Conflict of Interest

- SB, VV, and NA are employees of Complete HEOR Solutions (CHEORS) and NK is former employee of CHEORS
- No funding was received from any external organization
- The authors report no other conflicts of interest in this work

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OSTEOARTHRITIS AFFECTING HEALTH-RELATED QUALITY OF LIFE AMONG OLDER PATIENTS

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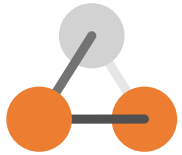
Presentation Flow

Introduction

Methods



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Introduction

- Background
- Study Rationale
- Study Objectives

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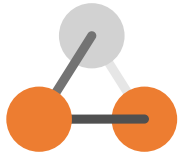

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Background

Musculoskeletal Disorders (MSD)

- Disorders or injuries of joint, muscles, tendons, cartilages, nerve, or spinal disc
- Typically characterized by pain, limitation of mobility, dexterity, lower ability to work
- Affects around 1.71 billion people worldwide

Osteoarthritis (OA)

- One of the most disabling subtype of MSD in which the tissues break over time
- 3rd most rapidly rising condition associated with disability after diabetes and dementia
- OA patients experience greater pain, fatigue, activity limitations, and disability levels

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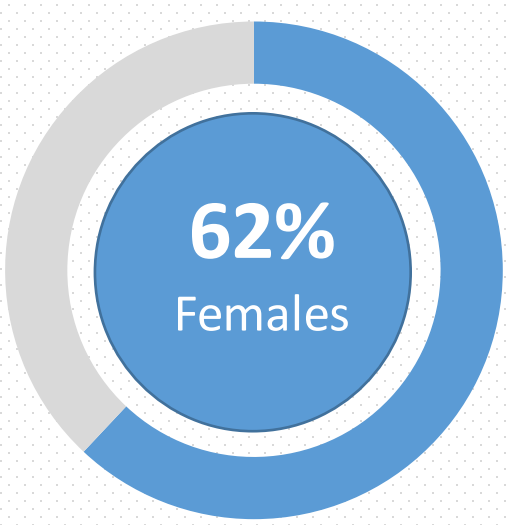
Burden of Osteoarthritis

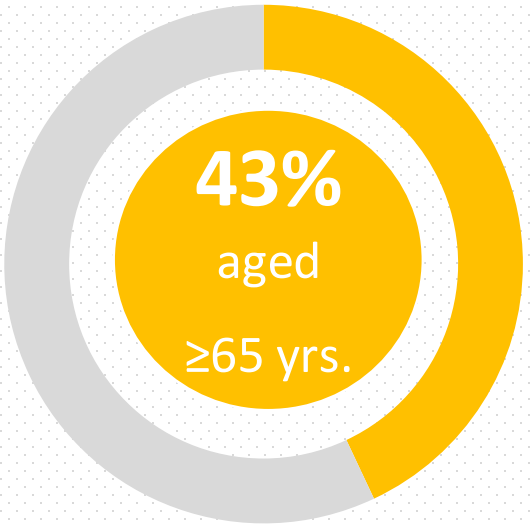
32.5 Mn US adults affected by OA

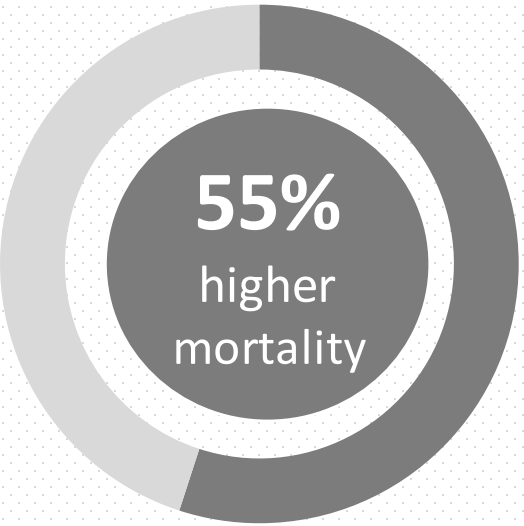
$136 Bn Annual total costs of OA

11.4% of all adults will experience arthritis-attributable activity limitations by 2040

$11,000 Annual all-cause per patient direct costs







Study Rationale

- As the world population ages, the prevalence of OA is expected to rise.
- The symptoms of OA causes severe physical limitation and mental strain on patients.
- Limited data regarding the **health-related quality of life (HRQoL)** of OA patients in the US over recent years.
- A better understanding of the impact of OA on HRQoL as compared to other MSDs may help in designing more appropriate intervention focused on OA patients.

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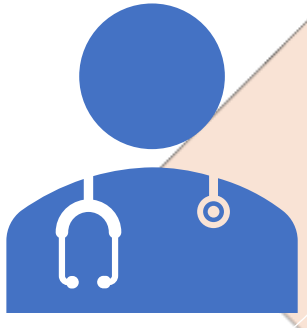
Objectives



Primary Objective:

To assess the difference in HRQoL among older patients suffering from OA vs. those suffering from other MSDs

Secondary Objective:

To identify the HRQoL disparities associated with sociodemographic risk factors among OA patients vs. those suffering from other MSDs

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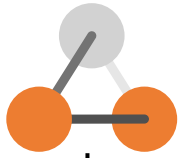

- Study design and data source
- Patient identification
- Outcomes and covariates
- Statistical analysis

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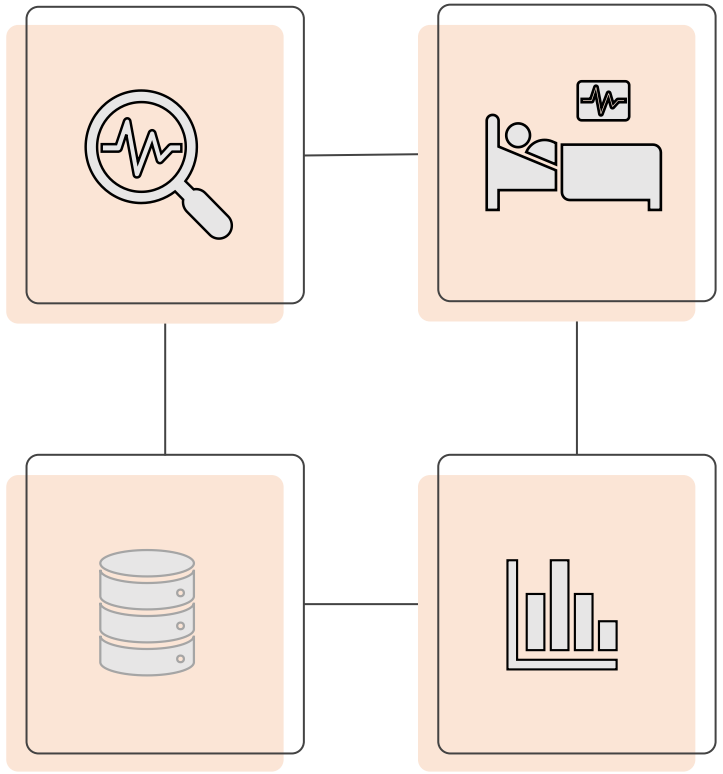
Methodology And Outcomes

Study Design

Retrospective observational cross-sectional study

Data Source

2011-2019 Medical Expenditure Panel Survey **(MEPS)** Household Components (HC) data



Patient Population

Patients aged ≥ 50 years diagnosed with OA (cases) and other MSDs (controls) using ICD codes

Outcome Measures

- Physical Component Summary (PCS) Score
- Mental Component Summary (MSC) Score

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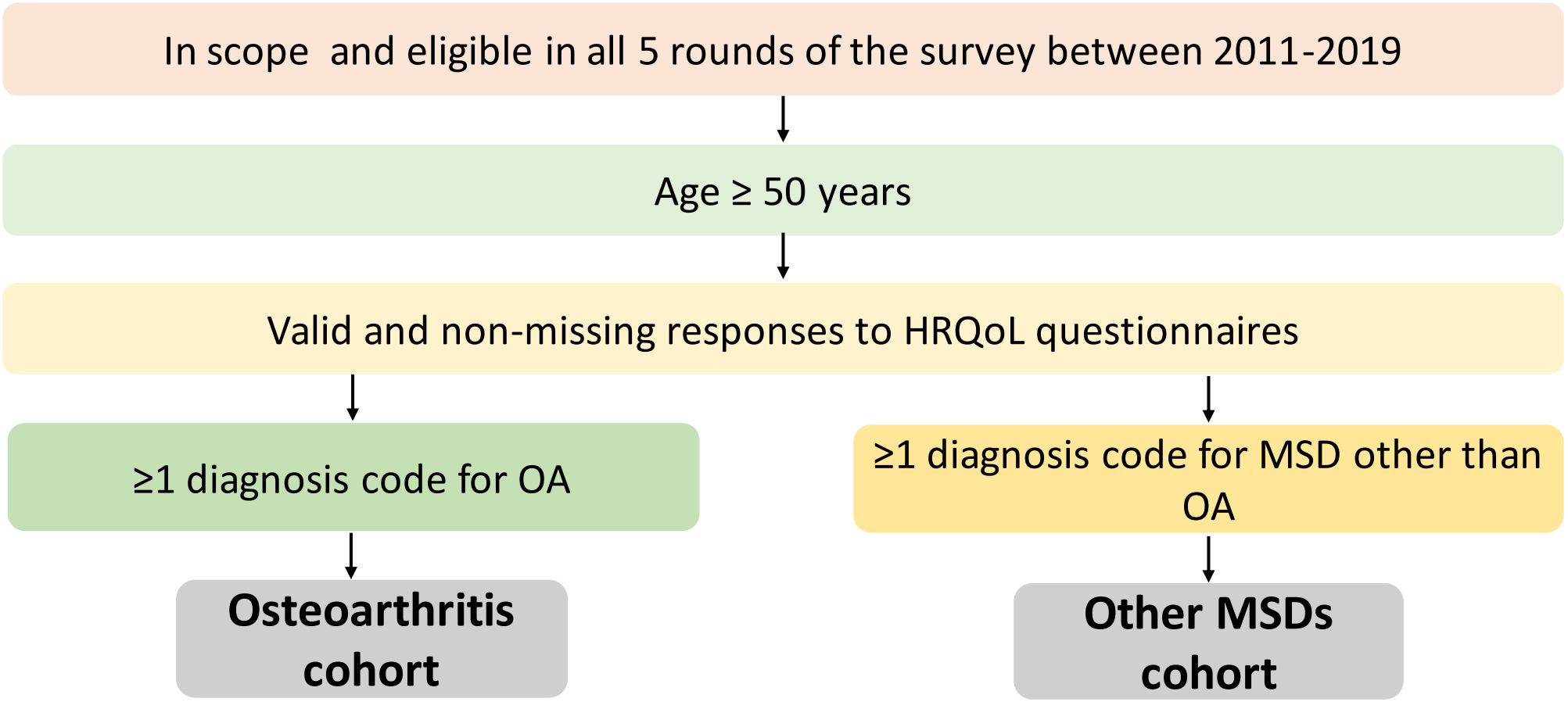
Cohort Selection Criteria



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Outcomes and Covariates

Outcomes

Following components from Short-Form 12 Version 2 (SF-12v2)/ Veterans RAND 12 (VR-12) questionnaire were used

- Physical Component Summary (**PCS**) scores
- Mental Component Summary (**MCS**) scores

Covariates

- Age
- Sex
- Race
- Region
- Type of insurance
- Educational qualifications
- Family income level
- Industry of employment
- Priority conditions count

Statistical Analysis

Step 1

Inverse Probability of Treatment Weighting (IPTW) to adjust for the confounding effect of observed covariates

Step 2

IPTW-adjusted Multivariable Regression to assess the difference in PCS and MCS scores among OA vs. other MSD patients

Step 3

Covariate adjusted analysis to identify the **differential impact** of OA (vs. MSDs) on HRQoL between **sociodemographic risk factors**

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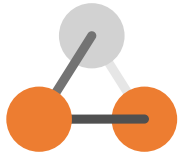

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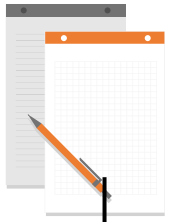

Conclusion

Primary Outcomes

- Cohort Selection Results
- Patient Characteristics
- Adjusted Multivariable Results Analysis on HRQoL

Secondary Outcome

- Interaction Effect of Potential Risk Factors

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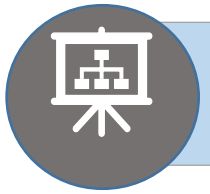
Cohort Development



Patients diagnosed with MSD related diseases
N= 81,363 [WAN: 96,350,401]

Osteoarthritis cohort N (%) [Weighted annualized N]	**Patients Excluded**	**Other MSD cohort** N (%) [Weighted annualized N]
≥ 1 diagnosis claim for OA **24,208 (29.75%)** [28,622,537]		≥ 1 diagnosis claim for MSD other than OA **57,155 (70.25%)** [67,727,865]
20,567 (84.96%) [24,505,946]	Age < 50 years	**29,353 (51.36%)** [35,355,474]
20,207(98.25%) [24,505,946]	Invalid and missing survey weights	**28,862 (98.33%)** [35,355,474]
18,860 (93.33%) [22,904,429]	Invalid responses to HRQoL questionnaire	**26,400 (91.47%)** [32,249,057]

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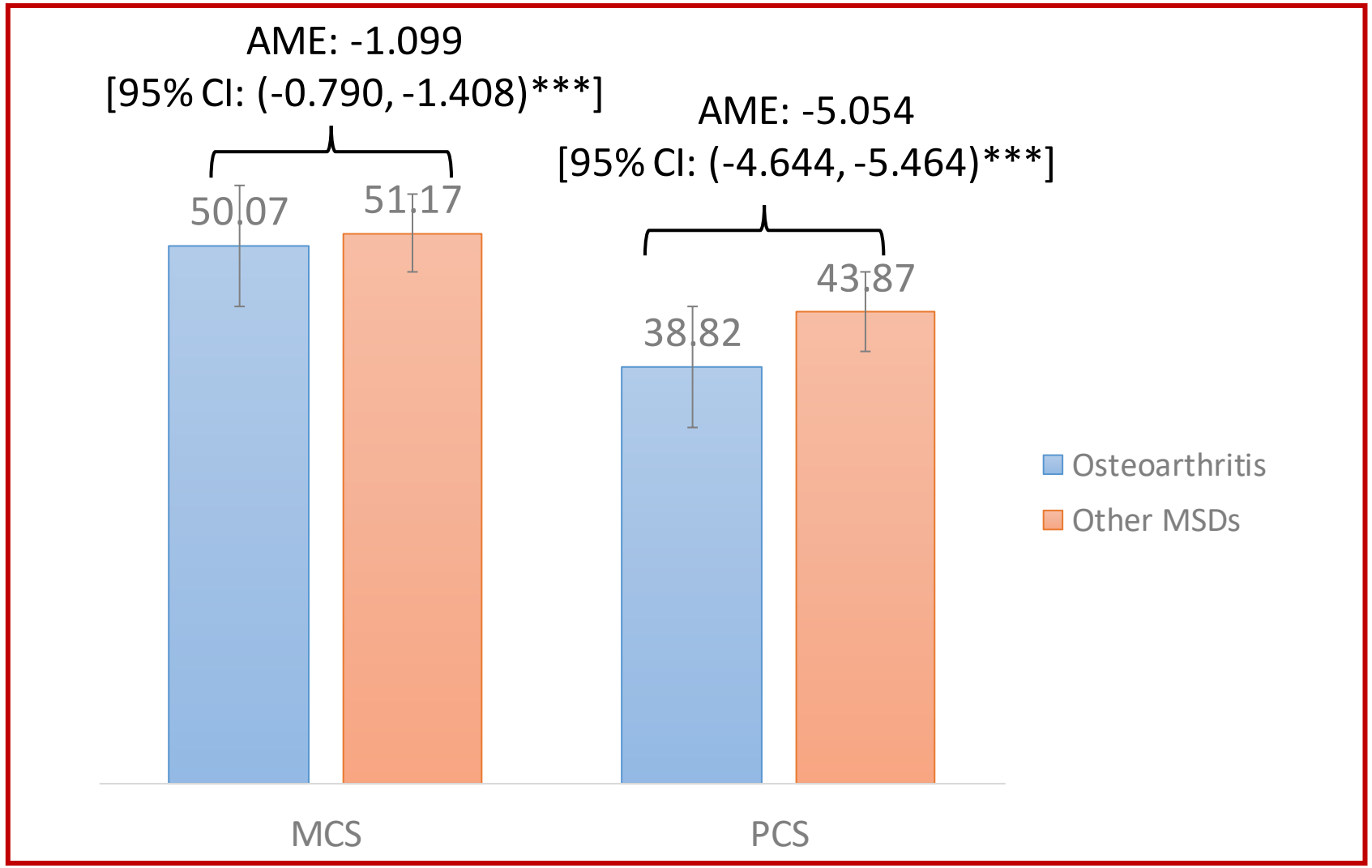
WAN: Weighted annualized number of observation

Patient Characteristics

- Patients with **OA**, on an average were **older** than patients with **other MSDs**
- **Majority of the patients** in both the groups were
  - **Females**
  - **Whites**
  - **Insured by a private plan**
- **OA** patients, on an average had higher **priority conditions count** and **unemployment rate** than **other MSD** patients

Adjusted Analysis Results for HRQoL



OA patients reported poorer physical and mental health than other MSD patients, with higher magnitude of poor physical health

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AME: Average marginal effect; CI: Confidence Interval MCS: Mental Component Summary; PCS: Physical Component Summary
** $p < 0.05$, *** $p < 0.01$

HRQoL Disparities Associated with Risk Factors

	Mental Component Summary	Physical Component Summary
 **Race**	**Hispanic** (vs. White) [AME: -1.710 ***]	NS
 **Gender**	**Male** (vs. Female) [AME: -0.662 **]	NS
 **Age-group**	**50-64 years** (vs. ≥ 65 years) [AME: -0.988 ***]	NS
 **Industry type**	**Blue-collar jobs** (vs. unemployed) [AME: -0.762 **]	**White-collar jobs** (vs. unemployed) [AME: -0.645 **]

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AME: Average marginal effect; NS: Non-significant effect
** $p < 0.05$, *** $p < 0.01$

Introduction

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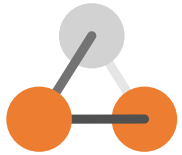

Results

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- Discussion
- Strengths and Limitations
- Conclusion

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Discussion

- OA patients had poorer physical and mental health status compared to other MSD patients
- A published study (Zhao et al. 2019) comparing patients with and without OA reported:
  - ✓ **Lower PCS** score among OA patients
  - ✓ **Comparable MCS** scores between the groups
- Future research needed to identify the factors associated with deteriorated HRQoL among OA patients

Strengths and Limitations

STRENGTHS

- **Nationally representative** findings on humanistic burden
- One of the very few studies to assess i**ncremental humanistic burden** of OA vs. other MSDs after accounting for a comprehensive list of confounders

LIMITATIONS

- **Inherent biases** of survey data -missing data, and recall bias
- **Under-reporting and underestimation of burden -** Cohorts identified using diagnosis codes
- **Threat to external validity** - includes only prevalent non-institutionalized MSD patients

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Conclusions

- OA is associated with decreased overall HRQoL as compared to other MSDs
- OA patients experience greater impact on their physical health
- Sociodemographic characteristics associated with greater reduction in MCS score among OA patients :
  - ✓ Hispanic race
  - ✓ Male gender
  - ✓ 50-64 years age category
  - ✓ Blue-collared job
- White-collared jobs affected the PCS score reductions in OA patients

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Thank You!

Questions/Comments?

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