

Social Support Predicts Pain and Disability Following Distal Radius Fracture

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INTRODUCTION

- The most common fracture is the distal radius fracture (DRF).
- Biomedical variables explain less than 30% of pain and disability outcomes.
- Social support has been a mediator of outcome in other health disorders.
- The Medical Outcomes Study (MOS) contributed a brief, multidimensional, self-administered, social support survey. It has 4 subscales: emotional/informational, tangible, affectionate, and positive social interaction.

PURPOSE

- To determine if baseline social support predicts post-operative pain and functional outcome after DRF.

STUDY PROCEDURES

- Prospective cohort study
- Patients were measured at baseline (within 7 days of fracture) and at 1 year post fracture
- Measures were performed by an independent evaluator
- An unacceptable reduction on the final radiograph was defined as a radial inclination of < 15 degrees, radial shortening of > 3mm, and/or > 20 degrees of volar tilt or > 10 degrees of dorsal tilt.
- Pearson correlations and backward regression were used to identify predictors of patient-rated pain and disability according to the PRWE.
- Models were built sequentially to look at the effects of social support, health status, and biomedical variables.

PARTICIPANTS

- 290 patients met the eligibility criteria
- Age: 18-84 years, mean age of 56.1 ± 15.5 years
- 68% were female
- 46% injured their dominant hand
- 24% fell on ice/snow, 57% fell from standing height
- 68% were low energy, 11% high energy

MOS Social Support Survey

Please sometimes look to others for companionship, assistance, or other types of support. How often is each of the following kinds of support available to you? If you need it, circle one number on each line.

	None of the time	A little of the time	Some of the time	Most of the time	All of the time
Emotional/informational support					
Someone you can count on to listen to you when you need to talk	1	2	3	4	5
Someone to give you information to help you understand a situation	1	2	3	4	5
Someone to give you good advice about a crisis	1	2	3	4	5
Someone to confide in or talk to about yourself or your problems	1	2	3	4	5
Someone whose advice you really want	1	2	3	4	5
Someone to share your most private worries and fears with	1	2	3	4	5
Someone to turn to for suggestions about how to deal with a personal problem	1	2	3	4	5
Someone who understands your problems	1	2	3	4	5
Tangible support					
Someone to help you if you were confined to bed	1	2	3	4	5
Someone to take you to the doctor if you needed it	1	2	3	4	5
Someone to prepare your meals if you were unable to do it yourself	1	2	3	4	5
Someone to help with daily chores if you were sick	1	2	3	4	5
Affectionate support					
Someone who shows you love and affection	1	2	3	4	5
Someone to love and make you feel wanted	1	2	3	4	5
Someone who hugs you	1	2	3	4	5

Figure 1: The MOS Social Support Form contains 18 items across 4 subscales. A total score can also be calculated out of 100.

MEASURES

- Social support score independent variable (1).
- Dependent variable= Pain and disability at 1-year post DRF: Patient-rated wrist evaluation (PRWE) (2).
- Health status was measured with the SF-12 (3).
- Range of motion (wrist/forearm), grip strength, and alignment on X-ray were measured impairments (4,5).



Name: _____ Date: _____

PATIENT RATED WRIST EVALUATION

The questions below will help us understand how much difficulty you have had with your wrist in the past week. You will be describing your average wrist symptoms over the past week on a scale of 0 to 10. Please provide an estimate of your difficulty on a scale of 0 to 10. A zero (0) means that you did not have any pain and a 10 (10) means that you had the most pain you have ever experienced or that you could not do the activity because of pain. You may leave it blank.

Rate YOUR PAIN: Sample Scale A

	No Pain	0	1	2	3	4	5	6	7	8	9	10	Worst Ever
All rest													
When doing a task with a repeated wrist movement													
When lifting a heavy object													
When it is at its worst													
How often do you have pain?	Never												Always

FUNCTION

A. SPECIFIC ACTIVITIES

Rate the amount of difficulty you experienced performing each of the items listed below - over the past week, using the number that describes your difficulty on a scale of 0 to 10. A zero (0) means it was not difficult at all to do the activity and a ten (10) means it was so difficult you were unable to do it at all.

Sample scale: 0 = No Difficulty, 10 = Unable

	0	1	2	3	4	5	6	7	8	9	10
Turn a door knob using my affected hand											
Cut meat using a knife in my affected hand											
Place bottles on my desk											
Use my affected hand to push up from a chair											
Carry a 10lb object in my affected hand											
Use bathroom tissue with my affected hand											

B. USUAL ACTIVITIES

Rate the amount of difficulty you experienced performing your usual activities in each of the areas listed below over the past week, using the number that describes your difficulty on a scale of 0 to 10. A zero (0) means it was not difficult at all to do the activity and a ten (10) means that you did not experience any difficulty and a ten (10) means it was so difficult you were unable to do any of your usual activities.

	0	1	2	3	4	5	6	7	8	9	10
Personal care activities (dressing, washing)											
Household work (cleaning, maintenance)											
Work (paid job or usual exercise work)											
Recreational activities											

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Figure 1: The Patient Rated Wrist Evaluation has subscales for pain and disability. A total score can also be calculated out of 100.

DISCUSSION

- Baseline social support has a small significant impact on 1-year pain and disability outcomes. Emotional support was the most relevant type.
- Pre-injury physical and mental health status, fracture severity, and treatment complications also contribute to 1-year outcomes.
- Biopsychosocial models need further exploration.

CLINICAL RELEVANCE

- Clinicians should inquire about social support when managing patients with DRF.
- Patients should be informed that emotional support might be beneficial in their recovery and encouraged to communicate with their meaningful social contacts.
- Since recovery is difficult to predict, ongoing attention to multiple aspects of the biopsychosocial model and individualization of treatment are needed.

RESULTS

- 34% of patients had at least 1 unacceptable radiographic parameter; 17% of patients had 2 or more unacceptable radiographic parameters.
- Intrinsic patient characteristics, including age, baseline heart problems, diabetes, or other medical co-morbidities, smoking history, and highest level of education attained, did not predict 1-year PRWE score.
- The emotional support subscale predicted 4.7% the 1-year PRWE scores.
- The SF-12 physical and mental scores, in addition to the MOS emotional support subscale, explained 38% of the variability of the 1-year PRWE.
- Of the fracture variables, pre-reduction radial inclination (injury severity) and complications predicted 28% of the variability of the 1-year PRWE score.

REFERENCES

- Sherbourne CD, Stewart AL. The MOS social support survey. *Soc Sci Med* 1991;32(6):705-714.
- MacDermid JC, Turgeon T, Richards RS, Beadle M, Roth JH. Patient rating of wrist pain and disability: a reliable and valid measurement tool. *J Orthop Trauma* 1998 November;12(8):577-586.
- Ware JE, Kosinski M, Keller S. *SF-12 How to score the SF-12 Physical and Mental Summary Scales*. 2 ed. Boston, Mass: The Health Institute, New England Medical Center; 2000.
- MacDermid JC, Donner A, Hildebrand KA, Richards RS, Bellamy N, Roth JH. Reliability of radiographic measures and classification in patients with distal radius fractures. *Canadian Journal of Plastic Surgery* 2001;9(2):52-58.
- MacDermid JC, Alyafi T, Richards RS. Test-retest reliability of static and endurance grip strength tests performed on the Jamar and NK. *Physiother Can* 2001;53(1):48-54.



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