

Social Connectedness and its Relationship to Health, Engagement, and Productivity in a University Employee Population

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ABSTRACT

Background: The United States Surgeon General's Advisory, *Our Epidemic of Loneliness and Isolation*, was a call to action for key stakeholders to promote social connection.

Aims: This quality improvement project provided an important step to better understand social connectedness in a university employee population as a basis for interventions that could promote health, engagement, and productivity.

Methods: This cross-sectional analysis used health risk assessment (HRA) data from 7,666 university employees. The HRA asked employees about how socially connected they felt to family, friends, and colleagues, and about other health behaviors, self-perceived health, and work engagement and productivity. Spearman's test was used to assess associations.

Results: Social connectedness had significant positive associations with vegetable and fruit intakes, exercise, self-rated health, work engagement, work productivity, and work ability ($p < 0.0001$ for all) and inverse associations with BMI ($p = 0.0001$), alcohol ($p < 0.0001$), tobacco use ($p = 0.0016$), and missing work due to sickness ($p < 0.0001$).

Conclusions: The findings that social connectedness was positively linked to healthy behaviors, self-perceived health, work engagement, productivity, and work ability provide a rationale for employers to build a social infrastructure to promote a healthy, engaged, and productive workforce.

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Keywords: social connection, employee health, work engagement, work productivity, work ability

BACKGROUND

The recent United States Surgeon General's Advisory (Office of the Surgeon General, 2023) sounded the alarm on the loneliness epidemic. In a 2024 survey of adults in the United States (Goddard & Parker, 2025), 16% of respondents reported feeling lonely or socially isolated most or all of the time, and 38% reported feeling lonely or socially isolated sometimes. Results from the American Time Use Survey (Kannan & Veazie, 2023) showed that social isolation increased and social engagement decreased over the 2003-2020 time period and that these trends pre-dated the Covid-19 epidemic.

The Surgeon General's Advisory (Office of the Surgeon General, 2023) stressed the importance of social connection for health and well-being. Lack of social connection has been linked to adverse health outcomes including premature mortality (Stokes et al., 2021), cardiovascular disease (Valtorta et al., 2016), and poor mental health (Mann et al., 2022) and cognitive functioning (Penninkilampi et al., 2018). Social connection has been postulated to affect health through biological, psychological, and behavioral pathways (Holt-Lunstad, 2021). Lack of social connection has been found to be associated with health risk behaviors including smoking and physical inactivity (Shankar et al., 2011). The workplace has been identified as a key setting for promoting social connection given that social connectedness is fundamental to a healthy, productive workforce (Holt-Lunstad, 2018).

This quality improvement project focused on a better understanding of social connectedness in a university employee population as a basis for building a healthier academic community. Specifically, it assessed both the degree of social connectedness in the university employee population and its association with other health-related behaviors, self-perceived health, and work engagement, productivity, and work ability that could catalyze employer support for interventions.

METHODS

This project involved a cross-sectional analysis of health risk assessment (HRA) data. It was conducted among employees in a large public university with an academic health system located in the southeastern United States. The university offers its faculty and staff a comprehensive well-being program that includes incentives to participate in certain health-promoting activities. In 2022, employees could receive \$100 for completing an HRA. After excluding one employee who had only provided demographic information, the cohort included a total of 7,666 employees who submitted an HRA in 2022. For 37 employees with two HRA submissions, only the first submission was included. Upon IRB review, this was determined to constitute a Quality Improvement Project.

The HRA included a variety of demographic, health, and work questions. Social connectedness was assessed based on participants' answers to the question, "How connected do you feel to family, friends, and colleagues?", with responses based on a 5-point Likert scale that ranged from "not connected" to "very connected". Given small numbers in the "not connected" category ($n = 107$), it was grouped together with the "a little connected" category.

For health behaviors, the focus was diet, exercise, body mass index (BMI), alcohol, and smoking based on evidence that these lifestyle factors play a major role in life expectancy (Li et al., 2018) and chronic disease risk (Li et al., 2020). Vegetable and fruit intakes were categorized based on whether participants ate 3+ servings each day for vegetables and 2+ servings each day for fruit, given evidence that these are critical thresholds for mortality reduction

(Wang et al., 2021). Exercise was categorized into quartiles based on moderate to vigorous exercise time per week. For BMI calculations, in accordance with previous research (Cuccu et al., 2019), biologically implausible values (BMI $<14 \text{ kg/m}^2$ or $>70 \text{ kg/m}^2$, height $<1.2 \text{ m}$ or $>2.2 \text{ m}$, and weight $<30 \text{ kg}$ or $>400 \text{ kg}$) were excluded from analysis. Given small numbers in the <18 category ($n = 63$), it was combined with the 18- <25 category in the analysis. Alcohol days per week were categorized (0, 1, 2-3, 4+) to approximate the first question in the AUDIT (i.e., The Alcohol Use Disorders Identification Test) questionnaire (Babor et al., 1992). Smoking/tobacco use was classified based on ever having regularly smoked or used tobacco. Self-rated health was assessed using a 5-point Likert scale ranging from *very unhealthy* to *very healthy*. Given small numbers in the very unhealthy category ($n = 44$), it was grouped together with the unhealthy category in the analysis.

The number of work days missed in the previous month due to sickness was included in the analysis as a binary variable (0 vs. 1+). Work engagement was measured using the 3-item Utrecht Work Engagement Scale (UWES-3), a validated tool for assessing work engagement (Schaufeli et al., 2019). Work engagement was categorized into quartiles based on UWES-3 score. Work productivity in the previous month was assessed using a 5-point Likert scale ranging from “not at all” to “very much” productive. Given small numbers in the “not at all” category ($n = 32$), it was combined with the “a little bit” category in the analysis. Work ability was measured using the single-item work ability score, a validated measure that can be used to assess ability to meet the physical and mental demands of work (Ebener & Hasselhorn, 2019). Consistent with previous work (Aldridge et al., 2020), the low and moderate categories, and the good and excellent categories, were combined in the analysis.

Counts and frequencies were used to provide data summaries. Spearman’s test of association was used to assess the relationship between social connectedness and health and work variables, with $p < 0.05$ as the threshold for statistical significance. Statistical analyses were conducted using SAS version 9.4 (SAS Institute Inc., Cary, NC, USA). Participants with implausible BMI values or missing responses for a variable were maintained in the overall cohort and only excluded from analyses in which they had missing or implausible data.

RESULTS

Employees included in the analyses ranged in age from 18 to 79 years, with a mean age of 42 years, and 67.7% were female. They identified as a variety of races/ethnicities; 73.1% identified as White. Table 1 shows the relationship between social connectedness and health and work measures. Social connectedness had significant positive associations with vegetable intake, fruit intake, exercise, self-rated health, work engagement, work productivity, and workability ($p < 0.0001$ for all) and significant inverse associations with BMI ($p = 0.0001$), alcohol ($p < 0.0001$), tobacco use ($p = 0.0016$), and missing work due to sickness ($p < 0.0001$).

Table 1*Relationships between Social Connectedness and Health and Work*

	Degree of Social Connectedness								q	P-value
	Not / A Little		Moderately		Pretty		Very			
	N	%	n	%	n	%	n	%		
Overall	846	11.04	1960	25.57	2674	34.88	2186	28.52		
Vegetables Daily									0.121	<0.0001
<3	436	51.54	933	47.60	1060	39.64	752	34.40		
3+	410	48.46	1027	52.40	1614	60.36	1434	65.60		
Fruit Daily									0.098	<0.0001
<2	289	34.16	572	29.18	610	22.81	457	20.91		
2+	557	65.84	1388	70.82	2064	77.19	1729	79.09		
Exercise (Quartiles)									0.156	<0.0001
<1.25 hours/week	298	35.22	574	29.29	595	22.25	405	18.53		
1.25-<3.00 hours/week	217	25.65	500	25.51	671	25.09	478	21.87		
3.00-<5.00 hours/week	184	21.75	485	24.74	722	27.00	595	27.22		
5.00+ hours/week	147	17.38	401	20.46	686	25.65	708	32.39		
Ever Used Tobacco									0.036	0.0016
No	698	82.51	1623	82.81	2292	85.71	1875	85.77		
Yes	148	17.49	337	17.19	382	14.29	311	14.23		
BMI (kg/m2) ^a									0.043	0.0001
14-<25	308	36.54	753	38.52	1077	40.34	867	39.77		
25-<30	233	27.64	552	28.24	846	31.69	683	31.33		
30-<35	126	14.95	299	15.29	388	14.53	330	15.14		
35+	176	20.88	351	17.95	359	13.45	300	13.76		
Alcohol Days/Week									0.045	<0.0001
0	350	41.37	823	41.99	1044	39.04	1026	46.94		
1	169	19.98	426	21.73	588	21.99	457	20.91		
2-3	193	22.81	478	24.39	721	26.96	483	22.10		
4+	134	15.84	233	11.89	321	12.00	220	10.06		
Self-rated Health									0.297	<0.0001
Very Unhealthy/Unhealthy	142	16.78	139	7.09	116	4.34	57	2.61		
Average	317	37.47	740	37.76	649	24.27	382	17.47		
Healthy	294	34.75	753	38.42	1288	48.17	834	38.15		
Very Healthy	93	10.99	328	16.73	621	23.22	913	41.77		
Missed Work due to Sickness ^b									0.066	<0.0001
0 days	614	72.75	1524	77.99	2075	77.98	1803	82.82		
1+ days	230	27.25	430	22.01	586	22.02	374	17.18		
UWES-3 Scores (Quartiles) ^c									0.335	<0.0001
<10	390	46.21	596	30.53	492	18.46	223	10.27		
10-<12	208	24.64	547	28.02	670	25.14	389	17.92		

12-<14	146	17.30	478	24.49	760	28.52	536	24.69		
14+	100	11.85	331	16.96	743	27.88	1023	47.12		
Productive at Work^d									0.384	<0.0001
Not at All or A Little Bit	112	13.27	100	5.12	72	2.71	27	1.24		
Somewhat	246	29.15	521	26.66	337	12.66	125	5.74		
Quite a Bit	311	36.85	862	44.11	1210	45.47	579	26.60		
Very Much	175	20.73	471	24.10	1042	39.16	1446	66.42		
Work Ability Score^e									0.181	<0.0001
0-7 (Low to Moderate)	193	22.84	262	13.39	197	7.37	92	4.22		
8-10 (Good to Excellent)	652	77.16	1695	86.61	2477	92.63	2089	95.78		

^a 18 respondents with biologically implausible values were excluded

^b 30 respondents have missing values for sick days

^c 34 respondents have missing values for work engagement

^d 30 respondents have missing values for productivity

^e 9 respondents have missing values for work ability

DISCUSSION

The recent United States Surgeon General's Advisory (Office of the Surgeon General, 2023) provided a remarkable framework and call to action for community stakeholders to strengthen social connectedness in their institutions to improve population health. This study found that social connectedness was positively associated with healthy behaviors, self-perceived health, and work engagement, work productivity, and work ability in a university employee cohort. While close to 2/3 of the cohort reported being either pretty or very connected, more than 10% reported being not or only a little connected.

This study was uniquely conducted in a university employee population. Its findings are consistent with a large body of evidence, much of it from large population studies, on the health benefits of social connectedness (Office of the Surgeon General, 2023). The lack of social connection has been linked to myriad adverse health outcomes including premature mortality (Stokes et al., 2021), cardiovascular disease (Valtorta et al., 2016), and poor mental health (Mann et al., 2022) and cognitive functioning (Penninkilampi et al., 2018). This study adds to the more limited data showing the positive links between social connectedness and work outcomes. A recent systematic review and meta-analysis (Bryan et al., 2023) across various occupation groups found that loneliness was related to decreased job performance, job satisfaction, and worker-manager relationship quality, and increased burnout. Cigna data (Bowers et al., 2022) showed that loneliness was associated with increased avoidable absenteeism and a greater than \$154 billion per year in lost productivity costs.

This study supports the value of and provides an economic rationale for an academic institution to build a social infrastructure to promote a healthy, productive workforce, with benefits potentially extending to students and the larger community. The university, with its core educational mission, is uniquely positioned to promote social connectedness through a rich array of curricular and extra-curricular activities, health and wellness programs, and personal and professional development.

This study's findings can inform programs to build healthier academic communities. Engaging employees as members of an academic community strengthens the university's social capital, by building relationships among those in similar roles or situations such as with peer support programs, as well as by building relationships with those who are outside of one's group such as with leadership coaches or interdisciplinary teams. These connections require a comprehensive university-wide approach, based on The U.S. Surgeon General's Advisory (Office of the Surgeon General, 2023, p.61) recommendations:

1. "Make social connection a strategic priority" across the institution, e.g. by embedding social connectedness in the university's strategic goals and policies. Examples might include research policies that incentivize interdisciplinary faculty collaboration; enhanced academic policies in mentoring and career development (e.g. group mentoring or peer mentoring that fosters social connectedness), and annual review policies that include accountability measures on social connectedness.
2. "Train, resource, and empower leaders" to include social connectedness in program development, ranging from informal employee resource groups on extracurricular interests to community volunteer programs.
3. "Leverage existing leadership and employee training, orientation, and wellness resources" by adding and showcasing the benefits of social connectedness activities in their offerings on employee websites and in social media outreach.

Limitations

This study has several limitations. First, the cross-sectional design limits the ability to draw causal conclusions. Second, there is the potential for confounding by such factors as demographics and health status. Third, the study cohort, comprised of employees at a single large public university with an academic health system located in the southeastern United States who completed an HRA, limits generalizability.

CONCLUSIONS

This analysis found that social connectedness was linked to health behaviors, self-perceived health, and work engagement, productivity, and work ability in a university employee population. These findings provide a rationale for employers to prioritize social connection and to institute social connectedness interventions with the aim of building healthier academic communities.

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