Sociodemographic and Clinical Predictors of Prescription Opioid Use in a Longitudinal Community-Based Cohort Study of Middle-Aged and Older Adults

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BACKGROUND

- Despite declining opioid prescribing rates in the United States, the annual prevalence of prescription opioid use in adults ≥50 years old is estimated to be 40%, higher than that of younger adults (ages 18-29 years, 36%).
- In addition, opioid misuse among adults ≥65 years old is increasing, which is particularly concerning given their higher prevalence of chronic pain and vulnerability to opioid-related harms (i.e., falls, unintentional overdose).
- As the American population ages, understanding factors that contribute to overall opioid use is a necessary first step in the determination and mitigation of inappropriate prescribing and opioid-related harms.
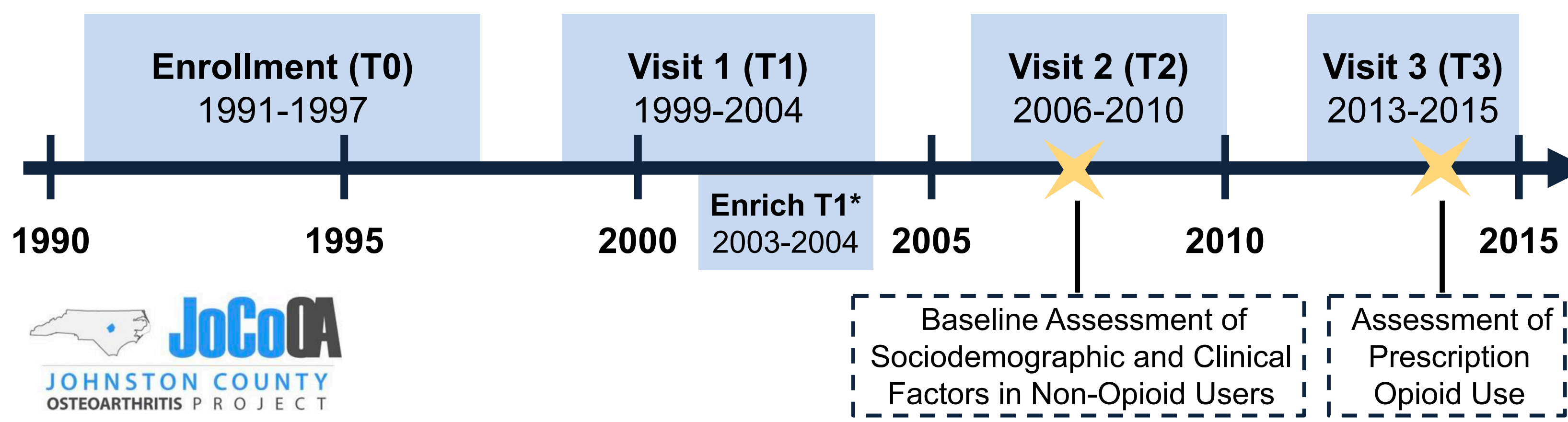
OBJECTIVE

- To assess predictors of prescription opioid use in a community-based cohort of middle-aged and older adults with a high prevalence of chronic pain.

METHODS

Study Participants & Data Collection

- This study included participants from the Johnston County Osteoarthritis Project (JoCoOA), a community-based longitudinal cohort study of residents in predominantly rural Johnston County, North Carolina.
- JoCoOA enrolled a representative sample of African American (AA) and White civilian adults aged ≥45 years, regardless of osteoarthritis status (T0: n=3,187, T1* enrichment: n=1,015); follow-up occurred approximately every 5 years.
- Participants included in the analysis (n=786) completed consecutive T2 and T3 follow-up visits, were not missing T2 or T3 medication data, and did not report using prescription opioids at T2.

Enrollment (T0) 1991-1997 | Visit 1 (T1) 1999-2004 | Enrich T1* 2003-2004 | Visit 2 (T2) 2006-2010 | Visit 3 (T3) 2013-2015

Baseline Assessment of Sociodemographic and Clinical Factors in Non-Opioid Users

Assessment of Prescription Opioid Use

METHODS

Potential Predictors of Opioid Use (T2; 2006-2010)

Self-Reported Variables: age, sex, race, employment status, educational attainment (years of formal schooling), marital status (unmarried includes never married, separated, divorced, widowed), insurance status	
BMI	body mass index, computed from measured height, weight
Household Poverty Rate	percentage of households in a Census block group with income below poverty level, addresses geocoded to a block group
History of Depressive Symptoms	participant report of doctor, nurse, health professional telling them they have/ever had depression and/or score≥16 on the Center for Epidemiologic Studies Depression Scale (CES-D; range 0-60)
Perceived Social Support	quantified with Strong Ties Measure of Social Support (range 0-20); moderate/poor[<19], strong[≥19]
Pain Catastrophizing	an exaggerated negative cognitive state that arises in response to actual/anticipated pain, measured with the Pain Catastrophizing Helplessness Subscale (range 0-25); high[≥15], moderate/low[<15]
Pain Sensitivity	operationalized as pressure-pain threshold (PPT) measured during T2 visit using a mechanical pressure-based dolorimeter; sensitive[<4kg], normal[≥4kg]
Polypharmacy	≥5 medications, determined using T2 medications questionnaire; participants showed research staff all prescription and over-the-counter (OTC) medications used on regular or as-needed basis

Opioid Use (T3; 2013-2015)

- Ascertained from T3 medications questionnaire, where medication names for all prescription and OTC medications used on regular or as-needed basis were documented by research staff.
- Medication names reviewed for generic and brand name opioid analgesics: codeine, fentanyl, hydrocodone, hydromorphone, meperidine, methadone, morphine, oxycodone, oxymorphone, tramadol.

Statistical Analysis

- Univariable logistic regression was used to estimate odds ratios (OR) and 95% confidence intervals (CIs) for the crude association between each variable and opioid use. Variables significantly associated with opioid use in univariable models (p<0.05) were included in a multivariable logistic regression model to estimate adjusted ORs (aOR) and 95% CIs.

RESULTS

Participant Characteristic[a]	Opioid Use	No Opioid Use	Univariable Models OR	(95% CI)	p-value	Multivariable Model aOR	(95% CI)	p-value
Age (years), n (%)								
50–60	30 (17.2)	144 (82.8)	**2.23**	**(1.22, 4.08)**	**0.009**	**2.52**	**(1.08, 5.88)**	**0.033**
60–69	50 (13.2)	328 (86.8)	1.63	(0.94, 2.82)	0.079	1.70	(0.87, 3.33)	0.119
≥70	20 (8.5)	214 (91.5)	ref.			ref.		
Sex, n (%)								
Male	24 (9.3)	235 (90.7)	ref.			ref.		
Female	76 (14.4)	451 (85.6)	**1.65**	**(1.02, 2.68)**	**0.043**	1.27	(0.72, 2.24)	0.406
Race, n (%)								
White	65 (11.9)	480 (88.1)	ref.					
African American	35 (14.5)	206 (85.5)	1.26	(0.81, 1.95)	0.315			
Body Mass Index, n (%)								
< 30 kg/m²	28 (7.9)	328 (92.1)	ref.			ref.		
≥ 30 kg/m²	72 (16.7)	358 (83.3)	**2.36**	**(1.49 , 3.74)**	**<0.001**	1.59	(0.95, 2.67)	0.079
Educational Attainment, n (%)								
≥ 12 years	82 (12.1)	594 (87.9)	ref.					
< 12 years	18 (17.1)	87 (82.9)	1.50	(0.86, 2.62)	0.155			
Employment Status, n (%)								
Employed/Retired	75 (10.9)	612 (89.1)	ref.			ref.		
Unemployed	25 (26.3)	70 (73.7)	**2.92**	**(1.74, 4.88)**	**<0.001**	1.31	(0.65, 2.62)	0.453
Household Poverty Rate, n (%)								
<12%	30 (10.1)	266 (89.9)	ref.					
12%–24%	51 (13.4)	329 (86.6)	1.37	(0.85, 2.22)	0.193			
≥25%	19 (17.3)	91 (82.7)	1.85	(0.99, 3.45)	0.052			
Marital Status, n (%)								
Married	53 (10.8)	440 (89.2)	ref.					
Unmarried[e]	41 (15.6)	222 (84.4)	1.53	(0.99, 2.38)	0.056			
Depressive Symptoms, n (%)								
No	56 (9.1)	561 (90.9)	ref.			ref.		
Yes	44 (27.8)	114 (72.2)	**3.87**	**(2.48, 6.02)**	**<0.001**	**2.00**	**(1.17, 3.43)**	**0.012**
Social Support, n (%)								
Strong	39 (9.5)	371 (90.5)	ref.			ref.		
Moderate/Poor	56 (15.9)	296 (84.1)	**1.80**	**(1.16, 2.78)**	**0.008**	1.24	(0.76, 2.04)	0.385
Pain Catastrophizing, n (%)								
Normal	47 (8.6)	502 (91.4)	ref.			ref.		
High	51 (23.1)	170 (76.9)	**3.20**	**(2.08, 4.94)**	**<0.001**	**2.17**	**(1.33, 3.56)**	**0.002**
Pain Sensitivity, n (%)								
Normal	59 (10.5)	503 (89.5)	ref.			ref.		
High	35 (18.0)	159 (82.0)	**1.88**	**(1.19, 2.96)**	**0.007**	1.24	(0.72, 2.13)	0.436
Health Insurance, n (%)								
Private	30 (8.9)	307 (91.1)	ref.			ref.		
Public	46 (18.0)	209 (82.0)	**2.25**	**(1.38, 3.69)**	**0.001**	1.38	(0.78, 2.46)	0.270
Uninsured	22 (12.3)	157 (87.7)	1.43	(0.80, 2.57)	0.225	1.26	(0.63, 2.49)	0.513
Polypharmacy, n (%)								
0–4 Medications	26 (6.7)	360 (93.3)	ref.			ref.		
≥5 Medications	74 (18.5)	326 (81.5)	**3.14**	**(1.96, 5.04)**	**<0.001**	**2.16**	**(1.24, 3.77)**	**0.007**

[a] All percentages are row percentages, out of the total number of participants within the category of each characteristic

- Among 786 JoCoOA participants who were non-opioid users at baseline:
  - 66 years old on average [standard deviation=7.4; range=50-88]
  - 67% women, 31% AA, 55% obese based on BMI
  - 20% with history of depressive symptoms, 46% felt bothered at least "once in a while" by a lack of social support
  - 28% reported having catastrophic thoughts related to pain
  - Polypharmacy was prevalent in 51% of participants
- At follow-up, **13%** (n=100) of participants were using prescription opioids
- Significant independent predictors of opioid use included: younger age, high pain catastrophizing, polypharmacy, and a history of depressive symptoms.

CONCLUSIONS

- Contributing to the fundamental opioid research that is needed on middle-aged and older adults, the simultaneous assessment of a breadth of clinical and sociodemographic factors identified underlined polypharmacy, pain catastrophizing, and depressive symptoms as modifiable predictors of prescription opioid use.
- Among patients ≥50 years old with chronic pain, our results support: 1) assessing these factors during clinical encounters and 2) providing alternative treatment approaches, such as behavioral interventions and pharmacological review.

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