Work disability in rheumatic diseases

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Bal du moulin de la Galette - Pierre-Auguste Renoir
Topics

- General concepts of disability
- Rheumatoid arthritis (RA)
- Fibromyalgia (FMS)

Other rheumatic disorders:
- Psoriatic arthritis (PA)
- Ankylosing Spondylitis (AS)
- Osteoarthritis (OA)
Introduction

Work disability associated with rheumatic diseases accounts for majority of costs associated with these conditions.

Growing interest in work disability associated with rheumatic diseases reflected in peer-reviewed literature.

Majority of articles concerned with Rheumatoid Arthritis (RA).
“...to provide a unified standard language and framework for the description of health and the health related status”

- **Health domains:**
  - Body function
  - Activity
  - Participation

The ICF is complimentary to the ICD-10 classification
- Possibility to compare data over countries, disciplines, health care systems
<table>
<thead>
<tr>
<th><strong>ICF Definitions:</strong></th>
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</thead>
<tbody>
<tr>
<td><strong>Body Functions</strong> are physiological functions of body systems (including psychological functions).</td>
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<tr>
<td><strong>Body Structures</strong> are anatomical parts of the body such as organs, limbs and their components.</td>
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<tr>
<td><strong>Impairments</strong> are problems in body function or structure such as a significant deviation or loss.</td>
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<td><strong>Activity</strong> is the execution of a task or action by an individual.</td>
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<td><strong>Participation</strong> is involvement in a life situation.</td>
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<tr>
<td><strong>Activity Limitations</strong> are difficulties an individual may have in executing activities.</td>
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<tr>
<td><strong>Participation Restrictions</strong> are problems an individual may experience in involvement in life situations.</td>
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<td><strong>Environmental Factors</strong> make up the physical, social and attitudinal environment in which people live and conduct their lives.</td>
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</tbody>
</table>
ICF definitions

**Impairments** (פגיונות): problems in body function and structures leading to significant deviations or function loss

**Activity limitations**: (מגבלייה תפקודית): difficulty one may have in execution of a task or an action.

**Participation restriction**: (מגבלה השותפות): problems one may experience in involvement in life situations.
Box 1: The ICF Model: Interaction between ICF components

WHO 2001, 18
Role of the ICF in Rheumatic disease

- An ICD-10 diagnosis of Rheumatoid arthritis (M 05) says nothing about activity limitations and participation restrictions of the patient (if any)
- Two individuals with a code of M 05 do not have the same limitations
- Two components of the ICF:
  1. “What are the problems and limitations in body function and structure of each single patient?”
  2. “Do these impairments lead to limitations in activity and participation?”
Assessing disability

- Technical measures
- Clinical measures
- Patient – oriented measures

**Technical**: range of motion, goniometry, muscle strength, hand grip strength

**Gait velocity**, “Time to up and go”

**Patient oriented**: HAQ, MACATAR (MacMaster Toronto Arthritis Preference Disability Questionnaire)
Measures of impairment

- Tender and swollen joint counts
- Joint range of motion
- Joint malalignment and deformity
- Joint circumferences
Measures of impairment – cont.

- Manual muscle strength testing
- Tests of sensation and deep tendon reflexes
- Acute phase reactants
- Abnormalities in other organ systems

*Most are* **clinician-observed measures**
Major symptoms of rheumatic diseases

- Pain
- Fatigue
- Stiffness
Pain

Completely subjective sensation

Assessed most accurately by patient self-report
### Patient self-report instruments - Pain

<table>
<thead>
<tr>
<th>Instrument</th>
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<tbody>
<tr>
<td>Numeric rating scale</td>
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<tr>
<td>Visual analogue scale</td>
</tr>
<tr>
<td>Health Assessment Questionnaire Pain scale (visual analog scale)</td>
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<tr>
<td>Arthritis Impact Measurement Scales-Pain subscale</td>
</tr>
<tr>
<td>Western Ontario and McMaster Universities Osteoarthritis Index-Pain subscale</td>
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<tr>
<td>Australian/Canadian Osteoarthritis Hand Index</td>
</tr>
<tr>
<td>McGill Pain Questionnaire</td>
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<tr>
<td>SF-36 pain subscale</td>
</tr>
</tbody>
</table>
Patient self-report instruments – Stiffness, fatigue

<table>
<thead>
<tr>
<th>Duration of morning stiffness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual analogue scale of severity</td>
</tr>
<tr>
<td>Western Ontario and McMaster Universities Osteoarthritis Index-Stiffness subscale</td>
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</tbody>
</table>

Fatigue

<table>
<thead>
<tr>
<th>Visual analogue scale of severity</th>
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<tbody>
<tr>
<td>Fatigue Severity Scale</td>
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<tr>
<td>SF-36 vitality subscale</td>
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<tr>
<td>Nottingham Health Profile energy subscale</td>
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</tbody>
</table>
Additional methods for assessing pain

- Medication seeking behavior (not very reliable)
- Observed pain behavior (grimacing, guarding etc.)
- Manual Dolorimetry – measures pain threshold – not intensity and experience of pain
Dolorimetry
Pooled indexes - combine ratings of several different impairments

<table>
<thead>
<tr>
<th>Description</th>
<th>Reference</th>
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</thead>
<tbody>
<tr>
<td>Attempt to provide summary measures of disease activity and damage</td>
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<tr>
<td>Disease Activity Score (DAS) in rheumatoid arthritis</td>
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<tr>
<td>Systemic Lupus Erythematosus Disease Activity Index (SLEDAI)</td>
<td></td>
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<tr>
<td>Systemic Lupus International Collaborating Clinics/American College of Rheumatology Damage Index (SLICC)</td>
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<tr>
<td><strong>Birmingham</strong> Vasculitis Activity Score</td>
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</table>
Performance-based tests of functioning

- Grip strength
- Walking time
- Button test
- Timed chair stands

All are *effort dependent*

*Do not directly measure everyday life experiences*
Patient self-reported measures of Health status

- **Single-item** measures:
  - Number of work days or school days missed
  - Number of days one's activities were limited by ill health
Multi-item closed-ended health status indexes

HAQ-DI
AIMS
SF-36
HAQ (Health Assessment Questionnaire) - DI (Disability Index)

- 20-question index reports degree of difficulty
  - 0 = no difficulty; 1 = some difficulty; 2 = much difficulty; 3 = unable to do
- 8 functional areas
  - Dressing, arising, eating, walking, hygiene, reaching, gripping, and errands and chores
HAQ-DI

- **Disability Index** - an ordinal scale with increments of 0.125 and a possible range of 0 to 3.
- Use of **aides** or help **from another person** can be incorporated in scoring
Limitations of the HAQ

- Focus on **physical impact** of RA rather than **psychological health** of patient, family, social and financial consequences of disease
- **Psychosocial factors** may contribute between 10 to 20 % towards disability
Rheumatoid Arthritis (RA):

- Disease manifestations
  - Joint swelling (usually symmetrical)
  - Pain
  - Morning stiffness
  - Fatigue

- Long-term consequences
  - Cartilage damage
  - Bone erosion
  - Deformity
  - Disability
  - Premature death

WHAT RA HANDS USED TO LOOK LIKE...
CHRONIC RA – X-RAYS
Work disability: a prospective 18 year study of 823 patients.
In 1974, a computerized database developed for entry of all patient visits
Clinical, laboratory, and self-report information
Mailed questionnaires at 6 month intervals
1994, RA patients interviewed in detail about lifetime work status and work disability
RESULTS

- Work disability occurred in 25% at 6.4 years
- 50% at 20.9 years
- Work disability was predicted by demographic and clinical variables
- Education level, body mass index (BMI), ESR, RF, pain, (HAQ) disability, physical demands of job at first clinic visit
Improving outcome of RA:

- Long-term study of successive cohorts of RA patients
- 3035 patients from 8 centers
- Followed from 1977 to 1998
- Use of methotrexate (MTX) at enrollment increased from 1.0 to 44 percent
- Prednisone use remained constant
- Average disability declined by approximately 2% per year
Effects of anti-rheumatic drug treatment on function

- Amount of joint damage present at time therapy is initiated
- Interventions effective in preventing joint damage most effective in improving function when introduced as early as possible
Objective:

- To determine prevalence and incidence of work disability in rheumatoid arthritis (RA), and to determine effect of anti-TNF therapy on work disability.
Results

- 12.8 years after RA onset, 56.2% still employed
- In comparison, in 1987 Yelin reported that 11 years after diagnosis of RA 49% employed
- Of those not working, 22.7% considered themselves disabled
- 30.5% had stopped work for health reasons and 20.6% were receiving Social Security disability benefits
Conclusion

Rates of self-reported disability were lower than noted in previous studies, perhaps reflecting overall improvement in RA therapy.
The incidence of Disability Pension (DP) due to RA has decreased over recent years, coinciding with earlier more aggressive treatment with DMARDs and biologics.

A similar declining incidence of DP was seen in patients with all diagnoses in the general population.

The decrease in DPs was, however, larger for RA and was evident even before introduction of biologics.
Number of patients with new DPs due to RA and due to all diagnoses and linear trends over time for RA and for all diagnoses, 1990–2010.

Hallert E et al. Rheumatology 2012;51:338-346
Sales of biologic drugs in Sweden during the years 2000–10, all diagnoses.

Hallert E et al. Rheumatology 2012;51:338-346
Unadjusted cumulative days of sick leave and disability pension during the first 3 years after day of diagnosis for rheumatoid arthritis (RA) patients diagnosed during 1999–2007 and matched comparators from the general population (GenPop, 5 per RA patient), given as mean with 95% CIs and as median.

*Significant difference across groups of a variable (p<0.001)

Olofsson T et al. Ann Rheum Dis
doi:10.1136/annrheumdis-2012-202911
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Frida Kahlo: Self Portrait
Fibromyalgia

ACR 1990 Criteria:
- Widespread pain
- Tender points – 11/18

2010-2011 diagnostic criteria:
- Widespread pain Index (WPI) >3, and Symptom severity score (SS) > 5 or WPI 3-6 and SS>9
- Symptoms have been present for 3 months
- No other disorder to explain the pain
Diagnostic criteria definitions:

- **WPI**: number of areas (19) where the patient has had pain over the last week
- **Severity score:**
  - Fatigue
  - Waking unrepressed
  - Cognitive symptoms
  - Somatic symptoms
  - (0-3 points on each item)
- Somatic symptoms: IBS, numbness, dizziness, depression, constipation, nausea etc. etc. etc.)
2016 Update

- Generalized pain, defined as pain in at least 4 of 5 regions, is present.
- Symptoms have been present at a similar level for at least 3 months.
- Widespread pain index (WPI) ≥7 and symptom severity scale (SSS) score ≥5 OR WPI 4–6 and SSS score ≥9.
- A diagnosis of fibromyalgia is valid irrespective of other diagnoses. A diagnosis of fibromyalgia does not exclude the presence of other clinically important illnesses.
Paradigm Shift in Fibromyalgia

- Discrete illness
- Pain, focal areas of tenderness
- Psychological and behavioral factors nearly always present

- Part of a larger continuum
  - American College of Rheumatology criteria
  - Chronic widespread pain
  - Tenderness in >11/18 tender points

- Psychological and behavioral factors play roles in some individuals
SYMPTOMS AND SYNDROMES RELATED TO FIBROMYALGIA

- Tension/migraine headache
- Affective disorders
- Temporomandibular joint syndrome
- Constitutional symptoms and syndromes
- Fatigue and Chronic Fatigue Syndrome (CFS)
- Idiopathic low back pain
- Sleep disturbances
- Irritable bowel syndrome
- Nondermatomal paresthesias
- Memory and cognitive difficulties
- ENT complaints (sicca sx, vasomotor rhinitis, accommodation problems)
- Vestibular complaints
- Multiple chemical sensitivity, “allergic” symptoms
- Esophageal dysmotility
- Neurally mediated hypotension, MVP
- Noncardiac chest pain, dyspnea due to respiratory muscle movement dysfunction
- Interstitial cystitis, male urethral syndrome, vulvar vestibulitis, vulvodynia

Supraspinal Influences on Nociceptive Processing

**Facilitation**
- Substance P
- Glutamate and EAA
- Serotonin ($5HT_{2a, 3a}$)
- Neurotensin
- Nerve growth factor
- CCK

**Inhibition**
- Descending anti-nociceptive pathways
  - Norepinephrine – serotonin ($5HT_{1a,b}$)
- Opioids
  - GABA
  - Cannabionoids
  - Adenosine
Stimuli and Responses During Pain Scans

Treatment of Fibromyalgia and Other Central Pain Syndromes

- Education
- Pharmacological therapy
- Aerobic exercise
- Alternative therapies
- Cognitive behavioral therapy (CBT)
SİPOL BHALMOT
HIPBROMAELGI

ברכשה:

הנהית קלינית

Clinical Guidelines

מלכות העיתונאות:

האגוד למדינת רפואית
המהדורה הרביעית בישראל

2013
Symptoms of Pain, Fatigue, etc.

Functional Consequences of Symptoms

- Increased Distress
- Decreased activity
- Isolation
- Maladaptive illness behaviors
- Poor sleep
- Increased distress

Nociceptive processes (damage or inflammation of tissues)
Disordered sensory processing

Nonpharmacological Therapies to Address Dysfunction

Pharmacological Therapies to Improve Symptoms

Dually Focused Treatment

Symptoms in fibromyalgia which influence activity

- Pain, sleep disturbances, and difficulties in managing motor tasks
- Memory and concentration difficulties
- Fatigue - strong predictor of work dysfunction and an overall lower health status.
- Reduced muscular capacity
- Ability to fully activate motor units is decreased in painful muscles
- Difficulty with repetitive movements, static muscle work (holding tools), standing or sitting in the same position for long periods
Difficulties in daily life with fibromyalgia

- Carrying groceries, climbing stairs, walking, running and working with elevated arms
- Power grips e.g. Turning faucets
- Physically heavy work
- Computer work
- Telephone work
- Writing on a blackboard
- Working with small children who need help tying shoelaces, buttoning clothes, and bending down
Work adjustments in Fibromyalgia

- Work situations with **heavy physical** tasks, working above shoulder level, **power grip**, frequent carrying and lifting, static movements, dynamic repetitive work, eccentric muscle work should be avoided, when selecting a suitable work position for FM patients.

- People with FM need to be able to **change** between different work positions and work tasks, and also need to take short **breaks** during work tasks.
A rest during the day alleviates pain, makes afternoon work easier.

The number of hours at work usually needs to be reduced to 75 or 50%.

A positive social environment, where the worker is appreciated by the supervisor and co-workers, is important for remaining at work.

Reduced, more flexible working hours - an important adjustment for enabling women with FM to use remaining work capacity.

Despite limitations, approximately 34 - 77% still work.
# Factors Promoting Sustainable Work in Women with Fibromyalgia

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<tr>
<th>Categories</th>
<th>Sub-categories</th>
<th>Aspects</th>
</tr>
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<tr>
<td>The meaning of work</td>
<td>Individual meaning of work</td>
<td>Satisfaction in work, Meaningfulness, Confirmation, Identity, Income</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Structure in daily life, Distraction</td>
</tr>
<tr>
<td></td>
<td>Social meaning of work</td>
<td>To be part of a social context, Participation in society, Normality</td>
</tr>
<tr>
<td>Individual strategies</td>
<td>Strategies for handling symptoms</td>
<td>Mental strategies, Adjustment, Alleviating symptoms</td>
</tr>
<tr>
<td></td>
<td>Strategies for handling the work day</td>
<td>To avoid heavy work tasks, To set limits, To take pauses</td>
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<tr>
<td></td>
<td>Strategies for handling long-term work life</td>
<td>To change career, To control work schedules, To plan and prioritize,</td>
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<td>To develop personal qualities, To improve health by physical activity,</td>
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<tr>
<td>A favourable work environment</td>
<td>Physical work environment</td>
<td>Opportunities for flexibility, Ergonomic aids, Non-strenuous work tasks</td>
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<td>Psychosocial work environment</td>
<td>Well-structured work organization, Social support from colleagues,</td>
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<td>Social support from management</td>
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<tr>
<td>Social support outside work</td>
<td>Societal social support</td>
<td>From health care, From the Swedish Social Insurance Agency</td>
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<td></td>
<td>Private social support</td>
<td>From family, From friends</td>
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SOCIAL SECURITY WORK DISABILITY AND ITS PREDICTORS IN PATIENTS WITH FIBROMYALGIA
הערכות בכות עברת חולי פיברומיאלגייה - הצגה

פיברומיאלגייה המאותות על ידי סיפול תרופתי או אחר

כואב הורשה סיפול מתוחכם ריצח בחורף וodoreת וזיפול של אוזנים ו과학ים

המוצלים לפיברומיאלגייה משך שנא לפגוע, לרוב הואزهر החנה לחופל

כואב הורשה סיפול ריצח למשך שנא לפגוע עם תגובת בולתי מפסקת לשתית הורשה

יעדוות של 2 ס-toggler סיפולים אחורם המוצלים לפיברומיאלגייה, עם תיגוד התנגובпочт

במידה İnıyorımı הסמונת נספה מתחעות בגוות לפיברומיאלגייה (מחודשת)

המברחת על ידי הממחית השחיה מתוך הרשימה ההבה, גנוב אחורית נכת

בהונות או הסמונת הגויית : 1. מתי ר nye. 2. הפרעות בohan 3. שלפוחית רגיעה

4. הפרעות בירה וחיכוך 5. קרב רナイ 6. הסמוניה דכאון.

הערכה בכות העברת חולי התherits אתורי על ביתן הורפה של הצהויה הביךורי אצל

הממחית המרשלים בפיברומיאלגייה قناך רופאי משפחת, רואמותולוגים

הממחית לכצב
Psoriatic Arthritis
Epidemiology

- 7-42% of patients with psoriasis
- Estimated prevalence of 1%
- Annual incidence of 6.1 per 100,000
- Mild predominance in males
Moll and Wright Clinical Classification

- Arthritis of distal interphalangeal joints
- Arthritis mutilans
- Symmetric polyarthritis (28-78%)
- Asymmetric oligoarthritis (16-53%)
- Spondyloarthropathy (20-40%)
DIP involvement
Psoriatic arthritis is an enthesitis

- DIP joint disease
- Spinal inflammation
- Dactylitis - sausage finger
Sausage finger
Extra-articular features of psoriatic arthritis

- Psoriatic skin lesions
- Iritis
- Mouth ulcers
- Urethritis
Radiological features of PsA

- Lack of juxta-articular osteopenia
- Pencil-in cup change
- Ankylosis
- Periostal reaction
- Asymmetric sacroiliitis
- Coarse syndesmophytes
Erosive psoriatic arthritis
Prognosis of psoriatic arthritis

- Increased risk of progression in patients who present with > 5 swollen joints
- HLA-B27 + DR-7, B-39, DQw3 - bad prognostic signs
- HLA-B22 - protective
- Increased risk of death
Management of PsA

- NSAID’s
- Methotrexate
- Sulphasalazine
- Azathioprine
- Cyclosporine
- Leflunomide
- Anti TNFα therapies (Etanercept, Infliximab, adalimumab, golimumab, cetrolizumab pegol)
- Anti IL-17A antibodies (Secukinumab)
- Anti IL-12 + IL-20 antibodies (Ustekinumab)
- Intra articular injections of corticosteroids
Description and prediction of physical functional disability in psoriatic arthritis: A longitudinal analysis using a Markov model approach

- 341 patients with PA completed 2 or more Health Assessment Questionnaires (HAQs)
- Markov model - allows transitions to and from 3 disability states. Used to characterize longitudinal course of physical functioning
3 longitudinal patterns:
1) Stable disability
2) Steady improvement or deterioration in disability over time (27%)
3) Fluctuating state of disability, (27%)
28% of patients – “resistant to becoming disabled”
Other patients - enduring disability or move between disability states
PA: the unpredictable course

- No disability
- Moderate disability
- Severe disability
ANKYLOSING SPONDYLITIS (AS)
GRADE 1-2 SACROILEITIS

Grade 1
(suspicious changes)

Grade 2
(minimal changes)
BILATERAL SACROILEITIS GRADE 4
Affects young people, predominantly men
Axial skeleton and peripheral joints
Unlike RA - an *inflammatory enthesiopathy* - insertion of tendons into bone
Treatment has become more effective with use of disease modifying agents (etanercept and anti-TNF-α drugs)
Exercise has great importance in maintenance of good posture and movement
Axial spondyloarthropathy (axial SaA):
1. Ankylosing spondylitis
2. Non – radiographic axSpA
3. Suspected in patients with chronic “inflammatory” back pain
4. Pain present for more than 3 months consciously
5. “Inflammatory” back pain: insidious onset, improvement with exercise, no improvement with rest, onset before age 40
AS (and other spondyloarthropathies)

- **Morning stiffness** which will intrude on the ability to work and requires employer understanding
- **Task difficulties**: difficulty in maintaining same position at work all day
- Results of **decreased range of movement**
- **Fatigue** and pain
Work disability in AS

- Finnish cohort of 76 patients with AS: 4% unable to work at five years of follow-up, 5% at 10 years, 13% at 15 years, 30% at 25 years and 50% at 45 years follow-up

- 25 years: 48% of patients still at original occupation, 17% had to change jobs, 5% retired because of age

- Exposure to cold at work, inability to change jobs, prolonged standing postures at work and non-sedentary jobs - significantly associated with probability of long-term disability
Work disability in AS

- Cessation of working occurred much later than in RA, 15.6 years after disease onset.
- WD in AS significantly associated with low levels of education, a more severe disease course with acute anterior uveitis, 'bamboo spine', co-morbidity and female sex
Osteoarthritis

- *Most frequent* joint disease
- 10.8% prevalence of hip OA in patients older than 35 years with increase of up to 35.4% at age 85
- Exposure to *heavy work* and degenerative changes in the knee
- Early development of osteoarthritis after injury of meniscus and/or of the anterior cruciate ligament
Work disability (WD) in OA

- Reports on WD in degenerative joint disease are scarce
- Of 10,412 patients with OA, the percentage of patients with OA still in workforce - similar to sex and age adjusted controls
- WD seems considerably less in OA than in RA: only 3% OA patients, 1% controls
Vocational aspects in OA

- OA commonly effects people above or near retirement
- Julkunen et al. reported that after treatment with NSAIDS 31% of patients returned to work, 4% changed their job and 21% retired
IN CONCLUSION...

- Rheumatologic disorders are a major cause of work disability.
- Evaluating disability is challenging, particularly when based on patient-reported symptoms.
- Improved treatment has led to a decrease in rates of disability (at least in inflammatory joint disorders).
- Maintaining employment and workplace participation are a major goal.