Predictors of Physical Therapy Use in Patients with Rheumatoid Arthritis

Maura Iversen, PT, DPT, SD, MPH [1,2,3]
Ritu Chhabriya, MSPT [4]
Nancy Shadick, MD [2,3]

[1] Department of Physical Therapy, Northeastern University, [2] Section of Clinical Sciences, Division of Rheumatology, Immunology & Allergy, Brigham & Women's Hospital, [3] Harvard Medical School, [4] Sunnyvale Physical Therapy and Hand Rehabilitation, Sunnyvale, CA

Evidence Based Medicine

- Li L, Bombardier C. Utilization of physiotherapy and occupational therapy by Ontario rheumatologists in managing rheumatoid arthritis: a survey. *Physiother Can* 2003 Winter; 55(1):23-30.
- Kennedy N. Keogan F. Fitzpatrick M. Cussen G. Wallace L**. Characteristics of patients with rheumatoid arthritis presenting for physiotherapy management: a multicentre study. Musculoskeletal Care 2007; 5(1):20-5.**
- **Martin LJ. Griffith SM. High disease activity scores predict the need for additional health services in patients over 60 with rheumatoid arthritis. Musculoskelt. Care. 2006;4(1):1-11.**
- **Iversen MD et al How Rheumatologists and Patients With Rheumatoid Arthritis Discuss Exercise and the Influence of Discussions on Exercise Prescriptions *Arthritis & Rheumatism (Arthritis Care & Research) 2004;*51(1); 63–72.**

Impact of Rheumatoid Arthritis

- The estimated annual cost of RA in United States is over 8.7 billion dollars (Ramsburg KL 2000)

- Patients with RA are 8x more likely to have functional disability as compared to adults in general populations of same community. (Sokka, T et al. 2003)

- 30% patients with RA have permanent work disability within first 3 yrs of diagnosis (Sokka, T. 2003)

Physical Therapy (PT) and RA

- PT is recommended by the ACR, EULAR and professional societies to manage symptoms of RA
  - Use of PT services leads to significant improvements in self-efficacy, pain & disease activity ($p<0.01$) (Lineker 2001)
  - PT plays an integral role in helping patients cope with chronic pain and disability (Matsuta, K; Kikuna, T. 1992; Lineker 2001; Newsome 2002)
  - Increased ability to perform ADLs (Newsome 2002)thereby, reducing disability

Use of Physical Therapy in Rheumatoid Arthritis

Although physical therapy (PT) is proven to be effective, it is underutilized

- In Ontario 26.5% of rheumatologists refer patients to PT (Li et al 2003)
- Cross sectional study of outpatients, 22.5% of RA patients had unmet demands for PT (Martin 2006)
- A US study reported rheumatologists referred only 26.5% patients to PT (Iversen et al. 2005)
- In Germany, 44% of RA patients received individual PT (Zink et al. 2001)

Purpose and Design

- Purpose:
  - To identify factors associated with use of Physical Therapy services among patients with Rheumatoid Arthritis
- Design:
  - Design: Secondary analysis of a large prospective cohort

Subjects

- 1032 patients enrolled in the BRASS Registry at Brigham and Women's Hospital (BWH)
  - Inclusion criteria:
    - Patients aged >= 18 years and diagnosed with RA or sero-negative inflammatory arthritis (ICD-9 codes)
    - Meets American College of Rheumatology criteria for RA
    - Completed 12 month follow up survey
  - Exclusion criteria:
    - Patients diagnosed as Psoriasis or SLE
    - Patients <18 yrs

Measures

Variables	Measures
Demographic features	**Age, gender, education, income, race, insurance, employment, marital/living arrangement status**
Medical history	**Number of Co-morbidities, RA medications, duration of RA symptoms**
Self-efficacy	**Arthritis self efficacy scale** (Lorig et al.1998)
Disability	**MDHAQ** (Pincus et al. 1999)
Disease activity	**RADAI** (Stucki et al 1995)
Social networks	**Berkman Syme Social Network Index** (Berkman S. 1979)
Fatigue	**MDHAQ Fatigue** (Pincus et al. 1999)
Physical activity	**Previous h/o exercise**

Analyses

- Outcome: Use of Physical Therapy (y/n)
  - Descriptive statistics to characterize sample
  - T-tests, Chi Squared, Wilcoxon Rank Sum tests to examine differences between those who completed and those who dropped out
  - Univariate comparison of independent variables with outcome
  - Variables grouped and entered into logistic regression model to determine most significant predictor in group
  - Final multivariate logistic regression

Recruitment Results

- **1032 subjects enrolled**
- 87 subjects dropped out before year 1
- 82 subjects moved (43) or changed physicians (39)
- 46 subjects died
- 20 no response to 1 year f/u- still in cohort study
- 20 subjects missing data
- 5 subjects, diagnosis changed
- **772** subjects completed survey at 1 year follow-up

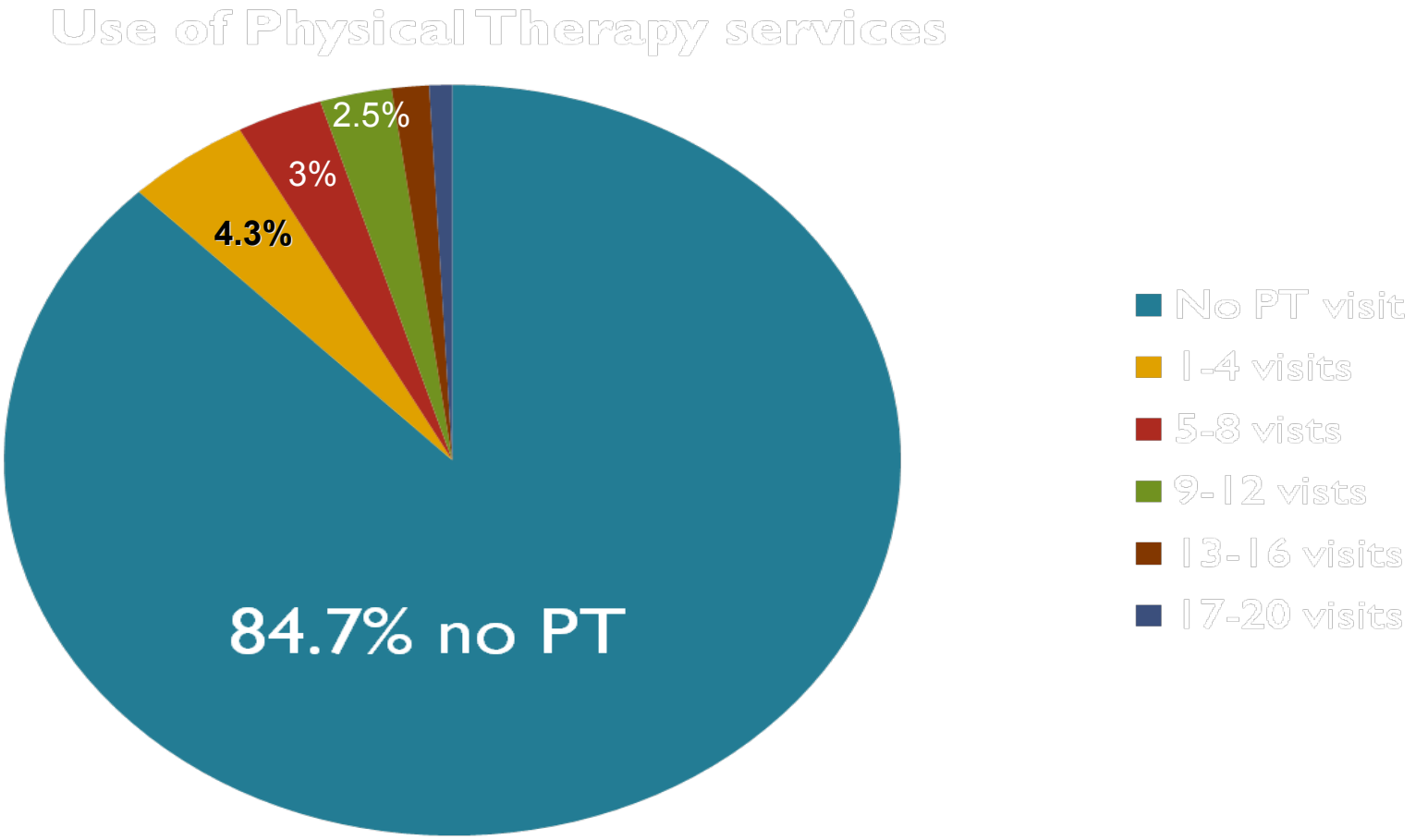
Features of Patients Who Completed the Follow-up and Those Who Did Not (n=1032)

Baseline Variables	Completed f/u (n=772)	Did Not Complete (n=260)	P-value
Mean Age (yrs)	56.3 (±13.6)	56.2 (±15.5)	NS
Female	642 (83.2%)	208 (80%)	NS
College Graduates	171 (22.2%)	63 (24.9%)	NS
Income ($70k-$90k)	330 (50.3%)	89 (45.3%)	NS
Caucasian	719 (93.6%)	251 (96.8%)	NS
Married	498 (64.7%)	164 (63.1%)	NS
Disability	71 (9.8%)	25 (10.7%)	NS
Co-morbidities	1.8 (± 1.30)	1.6 (± 1.26)	NS
RA diagnosis < 2 yrs	155 (20.1)	63 (24.2)	NS
Previous h/o exercise	209 (27.1%)	65 (25%)	NS

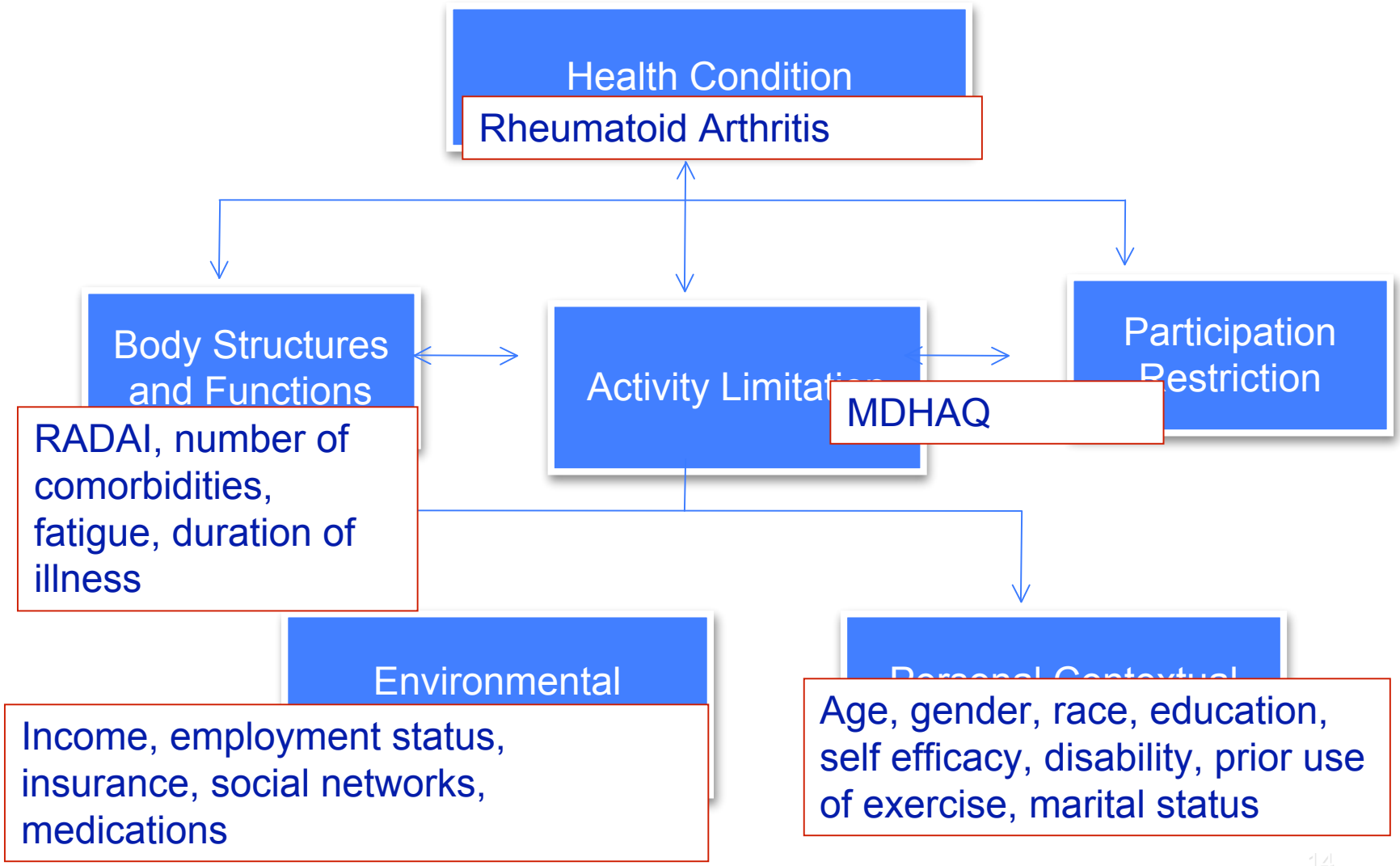
Health and Psychosocial Status Of Those Who Completed and Those Who Did Not (n=1032)

Baseline variables	Completed (N=772)	Did Not Complete (N=260)	P-value
Median MDHAQ (range)	0.63 (0-3)	0.6 (0-3)	NS
Median Self efficacy (range)	75 (10-100)	70 (10-100)	NS
Disease Activity (RADAI) :			NS
Mild (<=3.1)	354 (45.8%)	105 (40.4%)	
Moderate (3.1 to <=5.1)	184 (23.8%)	55 (21.2%)	
Highly active	234 (30.3%)	100 (38.4%)	
Mean Fatigue (SD)	42.18 (± 28.78)	42.5 (± 29.1)	NS
Social network scale			NS
Level I	100 (14.9%)	44 (17%)	
Level II	286(42.6%)	104 (40%)	
Level III	148 (22.0%)	65 (25%)	
Level IV	138 (20.5%)	47 (18%)	

Number of PT Visits per Subject



Variables Grouped Based on International Classification of Function (ICF)



Univariate Relationships with Primary Outcome- PT Use (Y/N)

	Odds Ratio (95%CI)
Age (< 60 yrs vs 60+)	1.0 (0.7 – 1.6)
Female	1.2 (0.7 – 2.0)
Education	2.2 (1.2 - 3.8)
On DMARDs, biologics, steroids	1.9 (0.8 – 4.4)
Unemployed on Disability	2.4 (1.4 – 4.3)
Health Insurance	0.4 (0.1 - 1.6)
Married or Living with Partner	0.8 (0.6 – 1.2)
Caucasian	0.9 (0.3 – 3.1)
Exerciser	1.8 (1.1 – 2.9)
Income (< 70 k versus >= 70 K)	0.5 (0.3 – 0.8)

Bivariate Relationships with Primary Outcome- Use of PT

	Odds Ratio (95% CI)
Disease Activity	1.2 (1.1 – 1.3)
Disease Duration (>= 2 yrs vs < 2 yrs)	1.4 (0.8 – 2.3)
Fatigue	1.2 (0.8 – 1.9)
Disability (MDHAQ >= 1 vs < 1)	1.7 (1.1 – 2.7)
Arthritis self-efficacy	1.2 (0.8 – 1.8)
Co-morbidities	1.1 (1.03 – 1.4)
Social Networks (Berkman Syme Index)	1.07 (1.02 – 1.3)

Predictors of Physical Therapy Use in Persons with RA (n=671)

Predictors	Odds Ratio	95% CI
Body Structures and Function		
Disease Activity (RADAI)	**1.4**	**1.1 –1.8**
Contextual factors		
Unemployed on Disability	**2.4**	**1.3 - 4.6**
Education	**1.5**	**1.2 - 1.9**
Social Networks (BSNI)	**2.1**	**1.3 – 3.5**

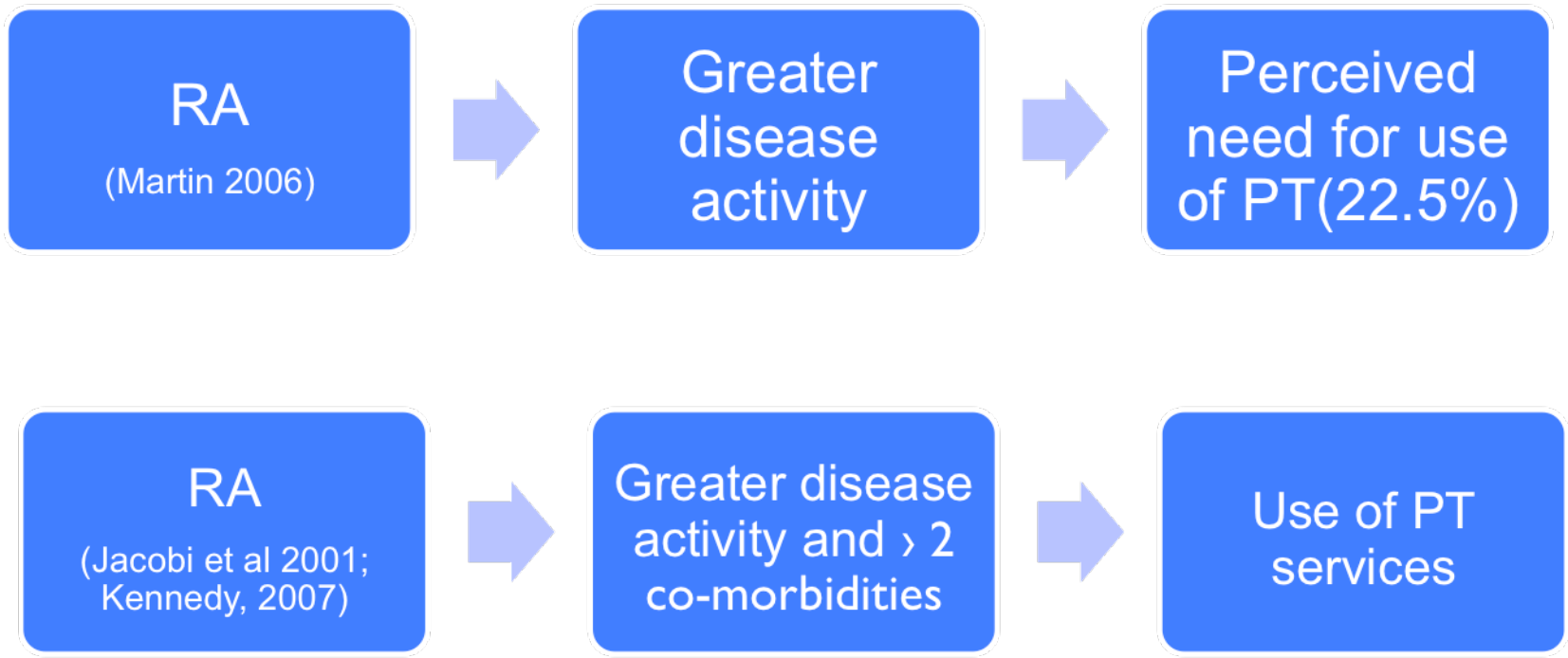
Discussion

- Our patients were primarily Caucasian females who had a high income, were well educated and had strong social networks

- 15.3% of the sample received PT services – slightly lower than the prior reports (Li et al 2003, Martin J 2006, Zink et al. 2001, Iversen et al 2005)

- ICF framework was useful in identifying contextual factors associated with PT use. (Cieza A, Stucki G 2005)

Discussion: Disease activity and Use of PT Services



Discussion

- Greater social networks associated with:
  - lower mortality (Berkman, 1979; Giles,2009)
  - provide access to care (Berkman, 1979)
  - motivation and information/advice about health services (Lubben et al 1988)
- Patients with higher education, even among well educated persons, were 50% more likely to use PT services
- Income was not significant after adjusting for social support and education

Discussion

- While fatigue has been identified as a predictor of PT service use **(Waltz ,2000),** disease activity was a stronger predictor
- Physical disability has been shown to predict referrals for PT (Waltz M 2000)
  - Disability, as measured by HAQ, was found to be significant predictor for utilization of PT services (Jacobi et al 2001) but was not significant in the multivariable model

Limitations

- Our sample was not culturally and SES diverse, so the results of this study cannot be generalized to all patients with RA

- While the study captured information on many known attributes associated with PT service use, it did not capture all potential attributes.

Strengths

- Used a combination of demographic, health, psychological and clinical factors to identify predictors of PT service use
- Large sample
- Used theoretical framework (ICF) for model building
- Limited missing data

Conclusion

- Patients with greater disease activity and disability and who are well educated with strong social networks were more likely to receive PT services.

- This study helps to identify new contextual factors associated with PT service use