

Impact of Psychological and Social Factors on Patient Responses to Pain and Pain Management

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Therapeutic Armamentarium

- Medication (eg, opioids, antidepressants, anticonvulsants, topicals)
- Surgery
- Neuroaugmentative (eg, nerve block, implantable devices)
- Physical modalities (eg, TENS, ultrasound)
- Complementary (eg, acupuncture, manipulation, yoga, tai chi)
- Psychological (eg, CBT, Contingency Management, Hypnosis, Biofeedback)
- Rehabilitation (eg, Multidisciplinary, Interdisciplinary)

Therapeutic Gains (% Active-Placebo) for Drug Therapies Using an Outcome Equivalent to Patient Expectation Being Met (at least 50% pain reduction) (Moore 2013;154:S77-S86)

Drug & Dose	Percent w/Outcome		Drug-Specific Improvement (Active-Placebo)
	Active	Placebo	
<u>Osteoarthritis – 12 weeks of treatment [6,w6,w7]: Outcome – at least 50% pain intensity reduction</u>			
Tanezumab 10	51	31	20
Etoricoxib 60	44	23	21
Celecoxib 200	39	22	17
Naproxen 1000	44	23	21
Ibuprofen 2400	39	27	12
Duloxetine 60/100	40	30	10
<u>Chronic low back pain – 12 weeks of treatment [5,w6]: Outcome – at least 50% pain intensity reduction</u>			
Etoricoxib 60	47	35	12
Etoricoxib 90	47	35	12
Duloxetine 60/100	39	30	9
<u>Osteoarthritis and chronic low back pain [w13]: Outcome – at least 50% pain intensity reduction</u>			
Tapentadol 200–500	30	24	6
Oxycodone 40–100	21	24	-3
<u>Painful diabetic neuropathy – 12 weeks of treatment [w9–w11]: Outcome – at least 50% pain intensity reduction</u>			
Duloxetine 60/100	48	26	22
Pregabalin 600 ^b	46	30	16
Gabapentin ≥ 1200 ^b	40	23	17
Lacosamide 400 ^b	35	25	10
Pregabalin 300 ^b	38	29	9
<u>Postherpetic neuralgia – 12 weeks of treatment [w9,w10]: Outcome – at least 50% pain intensity reduction</u>			
Pregabalin 600 ^b	39	14	25
Pregabalin 300 ^b	30	11	19
Gabapentin ≥ 1200 ^b	33	20	13
<u>Fibromyalgia – 12 weeks of treatment [6,w12]: Outcome – at least 50% pain intensity reduction</u>			
Duloxetine 60/100	28	17	11
Pregabalin 600	23	15	8
Pregabalin 450	21	15	6
Pregabalin 300	19	15	4

Effectiveness of Treatments

No shortage of treatments, just shortage of evidence of benefits

Assessment of **1,016** Cochrane review articles

- **44%** of the interventions likely beneficial
- **7%** harmful
- **49%** inconclusive as to benefit or harm

“One is instantly reminded of the malign influence of fashion on medicine, more than any other science. Even nowadays it is subject to fads although no science is more profitable.” Pliny the Elder, **23-79 AD**

Treatment Effectiveness

So, if overall treatments are only modestly effective...

Why?

Cochrane Database Syst Rev 2016;10:CD011605;Cochrane Database Syst Rev 2016;7:CD010092;Cochrane Database Syst Rev 2012;5:CD0094846;Cochrane Database Syst Rev 2015;7:CD008242;Cochrane Database Syst Rev 2014;4:CD007938;Cochrane Database Syst Rev 2015;7:CD008242; 28:1931-31; Bicket et al. Anesthesiology 2013;119:907-31; Chou et al. Spine 2009;34:1078-93; Louw et al. Pain Med 2017;18:736-50; Pinto et al. Ann Intern Med 2012;157:865-77; Scott et al. Pain Medicine;2009;10:54-69; Turk DC et al. Lancet 2011;377:2226-35; Turner et al. Clin J Pain 2007;23:180-95

Some Possible Explanations

Exclusive Reliance on the Biomedical Model

- Occult pathology
- Peripheral nervous system sensitization
- Central nervous system sensitization
- Genetics

Other Contributing Factors

- Means of assessing pain
- Variability in sensory sensitivity
- Psychological characteristics
- Combination of the interactions among multiple biopsychosocial factors

Characteristics of Biomedical Perspective on Chronic Pain

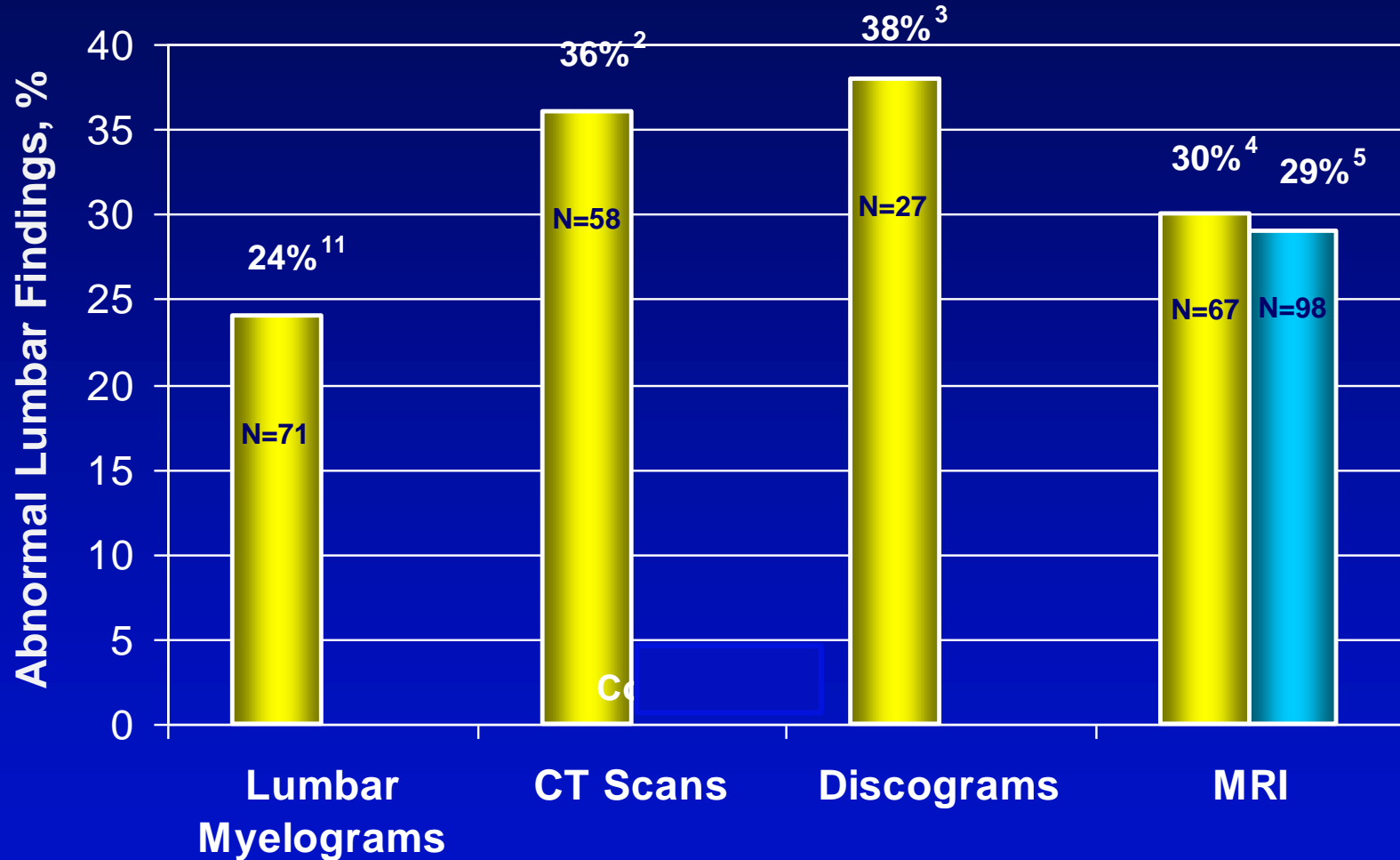
- Pain viewed as solely a signal of injury directly related to objective physical pathology
- Continual quest to find **THE** structural cause
- Attempt a “mechanical fix”
- Provide purely symptomatic treatments
- Active provider takes over responsibility and control from the passive patient

Some Challenges to the Biomedical Perspective

- Patients with **minimal objective evidence** of pathology often complain of **intense pain** – **False Negatives** (*Disease Deficit Disorder?*)
- **Asymptomatic** people often reveal objective evidence of structural abnormalities using various imaging procedures – **False Positives** (*Patients in waiting?*)

Holt J. J Bone Joint Surg Am 1968;50:720–6; Hilselberger & Witten. J Neurosurgery 1968;24:204-8; Wiesel et al. Spine 1984;9:199-206; Boden et al. J Bone Jt Surg 1990;72-A:403-8; Jensen et al. NEJM 1994;331: 69-73; Jarvik et al. Spine 2001;26:1158-66; Finan et al. Arthritis & Rheum 2013;65:363-72; Brinjikji et al. Am J Neuroradiol 2015;36:811–16

Prevalence of Abnormal Lumbar Findings in Asymptomatic People



¹Hifselberger & Witten. J Neurosurg 1968;28:204-6;²Wiesel et al. Spine 1984;9:549-51;³Holt. J Bone Jt Surg (Am) 1968;50:720-6;⁴Boden et al. J Bone Joint Surg 1990;72:403-8 ;⁵Jensen et al. N Engl J Med 1994;331:69-73

Some More Challenges to the Biomedical Perspective

- Patients with the **same** extent of tissue pathology, treated with **identical interventions**, respond in widely different ways¹
- **Surgical procedures** designed to inhibit symptoms by severing neurological pathways *believe* to be the generator(s) of pain may **fail** to eliminate or even alleviate it substantially in the majority of patients
- Often, even when surgery is a technical success, it is simultaneously a clinical failure -- **the patient continues to experience pain and disability despite “correction” of underlying pathophysiology**

¹Gerbershagen et al. Anesthesiology 2013;118:934-44

Even More Challenges to the Biomedical Perspective

- There are only **modest correlations** among physical **impairments**, **pain** reports, **disability**, and **response** to treatment

Disease & Pain ≠ Functional Limitations

Example

White et al. demonstrated that disease and moderate to severe pain had little impact on achievement of recommended physical activity levels, among people with or at high risk of knee OA assessed using radiographic imaging. They concluded that:

“Neither the disease of OA itself nor knee pain appeared to have substantial impact on the participants’ walking behavior in the normal living setting.”

Fundamental Problem of Pain

– So which is the most valid indicant of pain?

Self-report

- Narrative
- Questionnaire

Objective

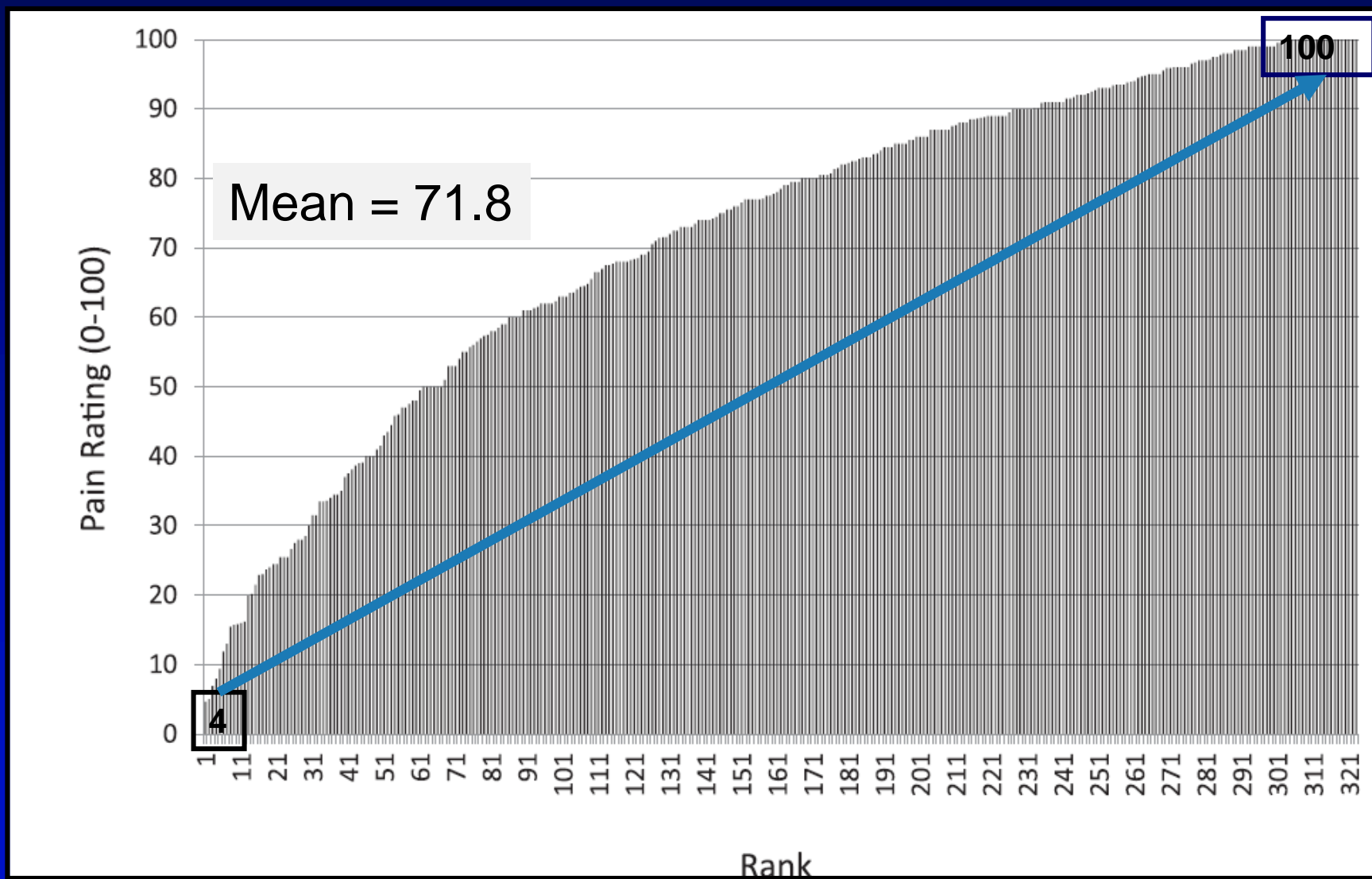
- History
- Examination
- Lab Tests
- Imaging
- Ambulatory monitoring

Not highly correlated!

Behavior (observable)

- Overt Expression
- Physical Performance

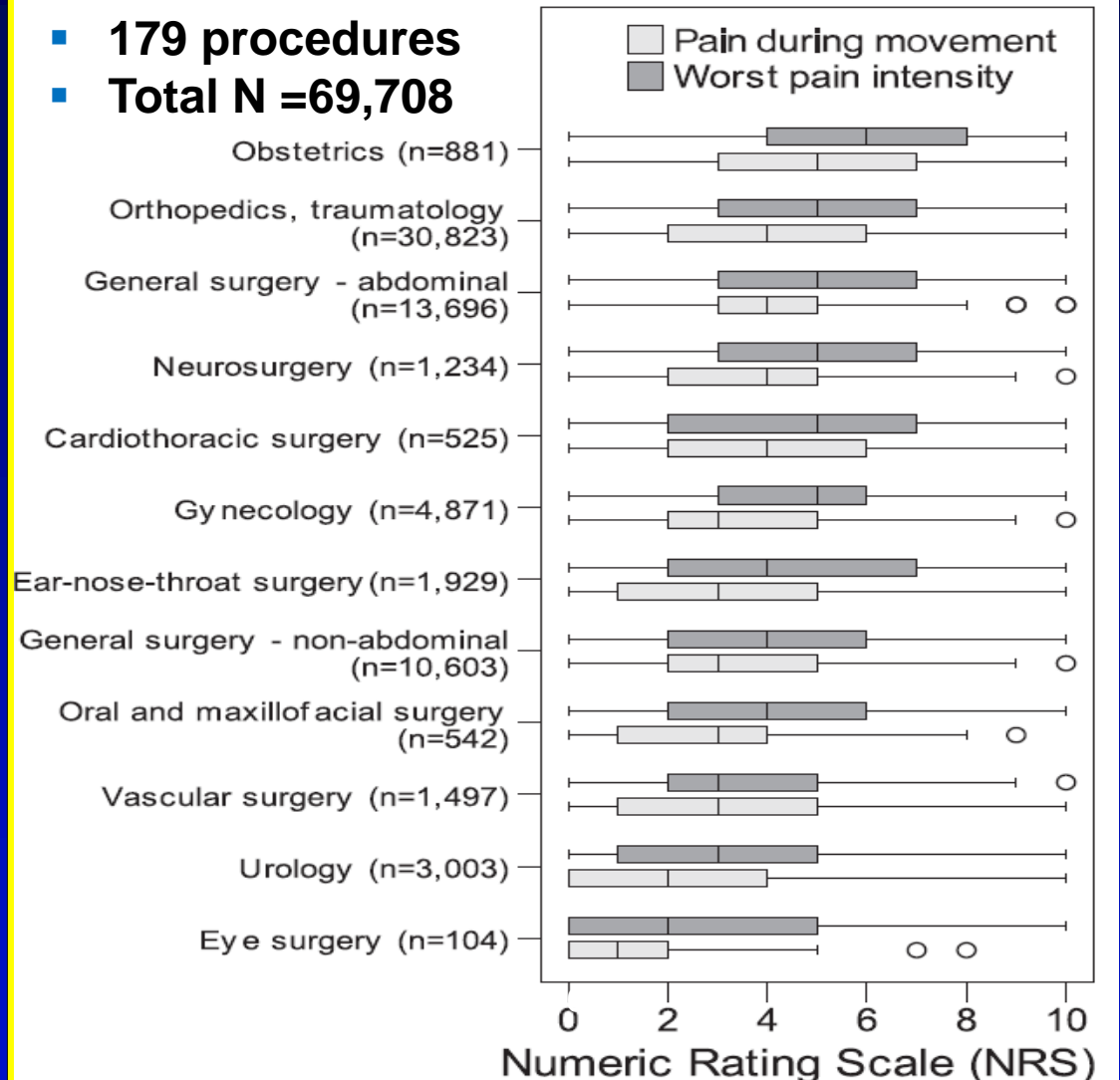
Sensory Sensitivity- Pain Ratings to the Same 48° Heat Stimulus in 321 Healthy Young Adults



Variability of Responses to Same Surgical Treatment

■ Subjective pain reports following the same surgical procedure, performed for the same reason vary greatly across patients.

- 179 procedures
- Total N =69,708



Snapshot vs. Motion Picture



BODIES in MOTION
WWW.SCOTT-EATON.COM

BODIES in MOTION
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Natural History of Persistent Symptoms: A Person's/Patient's Perspective

Awareness and Interpretation of Symptoms



Help/treatment-seeking



Diagnostic uncertainty



PT FRUSTRATION



Physician
frustration



Significant other
frustration

Doctor shopping



Multiple costly, invasive diagnostic tests



Suggestion of psychological causation or malingering



Increased symptom reporting, pain behaviors, and help-seeking

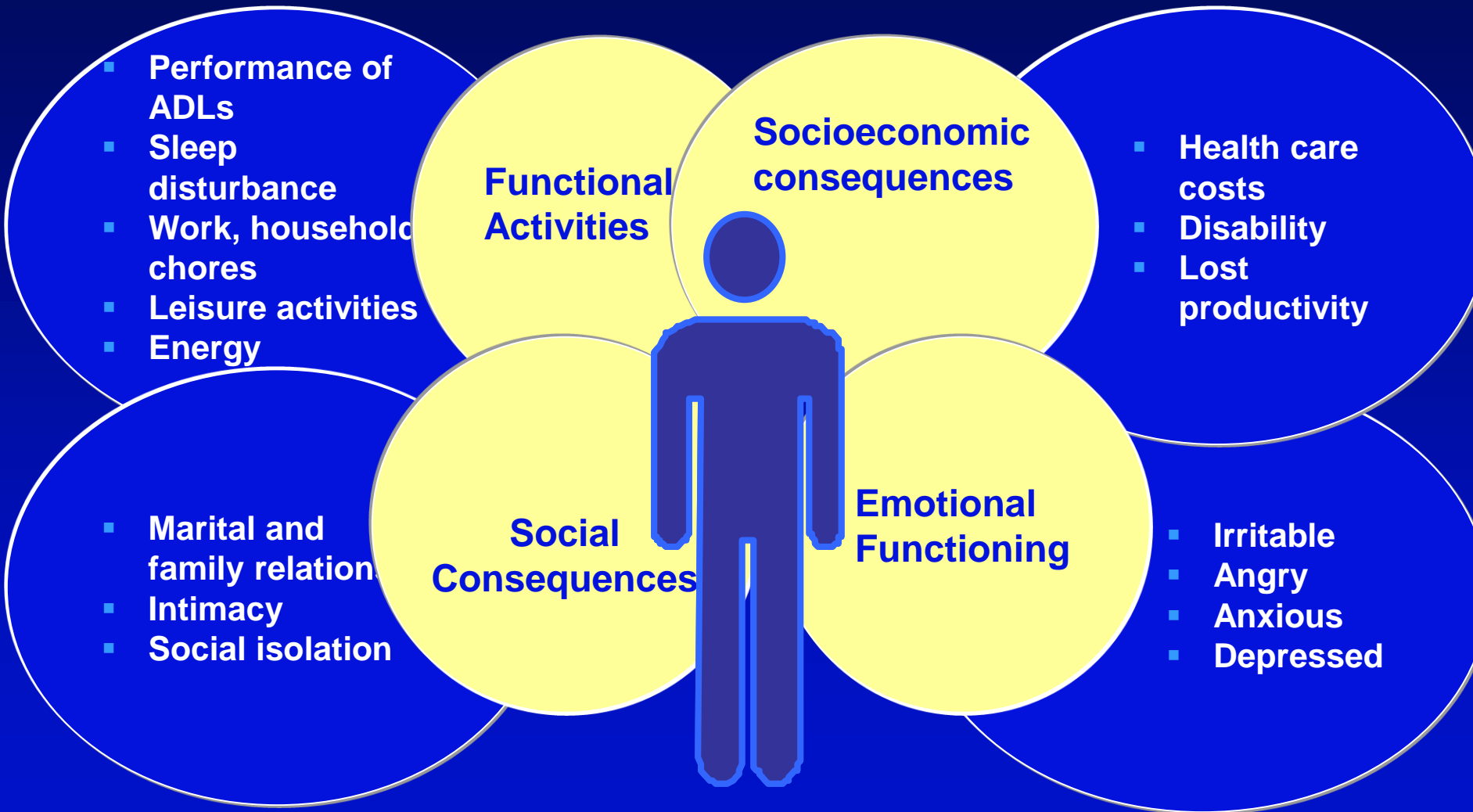


Increased emotional distress

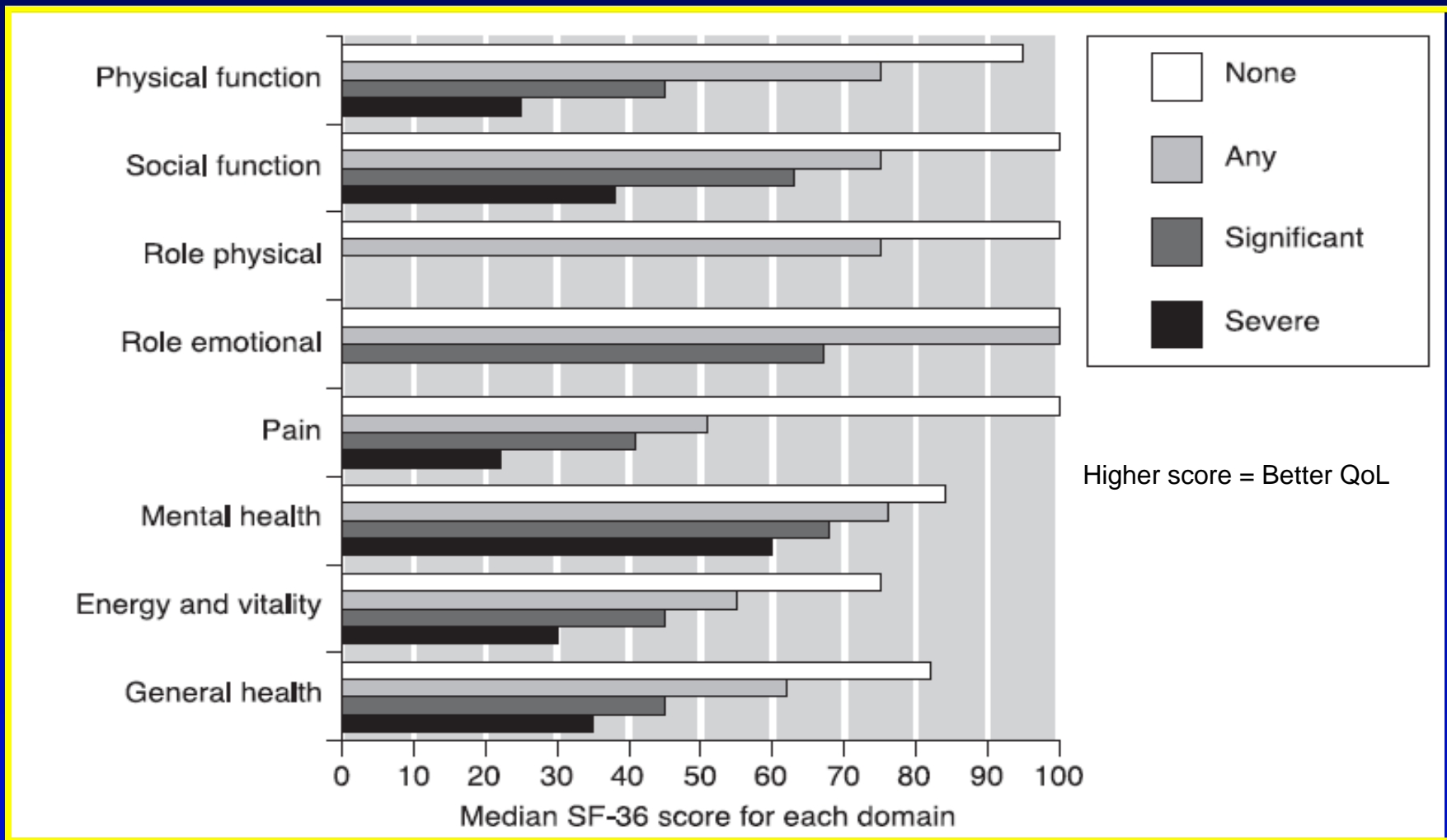
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The Impact and Burden of Chronic Pain



The Impact of Chronic Pain Severity in the Community



Why Consider Psychosocial Factors ???

Conclusion of a systematic review

“Psychosocial factors and emotional distress should be assessed because they are **stronger predictors** of low back pain [and many other prevalent chronic pain disorders] than either physical examination findings or severity and duration of pain.”

Psychosocial Factors Have Been Shown to Play a Role in ...

- Predicting disability¹⁻³
- Influencing perceptions and experience of noxious sensations⁴
- Directly affecting physiological processes (CNS, hormonal, peripheral)⁵⁻⁶
- Affecting emotional responses to pain⁷
- Affecting behavioral responses to pain⁸
- Influencing responses by significant others⁹
- Influence response to treatments¹⁰⁻¹⁴

¹Arnold et al. Gen Hosp Psychiat 2011;33:150-6; ²Chou & Shekelle. JAMA 2010;303:1295-302; ³Carragee et al. Spine J 2006;5,24-35; ⁴Edwards et al. Clin J Pain 2006;22:730-7; ⁵Colloca et al. Eur J Pain 2006;10:659-65; ⁶Kucyi et al. J Neurosci 2014;34:3969-75; ⁷Jensen et al. Pain 2012;153:1495-503; ⁸Lumley et al. J Clin Psychol 2011;67:942-68; ⁹Turner et al. Pain 2000;85:115-25; ¹⁰Goubert et al. J Pain 2011;12:167-74; ¹¹Benyon et al. Musculoskel Care 2010;8:224-326; ¹²Burns et al. Behav Res Ther 2003;41:1163-82; ¹³Celestin et al. Pain Med 2009;10:639-53; ¹⁴Wertli et al. Spine J 2014;14:2639-57

“New” Way of Thinking About People with Chronic Pain – Biopsychosocial

Must assess and address:

- **The biologic basis of impairment and pain**
- **Individual’s history**
- **The patient’s attitudes and beliefs, emotions, and behavior**
- **Coping, social supports, and financial resources available**
- **Responses by significant others**
- **Context in which a person/patient resides**
- **Social, work, and economic impact and influences**

If Treatment Only Modestly Effective – Need to Consider....Why and What Can Be Done?

- **Create and evaluate strategies to encourage more realistic expectations for symptoms & txs**
- **Maximize the therapeutic effects of a caring clinician**
- **Determine how best to facilitate, encourage, & motivate patient self-management**
- **Develop and evaluate the timing of txs and prevention of misuse and disability**
- **Develop and evaluate new txs**
- **Develop txs that address pain and comorbidities**
- **Determine what works and for whom**
- **Evaluate tx combinations**
- **Investigate strategies to facilitate maintenance and generalization of tx benefits and relapse prevention**