Association between Utilization of Chiropractic Services and Use of Prescription Opioids among Patients with Low Back Pain

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Objective

Among patients with low back pain, to compare recipients of chiropractic services with non-recipients with regard to use of prescription opioid analgesics.

Introduction

The United States is burdened by an epidemic of opioids prescribed for spinal pain, with escalating costs and incidence of adverse events , but no long-term improvement in clinical outcomes. Spinal manipulation as practiced by chiropractors is an effective non- pharmacological approach for care of spinal pain, and the supply of chiropractors as well as spending on spinal manipulative therapy is inversely correlated with opioid prescriptions in younger Medicare beneficiaries. This suggests that increased availability and utilization of chiropractic services could lead to reductions in opioid prescriptions, but it is not known how chiropractic care may influence patient behavior with regard to use of prescription opioids. The purpose of this study was to quantify the association between utilization of chiropractic services for low back pain and use of prescription opioids.

Design & Methods

We hypothesized that recipients of chiropractic services have lower likelihood of filling a prescription for an opioid analgesic, as compared to non-recipients. To test this hypothesis, we employed a retrospective cohort design for analysis of the New Hampshire All-payer Claims Database. The study population was comprised of patients aged 18-99 years residing in New Hampshire, with office visit for low back pain at least twice within 90 days. We excluded subjects diagnosed with cancer.

We identified cohorts of recipients and non-recipients of chiropractic services in 2013. We compared the cohorts with regard to incidence of prescription fills for opioids and associated charges. We employed logistic regression to compare recipients of chiropractic services to non-recipients with regard to likelihood of opioid prescription fill.

We controlled for patient demographics and comorbidities. Because cohort assignment was not randomized, the study was at risk for selection bias, because recipients and non-recipients of chiropractic care may differ with regard to their disposition toward use of prescription medications. To reduce this risk of selection bias, we employed weighted propensity scoring to create equivalent cohorts for comparison.

Opioids Prescribed for Back Pain

Acetaminophen/Codeine	Meperidine HCl
Acetaminophen/Codeine #2	Methadone HCl
Acetaminophen/Codeine #3	Methadone HCl Intensol
Acetaminophen/Codeine #4	Morphine Sulfate
Acetaminophen/Codeine Phosphate	Morphine Sulfate CR
Butalbital	Morphine Sulfate ER
Butalbital Compound	Oxycodone HCl
Codeine Sulfate	Oxycodone HCl CR
Codeine/Acetaminophen	Oxycodone/Acetaminophen
Fentanyl	Oxycodone/Aspirin
Fentanyl Citrate Oral Transmucosal	Oxycodone/Ibuprofen
Hydrocodone Bitartrate	Oxymorphone Hydrochloride
Hydrocodone Bitartrate/ Acetaminophen	Pentazocine/Acetaminophen
Hydrocodone Bitartrate/Homatropine	Pentazocine/Naloxone HCl
Hydrocodone Polistirex/ Chlorpheniramine	Tramadol HCl
Hydrocodone/Acetaminophen	Tramadol HCl ER
Hydrocodone/Homatropine	Tramadol Hydrochloride/ Acetaminophen
Hydrocodone/Ibuprofen	Dihydrocodeine
Hydromorphone HCl	Levorphanol
Hydromorphone HCl Dosette	

Discussion

Few studies have examined the comparative effectiveness of non-pharmacological care for low back pain as an upstream primary care strategy for reducing the use of opioid analgesics. Use of chiropractic care may lead to reduced use of opioid medications among patients with low back pain. Such a finding could exert a positive impact on patient care by pointing to a strategy for reducing unnecessary patient risk, particularly with regard to use of opioids.

Limitations

No dates associated with prescription fills (year only). No diagnoses associated with prescription fills. No way to identify subjects with and without pharmacy coverage. Limited number of covariates available for propensity scoring and modelling.

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Results

Patients with Opioid Prescription Fills

Cohort	N	Patients with Opioid Fills (%)	Patients with No Opioid Fills (%)
Recipients	6,868	1,286 (19)	5,582 (81)
Non-recipients	6,516	2,274 (35)	4,242 (65)

Likelihood of Opioid Prescription Fill

The adjusted likelihood of filling a prescription for an opioid was 55% lower among chiropractic recipients as compared to non-recipients (O.R. 0.45; 95% CI 0.40 - 0.47; p<0.0001).

Charges for Office Visits for Low Back Pain and for Opioid Prescription Fills

	Recipients			Non-recipients				
Charges (Year)	N	Average Charges	SD	N	Average Charges	SD	Difference in Means	ttest pooled P
Clinical (2013)	6,866	$1,513	$5,678	6,478	$6,766	$14,550	5,253	<0.0001
Opioids (2013)	1,523	$154	$563	3,317	$592	$2,107	438	<0.0001
Clinical + Opioids (2013)	1,505	$2,402	$5,256	3,142	$6,818	$9,233	4,416	<0.0001
Clinical (2014)	3,904	$2,066	$7,718	2,906	$6,917	$16,193	4,851	<0.0001
Opioids (2014)	1,286	$204	$579	2,274	$921	$2,816	717	<0.0001
Clinical + Opioids (2014)	841	$3,697	$7,863	1,381	$7,021	$9,495	3,324	<0.0001

Summary & Conclusion

The adjusted likelihood of filling a prescription for a prescription opioid was 55% lower among chiropractic recipients as compared to non-recipients. Average per-person charges for clinical services for low back pain and for prescription opioids were also significantly lower for recipients of chiropractic services.

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