Mapping Social Support Sources for Rural Patients with Chronic Illness

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Objective: In this study, we evaluated social support sources for rural residents with chronic conditions and examined associations between support sources and self-reported health status. **Methods:** Adults in rural zip codes across the United States (N = 183; 48.6% female) participated in an online survey. Chronic disease status was determined through participant self-report of prior medical diagnoses. Support sources were elicited using scenarios that require illness assistance or emotional support. Self-rated physical and mental health were measured using 5-point Likert scales. Chi-square tests examined gender differences in preferred sources of social support. Ordinal logistic regressions assessed predictors of self-rated health status, including support source preferences. **Results:** Family and friends were found to be primary sources of social support for rural residents managing illness. Women tended to rely more heavily on close family members whereas men were open to more diverse sources. Gender differences were statistically significant ($\chi^2(4) = 20.66$, $p < .001$). Those relying on close friends rather than family when sick also reported better physical health (B = 1.79, Wald = 4.91, p = .02). **Conclusion:** Findings indicate informal social ties are central for the health of rural populations. Gender differences in help-seeking patterns may necessitate tailored chronic disease interventions. Fostering community linkages and leveraging natural supports will be vital for addressing rural health disparities.

Key words: social support; rural health; chronic illness
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Rural communities in the United States (US) face challenges regarding chronic disease management and care. Compared to their urban counterparts, rural populations have higher rates of chronic conditions such as cardiovascular disease, arthritis, chronic obstructive pulmonary disease, and diabetes.[1-3] Mental health conditions, like depression and anxiety, are also prevalent, and rural counties have disproportionately higher rates of suicide and drug overdoses.[4,5] There are also fewer primary care providers, medical specialists, and mental health professionals *per capita* in rural areas.[6,7] Rural residents are less likely to receive preventive services and often have unmet healthcare needs.[8] A strong sense of self-reliance and independence common among rural residents may discourage asking for help.[9]

Social networks provide informational, emotional, and instrumental support that can facilitate chronic disease self-management and coping.[10-13] For instance, rural residents often rely on informal support from family, friends, or neighbors for transportation to medical appointments when formal services are absent. At the community level, social networks facilitate collective action and access to scarce resources.[14] Especially when health infrastructure is lacking, rural communities with strong internal ties and external links are better equipped to secure funding, recruit providers, and meet local health needs.[15]

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Whereas research documents the benefits of social relationships for managing chronic conditions,[10,12,13,16,17] far less attention has been directed at delineating rural social networks themselves – the structures underlying potential health effects. Rural populations tend to have dense, close-knit personal networks reflective of small size and shared community ties.[18-20] Furthermore, previous research indicates gender differences may exist in help-seeking tendencies and use of social support, with men often more reluctant to seek assistance.[21] Understanding how rural men and women differ in their sources of support can inform tailored interventions to facilitate chronic illness management for both groups. In this study, we aimed to address gaps in knowledge by investigating who rural residents with chronic physical and mental health conditions rely on for social support, as well as examine preliminary associations between these sources of support and self-reported physical and mental health status.

METHODS

This cross-sectional study used Qualtrics to collect data on rural residents' social networks and chronic disease status between March 17, 2020, and April 16, 2020. Inclusion criteria were being 18 years or older and living in a rural zip code as defined by Rural Urban Continuum Codes (RUCC). We used Amazon Mechanical Turk (MTurk) to facilitate recruitment and participants consented to complete the survey. Participants completed a one-time online survey in English assessing their socio-demographics, health status, and hypothetical scenarios regarding sources of support. Chronic disease status was determined through self-report of having ever received a diagnosis for select physical or mental health conditions from a medical provider. Respondents were compensated for their time if they correctly completed 2 out of 3 attention check questions.

To assess social support, we used validated survey questions from the 2018 General Social Survey (GSS).[22] Participants were presented with scenarios requiring different types of assistance such as home repairs or emotional support. As in the GSS, respondents were asked to report, *"Who would you turn to first to help you around your home if you were sick and had to stay in bed for a few days?"* and "*Who would you turn to first if you felt a bit down or depressed and wanted to talk about it?*"[22] Response options were (1) "Close family member," (2) "More distant family member," (3) "Close friend," (4) "Neighbor," (5) "Someone I work with," (6) "Someone else," and (7) "No one." Due to low response frequencies, "neighbors," "someone I work with," and "someone else" options were combined and simplified to "someone else."

Survey data were analyzed using SPSS Statistics 25 (IBM Corp, Armonk, NY). Bivariate analyses using chi-square tests examined differences in sources of support by gender. We conducted separate ordinal regression models to determine associations with self-rated physical and mental health (poor, fair, good, very good, excellent) based on age, gender, chronic disease status, and source of support when feeling sick and depressed respectively (ie, close family, close friends, distant family, someone else, no one). A Brant test for proportional odds assumption was not significant for either model.

RESULTS

A total of 183 participants completed the survey. Most of the sample was between 25 and 54 years old (82.6%). There were slightly more male participants (51.4%) than females (48.6%). In terms of chronic conditions, 38.5% reported having at least one chronic health condition. Regarding health status, 38.5% of participants rated their physical health as "good," while 31.3% reported "very good" and 13.8% "excellent." Only 3.1% rated their physical health as "poor." For mental health, 34.9% of participants rated it as "good," 35.4% as "very good," and 17.4% as "excellent." Just 2.1% of participants rated their mental health as "poor." Full sample demographics can be found in Table 1.

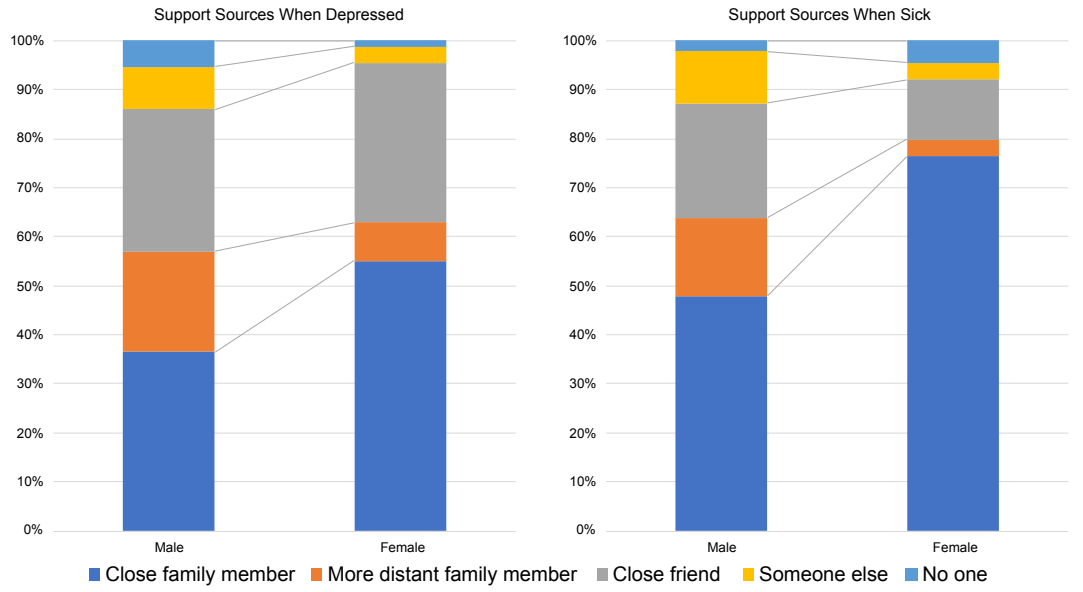
Gender Differences in Support Sources

The cross tabulations reveal some notable gender differences in sources of social support across the hypothetical scenarios. For *home assistance when sick*, women were far more likely to report turning to a close family member first (76.4%) compared to men (47.9%). Meanwhile, men were more likely to mention more distant family members (16.0% vs 3.4% for women), close friends (23.4% vs 12.4% for women), or someone else (10.6% vs 3.4% for

Table 1
Sample Demographics

		Male (N = 94)		Female (N = 89)		Total (N = 183)	
		N	Percent	N	Percent	N	Percent
Age	18-24	7	7.4%	4	4.5%	11	6.0%
	25-35	61	64.9%	34	38.2%	95	51.9%
	35-44	14	14.9%	21	23.6%	35	19.1%
	45-54	7	7.4%	14	15.7%	21	11.5%
	55-64	5	5.3%	12	13.5%	17	9.3%
	65-74	0	0.0%	3	3.4%	3	1.6%
	Prefer not to answer	0	0.0%	1	1.1%	1	0.5%
Race/Ethnicity	Non-Hispanic White	43	45.7%	67	75.3%	110	60.1%
	Non-Hispanic Black	12	12.8%	5	5.6%	17	9.3%
	Non-Hispanic Other	1	1.1%	3	3.4%	4	2.2%
	Hispanic	37	39.4%	8	9.0%	45	24.6%
Employment	Not employed	7	7.4%	18	20.2%	25	13.7%
	Employed, 1-39 hours	31	33.0%	32	36.0%	63	34.4%
	Employed 40+ hours	56	59.6%	39	43.8%	95	51.9%
Marital status	Unmarried	32	34.0%	35	39.3%	67	36.6%
	Married	62	66.0%	54	60.7%	116	63.4%
Income	Less than $30,000	22	23.4%	24	27.0%	46	25.1%
	$30,000 to < $60,000	42	44.7%	34	38.2%	76	41.5%
	$60,000-$69,000	9	9.6%	10	11.2%	19	10.4%
	$70,000 to $150,000 or more	21	22.3%	19	21.3%	40	21.9%
Physical Health	Poor	3	3.2%	3	3.4%	6	3.3%
	Fair	5	5.3%	18	20.2%	23	12.6%
	Good	41	43.6%	29	32.6%	70	38.3%
	Very good	29	30.9%	28	31.5%	57	31.1%
	Excellent	16	17.0%	11	12.4%	27	14.8%
Mental Health	Poor	1	1.1%	2	2.2%	3	1.6%
	Fair	9	9.6%	9	10.1%	18	9.8%
	Good	31	33.0%	33	37.1%	64	35.0%
	Very good	35	37.2%	31	34.8%	66	36.1%
	Excellent	18	19.1%	14	15.7%	32	17.5%
Chronic Condition	Yes	41	43.6%	28	31.5%	69	37.7%
	No	53	56.4%	61	68.5%	114	62.3%

Figure 1
Comparing Sources of Support by Gender



women). These gender differences were statistically significant, $\chi^2(4) = 20.66$, $p < .001$. Similar patterns emerged for *emotional support when depressed*. Women were more likely to say they would go to a close family member first (55.1% vs 36.6% for men). Men were more likely to report turning to more distant family members (20.4% vs 7.9% for women), someone else (8.6% vs 3.4% for women), or no one (5.4% vs 1.1% for women). These differences were also statistically significant, $\chi^2(4) = 13.17$, $p = .01$. Figure 1 provides a visual representation of these differences.

Self-reported Health

The ordinal regression model for self-rated physical health was statistically significant, $\chi^2(12) = 39.24$, $p < .001$, suggesting the predictors distinguished between physical health categories. Having a chronic condition was associated with lower self-rated physical health. Specifically, those with a chronic condition had 1.83 lower log-odds of being in a higher physical health category than those without a chronic condition ($B = -1.22$, Wald = 15.76, $p < .001$). Turning to close friends ($B = 1.79$, Wald = 4.91, $p = .02$) or someone else ($B = 1.97$, Wald = 4.35, $p = .03$) rather than a close family member when sick was related to higher self-rated physical health. Those relying on close friends had 3.38 greater log-odds of being in a better health category compared to those relying on family. There were no significant effects for age or gender. The ordinal regression model for self-rated mental health was statistically significant, $\chi^2(10) = 18.29$, $p = .05$. Having a chronic condition was associated with lower self-rated mental health. Specifically, those with a chronic condition had 1.14 lower log-odds of being in a better mental health category compared to those without a chronic condition ($B = -1.14$, Wald = 14.46, $p < .001$). None of the support source preferences when depressed were significant predictors in the model. There were also no statistically significant effects for gender or age.

DISCUSSION

The results of this study highlight the centrality of family and close friends in rural social networks for health-related support. Across the hypothetical scenarios assessing who participants would turn

to first, family and close friends were the primary choices. These findings align with previous research emphasizing the importance of informal social ties and community engagement for rural populations.[11,14] The reliance on family and neighbors for tangible support like illness assistance and transportation reflects the "social glue" bonding rural communities together.[18] At the same time, openness to assistance from more distal family members indicates that these networks also provide some "bridging" ties to external resources, although these were not as common.[15]

The relatively high proportion of respondents reporting good to excellent physical health in this study (84.2%) likely reflects the younger age distribution of our sample, with 82.6% being between 25 and 54 years old. In contrast, the overall rural population in the US tends to be older, with a median age of 51.4 years, and may experience poorer health outcomes due to age-related factors and chronic conditions.[23] Furthermore, it is important to note that the age distribution of our sample varied by gender, with the majority of male respondents (72.3%) being 34 years old or younger, while female respondents were more evenly distributed across age groups up to 64 years old. This may have affected the gender-based differences reported.

The results reveal gender differences in rural social networks that have potentially important implications. Women tended to draw more heavily on close family, whereas men reported greater openness to other sources like friends, co-workers, or neighbors. Gender norms around help-seeking and emotional support likely contribute to these differences.[21] Interestingly, the gender parity in turning to a "close friend" when depressed is a promising finding, as it suggests that both rural men and women have access to emotional support outside of the family context. This is particularly relevant given the growing concern about loneliness and its negative health consequences, especially among men.[24] This may require activation of third places or even online venues like online gaming to promote help seeking and connectedness.[25-28] However, it is also noteworthy that men more frequently reported having "no one" to turn to when depressed compared to women, highlighting the need for targeted interventions to promote social connectedness and mental health support for rural men. In contrast, women more commonly reported having "no one" to turn to when physically sick, which may reflect the gendered distribution of household emotional labor and caregiving responsibilities.[29] Despite men's reluctance to burden close family, outside support accessed through venues familiar to rural masculine culture may facilitate self-management. Findings elucidate promising directions for tailoring chronic care efforts to the gendered realities of rural social relationships.

Our findings underscore the importance of tailoring chronic disease management interventions to the gender-related realities of rural social relationships and support networks. For rural women, programs should actively involve family members, particularly spouses, as intervention partners to leverage their vital role in providing emotional and practical support. On the other hand, rural men may benefit from interventions that facilitate access to outside support through venues aligned with traditional rural masculine culture, such as community organizations, workplace initiatives, or faith-based groups.

Given the geographic dispersion in rural communities, it is crucial to consider innovative strategies for activating social networks and expanding access to support beyond immediate family and friends. Interventions should explore the potential of 'third places' – community spaces outside of home and work where people gather and interact – as venues for promoting social connectedness, information sharing, and resource provision related to chronic disease management.[30,31] Examples of third places in rural settings might include local diners, barbershops, or community centers. Moreover, the growing availability of digital technologies presents opportunities for creating 'online third places' that can bridge geographic barriers and connect rural residents with shared experiences and support needs. Online peer support groups, virtual health communities, and telehealth platforms tailored to rural populations could provide valuable resources for chronic disease self-management while mitigating concerns about privacy and stigma. Future research should investigate the acceptability and effectiveness of such digital interventions in rural contexts. By understanding and addressing the gender-related dimensions of rural social networks, and by leveraging both physical and digital third

places to activate these networks, public health practitioners can develop more effective and culturally relevant interventions to support chronic disease management among rural populations.

Limitations

The cross-sectional design limits the ability to determine causality and directionality of influences. Hypothetical scenarios also were used for network mapping rather than observing real-world relationships which could provide greater insight into how networks are leveraged; however, the survey utilized validated questions. Using panel data recruited from MTurk also may introduce bias in the potential sample demographics and based on concerns for click-workers. As this questionnaire was conducted in English it may not have captured the full experience of rural America given language accessibility. It also should be noted that data collection occurred near the beginning of the COVID-19 pandemic which may have impacted responses.

IMPLICATIONS FOR HEALTH BEHAVIOR OR POLICY

Our findings have implications for researchers, practitioners, and policymakers working to address chronic disease management in rural populations.

Research:

- Investigate the gender-related dimensions of rural social networks and their influence on health outcomes using longitudinal designs and mixed-methods approaches.
- Identify potential intervention points within rural social networks to improve chronic disease self-management.

Practice:

- Tailor chronic disease management interventions to the unique social contexts of rural communities, involving close family members for women and facilitating access to outside support through community organizations, workplace initiatives, or faith-based groups for men.
- Explore the potential of 'third places' and 'online third places' as venues for promoting social connectedness, information sharing, and resource provision related to chronic disease management.

Policy:

- Prioritize funding for community-based initiatives that foster social connectedness and support networks, such as grants for rural community organizations and policies that incentivize the creation and maintenance of 'third places'.
- Invest in rural broadband infrastructure to facilitate access to digital health resources and online support networks.

The findings also contribute to Healthy People 2030 objectives, such as increasing the proportion of adults with serious mental illness who receive treatment (MHMD-04), reducing the suicide rate (MHMD-01), and increase the proportion of adults who talk to friends or family about their health (HC/HIT-04).[32]

Human Subjects Approval Statement

This study was approved by Penn State's Institutional Review Board (STUDY #13707) and participants viewed an informed consent page prior to participation in the survey.

Conflict of Interest Disclosure Statement

The authors have no conflicts of interest to disclose.

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