HEALTH CARE EXPENDITURE & HEALTH-RELATED QUALITY OF LIFE OF MUSCULOSKELETAL PAIN PATIENTS ON OPIOIDS VERSUS NSAIDS

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Introduction

- United States citizens constitute about 5% of the world population, yet, consume about 80% of the world's opioid supply
- According to the CDC, almost 218,000 people died in the US from overdoses related to prescription opioids from 1999 to 2017.
- Evidence suggests that opioids are not superior to nonopioids for improving pain-related function.

Study Aims

- To determine the association between health care expenditure and health-related quality of life (HRQoL) among musculoskeletal pain patients on opioids, nonsteroidal anti-inflammatory drugs (NSAID), and opioid-NSAID combination products
- Hypothesis: Opioid users alone or in combination will be associated with higher healthcare expenditure and worse HRQoL

Methods

Study Population:

- Medical Expenditure Panel Survey (MEPS) was used for this study.
- Data included healthcare expenditure and patient-reported outcomes of non-institutionalized US citizens over 2-years (2016 & 2017)
- Inclusion: Age ≥18yo and ICD-10 code for musculoskeletal pain
- Exclusion: No record of opioid or NSAID use

Measures:

- Primary outcome: Health care expenditure (2017 US dollars)
- Secondary outcome: HRQoL using physical component score (PCS) and mental component score (MCS) on the 12-item Short Form Survey (SF-12)
- Predictors: Drug class type (opioids alone, NSAID alone, and opioid-NSAID combination), age, sex, race, 2017 family income, perceived health status, mental health status, highest degree obtained, physical limitations, employment status, and having a provider

Statistical Analyses

Analyses:

- Chi-square and ANOVA tests used to assess differences in baseline characteristics. Model build for the final model was performed using a PROC REG
- Modified Park test was used to identify the log-link with a gamma distribution used in the model
- Multiple linear regression models with interactions were used to analyze the data
- Tukey HSD adjustment was used to compare the adjusted costs
- Complex sampling accounted for using sampling weight, strata, and cluster design variables
- Difference of ≥3 points for PCS and MCS on the SF-12 survey is defined as clinically significant
- SAS version 9.4 was used for all statistical analyses

RESULTS

Table 1: Differences Among Drug Groups

Demographics		Opioids N(Column %)	NSAIDs N(Column %)	Combination N(Column %)	P-Value
Age*					<0.0001
	Mean (STD)	53 (20)	46 (22)	49 (19)	
Sex					0.45
	Male	108 (44.95)	325 (41.42)	416 (39.93)	
	Female	166 (55.05)	514 (58.58)	738 (60.07)	
Race*					<0.0001
	Hispanic	44 (10.41)	274 (19.58)	227 (10.53)	
	Non-Hispanic White Only	160 (74.34)	300 (55.20)	632 (73.57)	
	Non-Hispanic Black Only	55 (9.90)	179 (14.51))	231 (11.19)	
	Non-Hispanic Asian Only	5 (1.09)	59 (6.86)	32 (2.03)	
	Non-Hispanic Other/Multiple Race	10 (4.27)	27 (3.86)	32 (3.69)	
Perceived Health Status*					0.0258
	Excellent	24 (8.60)	99 (13.06)	105 (8.85)	
	Very Good	68 (31.03)	225 (29.99)	268 (27.17)	
	Good	85 (31.00)	299 (35.28)	384 (33.26)	
	Fair	69 (21.23)	169 (16.20)	274 (22.72)	
	Poor	25 (8.14)	46 (5.48)	116 (8.00)	
Mental Health Status					0.1991
	Excellent	47 (18.63)	197 (25.15)	237 (21.09)	
	Very Good	80 (31.61)	233 (30.10)	304 (29.44)	
	Good	104 (37.65)	279 (32.33)	401 (33.21)	
	Fair	32 (8.98)	109 (9.91)	166 (13.81)	
	Poor	9 (3.13)	20 (2.51)	39 (2.46)	
Highest Degree					0.1269
	No Degree	52 (13.53)	196 (13.41)	207 (11.32)	
	GED	18 (5.43)	39 (4.23)	63 (4.63)	
	High School Diploma	119 (45.49)	357 (45.46)	512 (44.49)	
	Bachelor's Degree	33 (14.00)	110 (18.06)	162 (18.70)	
	Master's Degree	13 (6.07)	55 (8.61)	78 (8.25)	
	Doctorate Degree	7 (3.76)	15 (2.22)	9 (0.83)	
	Other Degree	29 (11.72)	58 (8.01)	120 (11.79)	
Family Income Level- 2017*					
	Poor/Negative	46 (12.11)	157 (12.26)	257 (15.01)	0.0074
	Near Poor	17 (3.43)	61 (5.54)	68 (4.64)	
	Low Income	63 (22.74)	122 (11.87)	172 (13.63)	
	Middle Income	66 (25.13)	256 (30.77)	303 (25.47)	
	High Income	82 (36.59)	243 (39.56)	354 (41.25)	
Limitation in Physical Functioning*					0.0006
	Yes	114 (36.72)	217 (27.75)	469 (38.92)	
	No	159 (63.28)	619 (72.25)	683 (61.08)	
Employment Status*					0.0175
	Employed	117 (48.70)	467 (57.45)	516 (49.65)	
	Unemployed	156 (51.30)	371 (42.55)	634 (50.35)	
Has a Provider					0.4614
	Yes	249 (91.89)	728 (89.20)	1020 (89.03)	
	No	24 (8.11)	100 (10.80)	126 (10.97)	

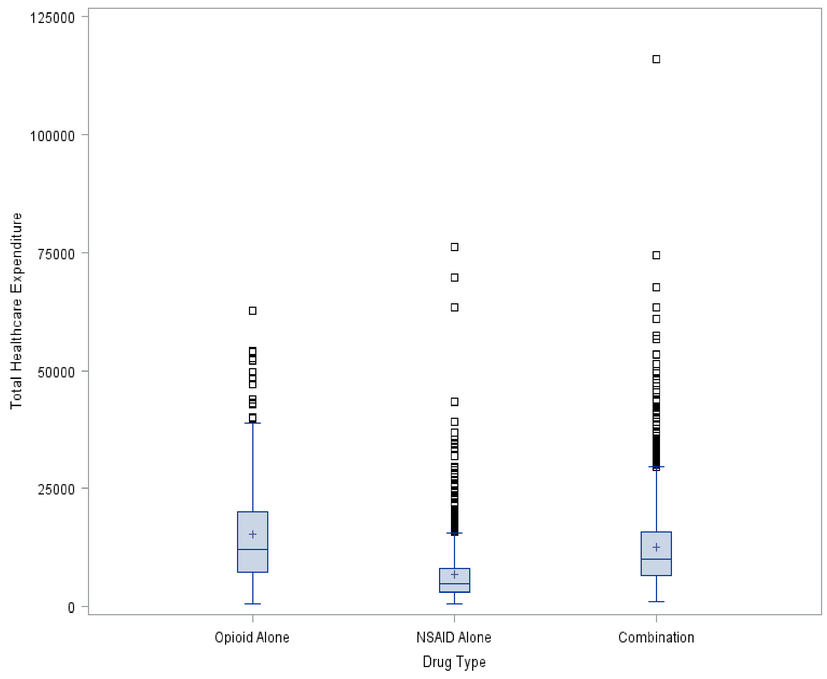
* Indicates significant chi-square p-values <0.05.
**Indicates significant p-value <0.05 as a result of a weighted t-test
N=Unweighted frequency
%= Weighted Column Percent

Table 2: Multivariate Analysis: Annual Health Care Expenditures and HRQoL

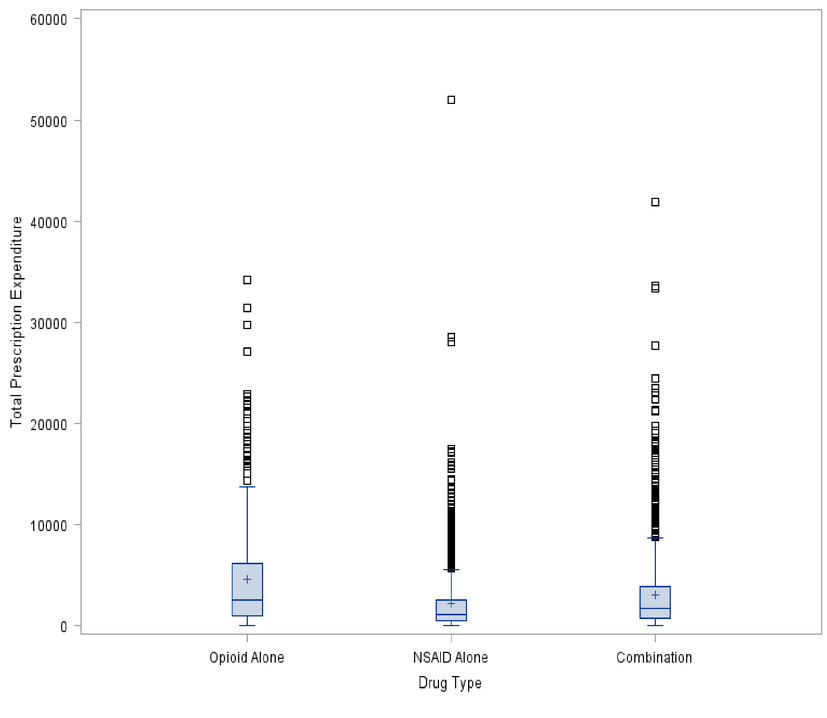
	Opioids		NSAIDs		Combination	
	N	Mean (STD)	N	Mean (STD)	N	Mean (STD)
Total Health Care Expenditure* **	348	$15449 (12049)	1104	$6939 (6818)	1506	$12690 (9762)
Prescription Expenditure* **	348	$4624 (5700)	1104	$2236 (3198)	1506	$3170 (4955)
Physical Component Score (PCS)* **	349	40.91 (9.14)	1106	46.57 (8.02)	1507	43.19 (8.80)
Mental Component Score (MCS)**	348	49.18 (5.68)	1105	50.56 (5.25)	1507	49.55 (5.69)

*** Indicates significance (p-values <0.05) at all levels
Indicates significance (p-values <0.05) at all levels **except between opioid and combination groups
N=Unweighted frequency

TOTAL HEALTHCARE EXPENDITURE BY DRUG TYPE



TOTAL PRESCRIPTION EXPENDITURE BY DRUG TYPE



Conclusion

- Patients with musculoskeletal pain in both opioid groups had significantly higher healthcare expenditures and worse mental and physical health status compared to NSAID only users
- NSAID group had higher PCS scores that were clinically significant compared with both opioid groups
- Difference in MCS scores was statistically significant between NSAIDs and both opioid groups, but this difference was not clinically significant.

Strengths:

- MEPS longitudinal (2-year) design; Large sample size

Limitations:

- Missing data due to survey design of MEPS data
- Unable to account for complex sampling for expenditure variables when using a log-link, gamma distribution

Implications:

- Clinicians should take caution in prescribing opioids to musculoskeletal pain patients

References:

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