

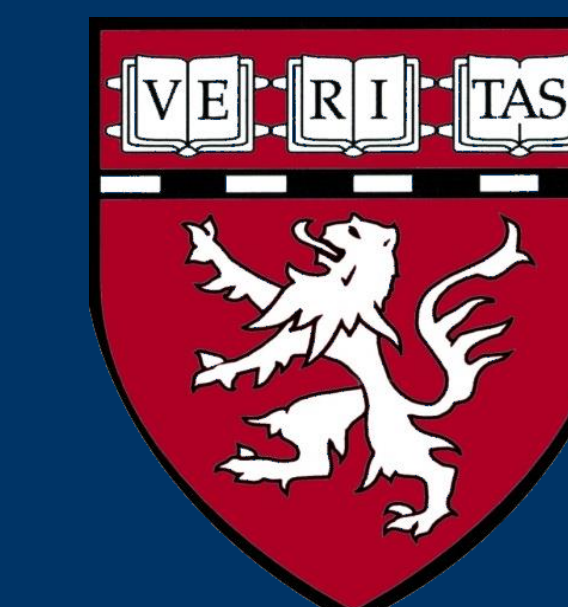


The Association between Social Network, Disease Activity, and Pain in Rheumatoid Arthritis

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Introduction

- Current research suggests that high social network status (level of social connectedness with one's family, friends, and community) is associated with lower levels of reported pain in rheumatoid arthritis (RA) patients.
- Research suggests that RA patients with high social network status have more emotional support which may lower disease activity as well as pain.

Aims

- This study aims to examine the association between social network, reported pain, and disease activity.

Methods

- Data collected from a single-center prospective observational RA cohort study were analyzed cross-sectionally.
- Social network was measured using the Berkman-Syme Social Network Index (SNI) (0 = no SNI; 4 = high SNI).
 - The SNI measures 4 types of social connections; marriage, contacts with family and close friends, church group membership, and other group affiliations.
- Disease activity scores were calculated using the DAS28-CRP3.
- Reported pain data were obtained from the pain scale in the Multidimensional Health Assessment Questionnaire (MDHAQ) (0 = no pain; 100 = severe pain)

Analysis:

- The univariate model included age, gender, social network, disease activity, disease duration, and seropositivity.
- A multivariable linear regression model was performed using a stepwise selection approach to examine the association between social network, reported pain, and disease activity.
- A second multivariable linear regression model was performed where disease activity was stratified to assess the association between SNI and pain for low, moderate, and high disease activity.
 - Disease activity categories were defined as follows: low is a DAS score ≤ 3.2 , moderate is a DAS score > 3.2 but < 5.1 , and high is a DAS score ≥ 5.1

Results

Table 1. Baseline Characteristics (N=1053)

Variable	
Gender (female) (N, %)	874 (83%)
Age, years (M, SD)	57.5 (13.6)
Disease duration, years (M, SD)	13.8 (11.9)
Seropositive (N,%)	600 (69.7%)
SNI (M, SD)	2.4 (1.0)
DAS28-CRP3 (M, SD)	3.2 (1.5)
Pain (MDHAQ) (M, SD)	32.0 (26.2)

Linear Regression Analysis Results:

- Univariate analyses found that age, disease duration, seropositivity, disease activity, and SNI were associated with reported pain.

Table 2. Social Network and Disease Activity associated with higher pain in RA

	β coefficient	p value
Lower Social Network Index	-1.82	0.02
Younger Age	-0.09	0.15
Gender (Female)	3.43	0.11
Increase in DAS28-CRP3	6.14	$<.0001$

- Using the significant variables from the univariate analyses, a multivariable linear regression model was run where high SNI was found to be significantly inversely associated with low reported pain, after controlling for disease activity (Table 2).
- A regression analysis was done with disease activity stratified by severity in an effort to investigate if a more prominent effect of SNI could be found in a subcategory of disease activity (Table 3).

Results

Multivariable Regression Analysis Stratified by Disease Activity Results:

Table 3. Social Network and Pain Stratified by Disease Activity

DAS Category	Social Network Index	
	β coefficient	p value
Low (N=520)	-2.0	0.06
Moderate (N=282)	-1.9	0.22
High (N=126)	-2.4	0.29

- Social Network index had border line significance among subjects with low DAS, but moderate and high disease activity were found to be not significant (Table 3).

Strengths/Limitations

Strengths:

- The study is a registry that asks a broad spectrum of questions on a variety of topics which helps avoid response biases.
- Study included more than 1,000 participants, which powered the multivariable analysis allowing us to assess disease activity and SNI.

Limitations:

- The stratified analysis likely did not yield a significant result because of low power due to the small sample size in each category.
- It is unclear if high social network status has psychosocial benefits that lead to reduced pain, or if low pain promotes an increase in patients' social participation causing a high social network status.

Conclusions

- High social network status was associated with lower reported pain, in this cohort of RA patients, even after controlling for disease activity.
- Future studies are needed to further examine the relationship between social support and reported pain, and if this association is present longitudinally.



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