[11]. These considerations emphasize the need to address social factors when developing successful interventions to close the gap on health inequities^[12], and improve the quality of life for rural older adults.

Social connectedness, defined by the CDC as “the degree to which a person or group is socially close, interrelated ... with other persons or groups”^[13], is an important component of the social determinants of health that are primarily responsible for producing health differences among social groups^[12]. Membership in social networks can provide vital opportunities for social engagement, and are important determinants of how older adults perceive their health; the more socially connected, the higher the perceptions of social, physical, and mental health and quality of life^[11,14]. The wide-spread use of social networking technologies such as Facebook provide an innovative tool that can overcome rural older adult barriers, and meet the need for social connectivity of this growing population.

According to the Pew Research Center, one third (35%) of older adults age 65 and older are using social media, compared with 2% in 2005^[15]. More than half (56%) prefer Facebook, the most popular social media site online^[16], primarily to stay in touch with family^[17]. Previous studies have shown that age is a significant factor in social networking site (SNS) use. Age was negatively correlated with SNS use and online network size^[18], and the older the adult, the less likely to have computer access and confidence using information technologies, and the less likely they are to access SNSs^[19]. Intrinsic motivations such as positive attitudes and personalities, perceived benefits of physical and emotional independence, and the perceived value and satisfaction with the activity, also influenced SNS use^[20]. The mixed age group and lack of representation of older adults in the studies, however, has made it difficult to generalize findings and improve

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our understanding of the role SNSs can play in rural healthy aging^[17]. Studies of older populations have included people age 50 as older adults, assuming they have the same usage and motivations as older adults. Research has demonstrated different ages have different motivations and patterns of usage^[21], an important consideration for tailoring future interventions.

A variety of indicators have been used to measure social connectedness, with mixed results. Social network use has been associated with higher levels of social role satisfaction^[18] and improved aspects of everyday life^[22], and has been shown to augment, rather than replace, traditional communication among older adults^[19]. Although significant differences in perceived loneliness between users and nonusers has not been found, higher frequencies of Facebook communication was significantly associated with less loneliness among active users^[18]. These findings suggest that social networking technologies have the potential to maintain and improve the social health of rural older adults, yet little is known about social networking use in this population. There is a scarcity of research focusing specifically on understanding the role of SNS use and social connectedness among older adults, and a gap in the rural setting.

Approximately one third of older adults are using social networking technologies^[15], but research is lacking in the uses and activities associated with it, that would enable health care practitioners to develop interventions with this application to increase social connectedness. These considerations highlight the importance of understanding the role of social networking use and the relationship with social connectedness among rural older adults. Therefore, the purpose of this study was to examine the characteristics and communication behaviors of rural older adult SNS users and nonusers, the relationship between age and network size, and the relationship between social networking users and nonusers and social connectedness, after controlling for the effects of age, sex, marital status, education, and income, among rural older adults.

Methods

This study was a quantitative cross-sectional descriptive study, using standard survey methods of paper and pen questionnaires for data collection. Institutional Review Board (IRB) approval was obtained. The variables under consideration were demographics, social connectedness, and SNS use.

Setting

The study was limited to 8 rural Southeast Idaho counties that were classified by Rural Urban Continuum Codes 7 (urban population of 2500–19,999, not adjacent to a metro area), 8 (complete rurality or <2500 urban population, adjacent to a metro area), and 9 (complete rurality or <2500 urban population, not adjacent to a metro area)^[23].

Participants

A convenience sample of 350 rural community-dwelling adults, age 65 years and older, residing in rural counties in Southeast Idaho participated in the study. The target sample size of 350 was determined per a priori calculation with G*Power for a medium effect size of 0.15, $\alpha = 0.05$, Power $(1 - \beta) = 0.80$. Inclusion criteria were: (a) adults aged 65 years or older, (b) able to read and

understand English, (c) able to understand the purpose of the study and give informed consent, and (d) were rural residents. Individuals residing in nursing homes or nonresidential settings, or with a medically diagnosed impaired cognition such as dementia or Alzheimer were excluded from the study. The sample was selected from senior centers, community events, health fairs, grocery stores, churches, libraries, hospitals, doctors' offices, and clubs located within the rural counties. To avoid selection bias, each person was asked to participate. The data were collected over a 3-month period in the Fall 2016.

Data collection

The participants were given an informed consent and data confidentiality agreement letter to sign, describing the purpose of the study and directions for completing the survey. Tables and chairs were set up or already in place in quiet, comfortable areas for participants to sit while completing the survey.

Quantitative data were collected using a paper and pen structured survey questionnaire divided into 3 parts. Part 1 investigated the demographic characteristics differentiating SNS users from nonusers among rural older adults of age, sex, race, marital status, education, and income. Part 2 was a Social Network Site survey, retrieved from an online questionnaire from SurveyMonkey (n.d.)^[24], that included 23 questions of single and multiple response questions, to assess characteristics of SNS users and nonusers, and their communication behaviors. Part 3, the Social Connectedness Scale-Revised^[25], is a 20 item, 6-point Likert scale (1 = strongly disagree to 6 = strongly agree) that measures social connectedness as a psychological sense of belonging. The 10 negatively worded items are reverse scored and added together with the 10 positive scores that characterize a feeling a sense of closeness with others, and maintaining and seeking connection. A range of scores from 20 to 120 is possible, and higher scores represent a stronger sense of social connectedness^[25]. The scale has been shown to have good internal reliability with a Cronbach α coefficient of 0.92–0.94, and appropriate convergent and discriminant validity^[25], and has demonstrated good internal and external consistency, and good construct and criterion validity, with an internal item reliability of Cronbach α of 0.88^[26]. Permission was obtained for use of the instrument from the scale developer. Approximately 15 minutes was needed to complete the questionnaire.

Data analysis

Analysis was conducted in IBM SPSS Statistics version 24. Before analysis, all variables were examined through descriptive and case summary reports for accuracy of data and missing values. Quantitative data were analyzed by descriptive and inferential statistics and correlational and hierarchical regression.

Results

Demographic characteristics

There were 350 participants in the final analysis, with a mean age of 76.4 years (range = 65–101 y), and 196 (56%) were female, and 333 (95%) were white. **Table 1** depicts the entire sample population, categorized as either SNS users ($n = 126$) or nonusers ($n = 224$), or all participants ($N = 350$). The mean age of SNS users was 74 years, and that of nonusers was 77.8 years. The majority ($N = 137$; 72%) of adults over the age of 75 years did not use SNSs.

TABLE 1
Demographic characteristics of SNS users and nonusers.

Variables	Nonusers Total	SNS Users Total	Total [n (%)]
Age (mean) (y)	77.8	74	76.4
65–74	87	72	159 (45)
75–101	137	54	191 (55)
Sex			
Male	106	48	154 (44)
Female	118	78	196 (56)
Race			
Non-Caucasian	13	4	17 (5)
White/Caucasian	211	122	333 (95)
Marital status			
Married/partner	105	86	191 (55)
No partner	118	39	156 (45)
Education completed			
Grade 1–12	103	32	135 (40)
College + 1–3 y	118	93	201 (60)
Income			
< \$50,000	166	69	235 (43.3)
≥ \$50,000	59	49	108 (15.6)

SNS indicates social networking site.

Table 2 depicts the Pearson χ^2 test of association for each demographic category against the likelihood of being a SNS user or nonuser. Younger-older adults (younger than 75 y of age), and adults with spouse or partner, college education, and higher income (> \$50,000), were more likely to use SNSs, whereas there were no statistically significant differences in sex and race between SNS users and nonusers.

Computer-mediated differences between SNS users and nonusers

Table 3 depicts the Pearson χ^2 test of association for each computer-mediated variable against the likelihood of being a SNS user or nonuser. Rural older adults who had a home computer, home Internet, were comfortable using the Internet, and viewed online SNS as important and privacy policies as effective, were significantly more likely to use SNSs. More SNS users reported having access to a computer (n = 123, 98%), and Internet at home (n = 124, 98%), compared with nonusers’ access to a computer (n = 123, 58%) and Internet at home (n = 133, 60%). SNS users also reported feeling more comfortable using the Internet (n = 112, 89%) than nonusers (n = 72, 32%), and most of the SNS users viewed SNSs as important (n = 124, 98%), versus more than half of nonusers (n = 128, 60%). Only half of SNS users

TABLE 2
Relationship between social networking site use and demographic characteristics of social network site users and nonusers.

Variables	χ^2_1 (N = 350)	Φ
Age (y)	10.90*	–0.18
Sex	2.79	0.09
Race	1.21	0.06
Marital status	15.25**	0.21
Education	14.81**	0.21
Income	17.45**	0.23

*P < 0.05.

**P < 0.001.

TABLE 3
Relationship between social networking site use and computer-mediated characteristics of social network site users and nonusers.

Variables	χ^2_1 (N = 350)	Φ
Computer access	64.10*	0.43
Home Internet	62.99*	0.42
Comfortable Internet	104.14*	0.55
Importance	60.93*	0.42
Privacy	9.01*	0.17

*P < 0.01.

**P < 0.001.

(n = 68, 50%) and a third of nonusers (n = 63, 34%) viewed privacy policies as effective.

Predictors of SNS use

Table 4 depicts the binary logistic regression test for each of the demographic and computer-mediated variables shown to be significantly associated with SNS use, to determine the predictors of SNS use. Having home Internet, feeling comfortable using the Internet, and viewing SNSs as important were statistically significant, –2 Log Likelihood = 239.59, χ^2 (9, N = 292) = 151.06, P < 0.001, indicators of SNS use. Age, marital status, education, income, having a home computer, and viewing privacy policies as effective were not statistically significant predictors of SNS use. Rural older adults with home Internet were 6 more times likely to use SNSs, and who were comfortable with the Internet were 25 times more likely to use SNSs, and individuals who viewed SNSs as important were 17 times more likely to use SNSs than nonusers.

Reasons not to use SNSs

Among the 224 SNS nonusers, almost half (n = 137, 46%) chose not to use SNSs due to lack of interest. Unfamiliarity with SNSs (n = 52, 17%), lack of computer access (n = 42, 14%), lack of privacy (n = 23, 8%) and a belief that SNSs were too complicated (n = 14, 5%) were also notable barriers to SNS use. Some nonusers reported a lack of enjoyment (n = 6, 2%), and a few reported it was against their culture. Reasons listed as “other” in the survey

TABLE 4
Multiple regression analysis examining predictors of social networking use by demographic and computer-mediated characteristics of social network users and nonusers.

Variables	B	SE-B	Wald	Exp(B)
Age (y)	–0.46	0.34	1.83	0.64
Marital status	–0.048	0.39	1.55	0.62
Education	0.17	0.37	0.21	1.19
Income	–0.31	0.37	0.74	0.73
Computer access	0.73	0.99	0.54	2.07
Home Internet	2.32	0.91	6.44*	10.15
Comfortable Internet	2.12	0.43	24.50**	8.3
Importance SNS	3.19	0.78	16.51**	24.19
Privacy policies	0.23	0.33	0.49	1.26
Constant	–5.90	1.47	16.12**	0.00

SNS indicates social networking site.

df = 1.

*P < 0.05.

**P < 0.001.

included: lack of computer efficacy, time, and value, security concerns, and a preference for other types of communication.

Characteristics of SNS usage

SNSs were primarily accessed on a home computer or laptop ($n = 111$, 55%), followed by smartphone ($n = 49$, 24%), and/or a tablet device ($n = 36$, 18%). Few used a shared computer ($n = 3$, 2%), or work computer ($n = 2$, 1%). Facebook was the most preferred SNS ($n = 119$, 44%), primarily to stay in touch with family and friends, followed by YouTube ($n = 38$, 14%) and Pinterest ($n = 36$, 13%). Blogs and forums ($n = 18$, 7%), Classmates.com ($n = 15$, 6%) and LinkedIn ($n = 12$, 5%) were also utilized. A few SNSs users reported using Windows Live ($n = 8$, 3%), Twitter ($n = 5$, 2%), and dating websites ($n = 8$, 2%). For responses to “other,” Instagram, church websites, and genealogy websites ($n = 39$, 15%) were also accessed. The majority of the 87 SNS users preferred public messaging by posting comments to friends’ pages ($n = 62$, 71%), rather than sending private messages ($n = 23$; 26%), and using Instant chat modes ($n = 2$; 2%), mainly to post about family events, and information and interests. In addition, SNS users were asked “How does online SNS affect your social life?” The majority (74%) felt that SNS use does not affect their face-to-face communication, 24% felt it had “somewhat” of an effect, and 2% felt it replaces most face-to-face communication.

Social awareness and social presence predictors of social connectedness

Table 5 depicts a multiple regression analysis that indicated social awareness (measured by preference for private or public communication) and social presence [measured by: (a) number of months as a SNS user, (b) frequency of SNS use (h/d), (c) number of group memberships, and (d) online social network size] were not statistically significant predictors of social connectedness, $F_{4,74} = 0.17$, $P = 0.968$. However, results indicated communication preference, group size, and length of time as a member were significantly associated with SNS use. The mean social connectedness score of the 118 active SNS users who completed the scale was $M = 92.97$ ($SD = 15.62$), of possible scores up to 120.

Age and online social network size

A Pearson correlation coefficient test indicated age was statistically significantly weakly negatively correlated, $r_{124} = -0.19$, $P = 0.034$, with online social networking size. Older-old (age 75–101 y) rural adults had significantly smaller social networks than younger-old (age 65–74 y) SNS users in the study. Seventy-eight (62%) of the 126 SNS users had a social network size <50 contacts and friends,

TABLE 5
Multiple regression analysis examining predictors of social connectedness by measures of social awareness and social presence of social network site users.

Model	B	t	sr ²	R	95% CI (B)
Constant	91.632	23.15*	−0.046	0.09	83.74, 99.52
Communication preference	0.87	0.20*			−7.63, 9.36
Group size	−1.423	−0.25*			−12.88, 9.94
SNS length	−0.175	−0.04*			−8.15, 7.80
SNS size	2.742	0.70*			−5.09, 10.57

CI indicates confidence interval; SNS, social networking site.

* $P < 0.05$.

and 46 (37%) had 50 or more contacts and friends in their online social networks.

Social connectedness predictors of SNS use

The mean score of SNS users who completed the Social Connectedness Scale was $M = 92.97$ ($SD = 15.62$), and nonusers was 88.59 ($SD = 16.20$). Table 6 depicts the hierarchal binary logistic regression test indicating the model was statistically significant, $-2 \text{ Log Likelihood} = 335.52$, χ^2_7 ($N = 306$) = 35.01, $P < 0.001$, although social connectedness did not add significantly to the model when controlling for the demographic variables already in the model. Rural older adults who were female, had a partner, college education and/or higher income (> \$50,000) were significantly more likely (1.8–2.0 times) to use SNSs.

Discussion

Rural older adults in the study mainly used SNSs to stay in touch with family and friends. Not only has it been researched in the United States, investigators from Portugal, Mexico, Canada, Britain, and other parts of the globe have also found a connection between older individuals’ SNS use and the value to connect with family^[17].

In this study, there was a significant relationship between social awareness and social presence variables and social connectedness. SNS users who publicly posted, and had a high frequency of SNS use, longer length of time as a member, and a high number of online social networks tended to have higher social connectedness scores, although these characteristics were not predictive of social connectedness. Whether SNS users in the study become more socially connected due to the type and frequency of communication, and size of online social networks, or SNS users who are already socially connected have different patterns of usage and larger social networks than nonusers cannot be determined.

The Pew Center reports that US older adult SNSs users socialize more frequently on a daily basis, compared with nonusers^[21]. However, in this study, although SNS users had slightly higher average social connectedness scores than nonusers, socially connected rural older adults in the study were not more likely to use SNSs, after controlling for age, sex, race, marital status, education and income, and SNS users and nonusers in the focus group expressed feeling socially connected.

Although there is a gap in research regarding social connectedness, prior studies have demonstrated the types and frequency of SNS communication have an influence on loneliness

TABLE 6
Hierarchal logistic regression analysis examining predictors of social networking use by social connectedness scores.

Variables	B	SE-B	Wald	Exp(B)	95% CI Exp(B)
Age (y)	−0.38	0.27	1.91	0.68	0.40, 1.17
Sex	0.68	0.28	5.72*	1.97	1.13, 3.44
Race	0.05	0.67	0.01	1.05	0.28, 3.94
Marital status	0.59	0.30	4.00*	1.81	1.01, 3.24
Education	0.75	0.31	6.05*	2.12	1.17, 3.85
Income	0.64	0.32	4.11*	1.90	1.02, 3.54
Social connected	0.00	0.01	0.09	1.00	0.99, 1.02
Constant	−1.97	1.00	3.86	0.14	—

CI indicates confidence interval.

* $P < 0.05$.

and social role satisfaction. A high annual frequency of directed and passive communications by older adult users of Facebook was significantly associated with less loneliness^[18], and a high frequency of directed communication was correlated with higher social role satisfaction^[19], and Facebook users were significantly more satisfied with their social roles, compared with nonusers^[18,22]. Consistent with previous studies and Pew Center statistics, SNSs were mainly used to stay in touch with family and friends, indicating a difference in motivation from younger generations who use SNSs mainly to stay in touch with friends^[27].

In addition, among SNS users in the study, age was significantly negatively correlated with online social network size, as oldest-older rural adults had smaller online social networks, attributed to a variety of factors. SNSs were used mainly to connect with family and friends, and less with colleagues and social groups, to augment face-to-face communication. Prior research indicated young-old Facebook users tended to have more friends on Facebook than old-old adults, and staying connected with family was the primary reason for use^[18]. This finding has implications for health care professionals tailoring interventions to the needs and motivations of this population for social connectivity.

Furthermore, SNS users in the study had a lower mean age than nonusers, and younger-older adults with a partner, higher education, and/or higher income were more likely to use SNSs, and were significant predictors of SNS use. This is consistent with prior studies^[18], and the Pew Center, who reported younger-older adults were significantly more likely to use SNSs^[16]. Similar to this study, the Pew Center reported American older adults with a spouse or partner, college education, and higher income were more likely to be SNS users^[15], although only one other study noted significant differences in marital status, education, and income^[20]. Previous studies that have been urban based may have had less variation in education and income among users and nonusers in the samples.

Although there were more females than males in the study, the difference was not significant, which may be due to a reported narrowing of the gap among SNS users^[15]. Some rural older adults in the study who shared a SNS with their spouse may have considered themselves nonusers if they did not have a separate profile on the SNSs, which may have contributed to the lower numbers of male use, and the questionnaire did not differentiate about sharing. The sample was (95%) Caucasian, and the Pew Center statistics have found similarities of SNS use among whites, Hispanics, and African-Americans^[15], therefore, it is not surprising that race was not significantly different between SNS users and nonusers in the study. Although it has been reported that rural residents lag behind urban and suburban residents in SNS use, rural older adult SNS use was the same as US statistics for American older adults^[15].

In addition, rural older adults in the study who had home computers and Internet, were comfortable using the Internet, and viewed SNSs as important and privacy policies as effective, were significantly more likely to use SNSs, compared with nonusers. Although home Internet and viewing SNSs as important were significant indicators of SNS use, feeling comfortable with the Internet was the largest predictor of likelihood of using SNSs, suggesting educational strategies that address these considerations may be an effective way to increase the likelihood of SNS use^[28].

Among nonusers, the primary reason for not using SNSs was lack of interest, and second, lack of computer access and knowledge about SNSs. Negative stereotypes that SNSs were complicated, time consuming, and lacked value, and privacy and security concerns, were also barriers to SNSs. This is consistent with prior studies and the Pew Research Center findings that unless older adults felt confident using technology and had positive perceptions of and valued SNSs, they were less likely to use them^[19,21].

More SNS users had home computers and access to the Internet, and felt more comfortable using the Internet compared with nonusers, demonstrating access and ability are important mediators of SNS use. However, these findings suggest perceptions of relevancy and trust in privacy policies are still important factors in positive perceptions of SNS use, and pose a significant barrier for using SNSs, even if the rural older adult has access and ability to use SNSs. Having a home computer was not predictive of SNS use, which was not surprising as SNS users also indicated that they used a smartphone and/or tablet to access SNSs. New technologies such as smartphones that are easier and more convenient to use may lower barriers and change the patterns of SNS use, and may increase the likelihood of SNSs use in this population.

This study has expanded the knowledge base of social determinants of health research in the context of the technological and rural environment. As the rural older adult populations rapidly increase, developing innovative interventions for social connectedness to augment limited community resources and overcome rural disparities is vitally important.

Limitations

People who participated in the study were recruited from senior centers and other public places. These individuals may be more high functioning than home-bound individuals. Although there is a relationship between social awareness and social presence variables and social connectedness, the research design was not an experimental design, therefore competing explanations for outcomes could not be ruled out, and causality cannot be inferred.

Conclusions

This study examined the motivations and barriers for SNS use of older adults and the impact on social connectedness, in order to aid in designing and tailoring interventions to meet the specific needs of this population in a rural context. Overcoming negative perceptions of SNSs and having access and ability to use SNSs may increase the likelihood of use, and offer an interventional strategy for social connectedness. Further research is needed to understand the relationship between SNSs and social determinants of health.

Ethical approval

The authors declare that they have no financial conflict of interest with regard to the content of this report.

Sources of funding

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Author contribution

A.H.F. made a substantial contribution to the conception and design, acquisition of data, and the analysis and interpretation of data, the drafting of the paper, and revising it for important intellectual content, as well as final approval for the version to be published. M.A.N. made a substantial contribution to the research design and the interpretation of data, and revising the paper for important intellectual content, as well as final approval for the version to be published.

Conflict of interest statement

No affiliations with or involvement in any organization with any financial interest in the subject matter or materials discussed in this paper. The authors declare no conflict of interest.

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