

Project 1: Trends in Veterans Reporting Chronic Pain from 2008 to 2016: A National VA Study

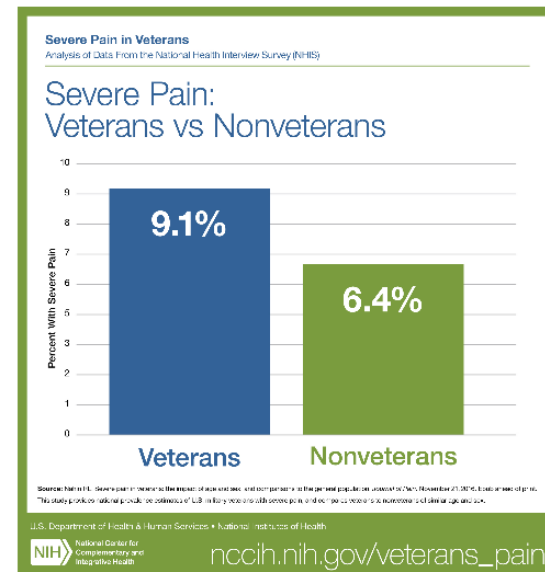
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Chronic Pain is a leading Public Health issue in the VA and the Private Sector

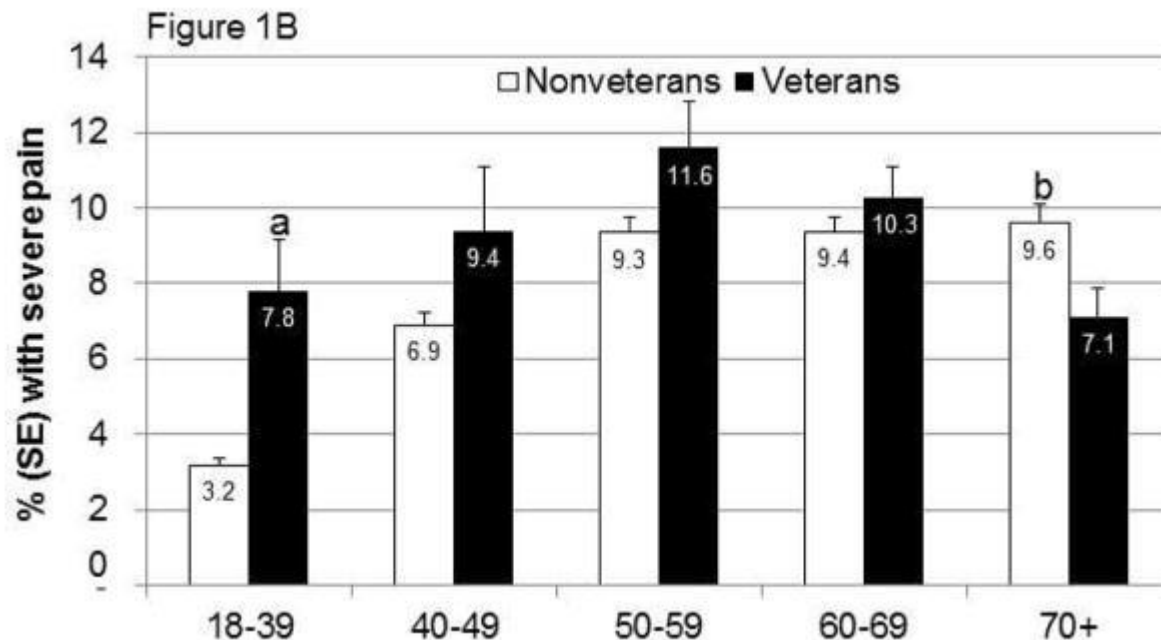
- Affects up to 100 million people in the US at a cost of 635 billion USD.
- Veterans are at an increased risk of Chronic pain compared with non-Veterans.
- “Our analysis showed that veterans were about 40 percent more likely to experience severe pain than nonveterans”
 - Richard L. Nahin, Ph.D

https://nccih.nih.gov/news/press/veterans_pain

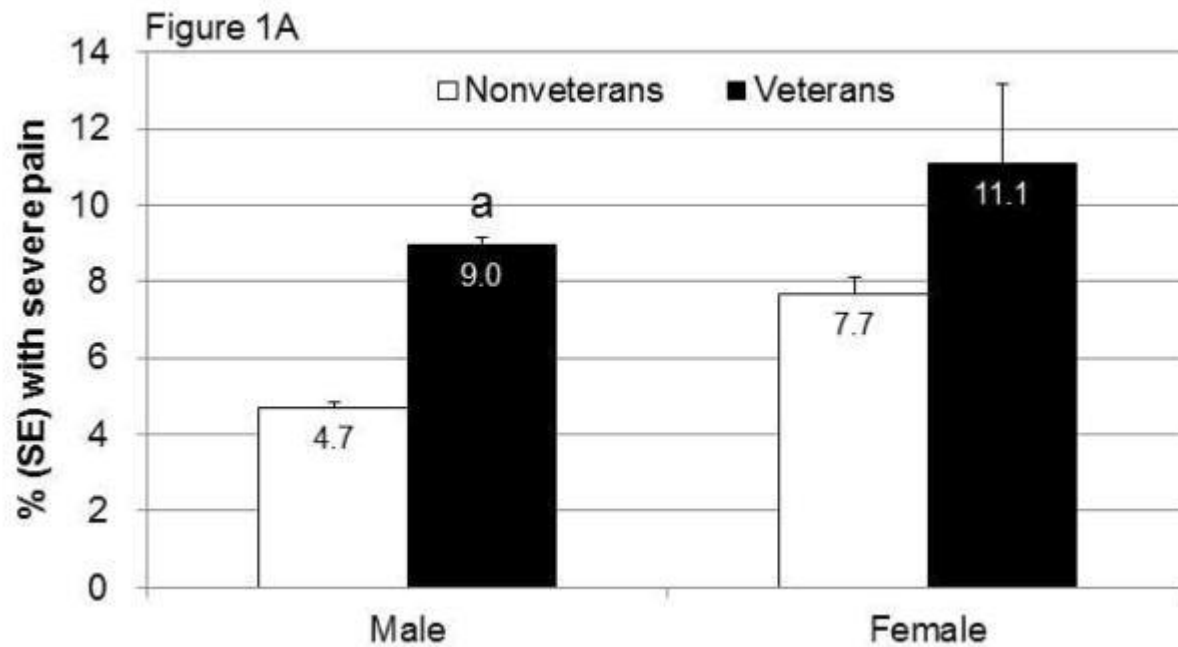


Recent Study Suggests Veterans are at an Increased Risk of Experiencing Chronic Pain

- A recent Study estimated the prevalence of various chronic pain conditions and persistent pain Among Veterans.
 - Based on National Health Interview Survey Data on 67,696 Adults
 - ~6,647 Self-identified Veterans in the Study



Female Veterans are at an Increased Risk of Reporting Severe Pain



Preliminary Motivation for this work.

- There is a public perception that chronic pain is an increasing issue for Veterans and Non-Veterans.
- However, there are no national estimates of the prevalence (or trends in the prevalence) of chronic pain amongst all Veterans engaged in VA care.
- Chronic pain is inherently subjective and longitudinal patient-reported outcome collection across an entire population is logistically challenging.
- A feasible strategy is needed to understand chronic pain trends in the context of a changing Veteran population.
- Can we use the VA EHR to identify the prevalence of chronic pain amongst all Veterans engaged in primary care at the VA?

We seek to answer the following:

- 1) Among US Veterans engaged in primary care at the VA between 2008-2016, is the prevalence of chronic pain (defined by pain scores or conditions related to chronic pain) increasing over time?

Hypothesis: Yes.

- 2) Is the observed change in the prevalence of chronic pain explained by changes in the demographic composition of the VA Population?

Hypothesis: Yes.

- 3) Are specific subsets of Veterans at an increased risk of reporting chronic pain?

Hypothesis: Older Veterans, Female Veterans, and non-white Veterans are at an increased risk of reporting chronic pain.

Analytic Approach Overview:

1. Identify all Veterans engaged in primary care between 2008-2016.
2. Discretize time into year-quarters. At the start of every year-quarter, identify if the Veteran reported chronic pain in the current quarter, or prior 4 quarters.
3. Identify other active chronic illnesses based on the ICD codes in prior 4 quarters or current quarter.
4. Identify age, race, and gender for each Veteran.

Data Source: VA Administrative Data

- National VHA administrative databases based on electronic medical records data.
- National VHA corporate data warehouse (CDW).
 - patient demographic information such as race, age, and gender.
 - records for all inpatient and outpatient episodes of care including a series of ICD9-CM (and 10) codes associated with each visit, the facility the visit occurred in, procedure codes associated with each visit, and a code identifying the clinic in which the encounter occurred.
 - Medication dispensed from VA pharmacies: VA pharmacy benefits management service (PBM).
 - the dates medication was supplied
 - the name of the medication
 - the national drug code (NDC)
 - medication class
 - the days supplied

Data Definitions

- Active Primary Care (at risk cohort):
 - Primary care visit in the 2 years prior to the start of a given quarter
 - No reported date of death prior to the start of the quarter
 - If over two years passed since the last primary care visit, or a date of death was reported, Veterans were censored in the following quarter
 - Veteran demographics, comorbidities, and pain related variables were calculated for each quarter they were at risk.
- Identifying Chronic Pain
 - Moderate Persistent Pain: 3+ pain scores, ≥ 4 , with at least 30 days but no more than 365 days between scores.
 - Severe Persistent Pain: 3+ pain scores, ≥ 7 , with at least 30 days but no more than 365 days between scores.
 - Chronic Pain Related Diagnosis: 2 outpatient or 1 inpatient ICD codes of a given condition in the current quarter or 4 quarters prior.

VA Data (cont)

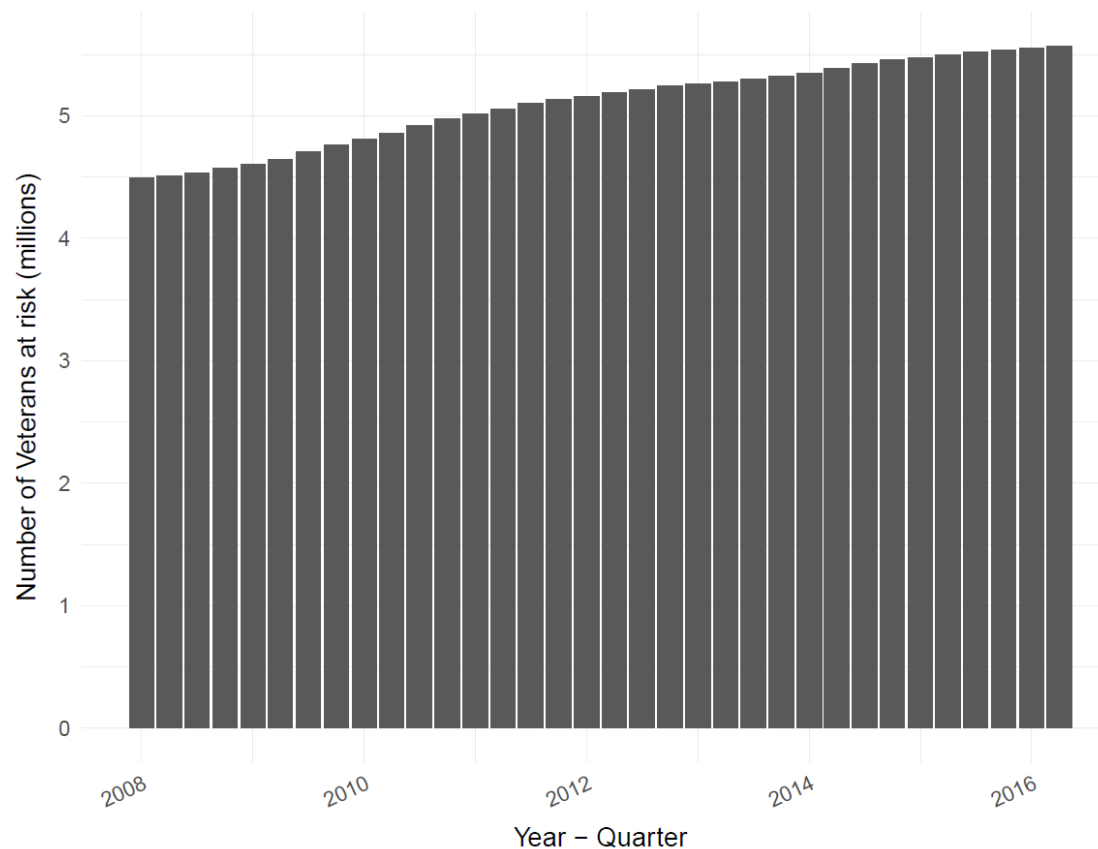
- Central Data Warehouse:
 - Vital Status Files including dates of death
- Patient Reported pain scores using the numeric pain rating scale
 - 0 = No Pain
 - 1-3 = Mild Pain
 - 4-7 = Moderate Pain
 - 8-10 = Severe Pain

Statistical Analyses

- Quasi-Poisson General Linear Model
 - Allows estimation of prevalence ratio.
 - Outcome: Chronic Pain Indicator
 - Model 1: Calendar time as continuous predictor
 - Model 2: Calendar time as continuous predictor, adjusting for Veteran Demographics.

Analytic Cohort Identification

- 9,232,270 Veterans with a primary care visit between 2008-2016 identified.
- 8,174,257 Veterans remained after excluding those with missing demographics (age, gender, race).



How is this cohort of Veterans engaged in primary care changing over time?

Demographics are Shifting.

Variable	2008.Q1	2011.Q1	2015.Q2
n	4489352	5014766	5494268
gender = Male (%)	4236678 (94.4)	4700336 (93.7)	5077348 (92.4)
race (%)			
black	665618 (14.8)	783904 (15.6)	924963 (16.8)
hispanic	273803 (6.1)	314073 (6.3)	369405 (6.7)
other	77686 (1.7)	99496 (2.0)	130385 (2.4)
white	3472245 (77.3)	3817293 (76.1)	4069515 (74.1)
age cat (%)			
[18,35)	280654 (6.3)	410330 (8.2)	545692 (9.9)
[35,45)	299312 (6.7)	352262 (7.0)	430076 (7.8)
[45,55)	605964 (13.5)	645877 (12.9)	670399 (12.2)
[55,65)	1282943 (28.6)	1441625 (28.7)	1081140 (19.7)
[65,75)	865790 (19.3)	977269 (19.5)	1642853 (29.9)
[75,120]	1154689 (25.7)	1187403 (23.7)	1124108 (20.5)

Traditional comorbidities are stable or decreasing.

Variable	2008.Q1	2011.Q1	2015.Q2
cancer (%)	298010 (6.6)	328855 (6.6)	366932 (6.7)
cvd (%)	184382 (4.1)	193521 (3.9)	205375 (3.7)
dementia (%)	49862 (1.1)	62842 (1.3)	66839 (1.2)
diabetes (%)	977198 (21.8)	1090312 (21.7)	1200319 (21.8)
heart failure (%)	182820 (4.1)	190654 (3.8)	206431 (3.8)
ischemic heart disease (%)	683404 (15.2)	680114 (13.6)	643492 (11.7)
liver (%)	9942 (0.2)	12766 (0.3)	15859 (0.3)
pulmonary (%)	484475 (10.8)	529088 (10.6)	571230 (10.4)
pvd (%)	177394 (4.0)	187973 (3.7)	202580 (3.7)
renal (%)	183245 (4.1)	234438 (4.7)	283166 (5.2)

Mental health conditions are generally increasing.

Variable	2008.Q1	2011.Q1	2015.Q2
anxiety (%)	222695 (5.0)	309809 (6.2)	477501 (8.7)
bipolar (%)	109448 (2.4)	151228 (3.0)	175941 (3.2)
concussion (%)	2965 (0.1)	8144 (0.2)	8171 (0.1)
depression (%)	561945 (12.5)	726901 (14.5)	880787 (16.0)
PTSD (%)	353134 (7.9)	496416 (9.9)	668706 (12.2)
Schizophrenia (%)	108153 (2.4)	111760 (2.2)	111399 (2.0)
TBI (%)	12959 (0.3)	16675 (0.3)	27470 (0.5)
suicidal ideation (%)	19521 (0.4)	39266 (0.8)	55152 (1.0)
subs. abuse alcohol (%)	233680 (5.2)	299704 (6.0)	335256 (6.1)
subs. abuse opioid (%)	29315 (0.7)	41256 (0.8)	56700 (1.0)
subs. abuse other (%)	139884 (3.1)	178048 (3.6)	203832 (3.7)

1) Among US Veterans engaged in primary care at the VA between 2008-2016, is the prevalence of chronic pain (defined by pain scores or conditions related to chronic pain) increasing over time?

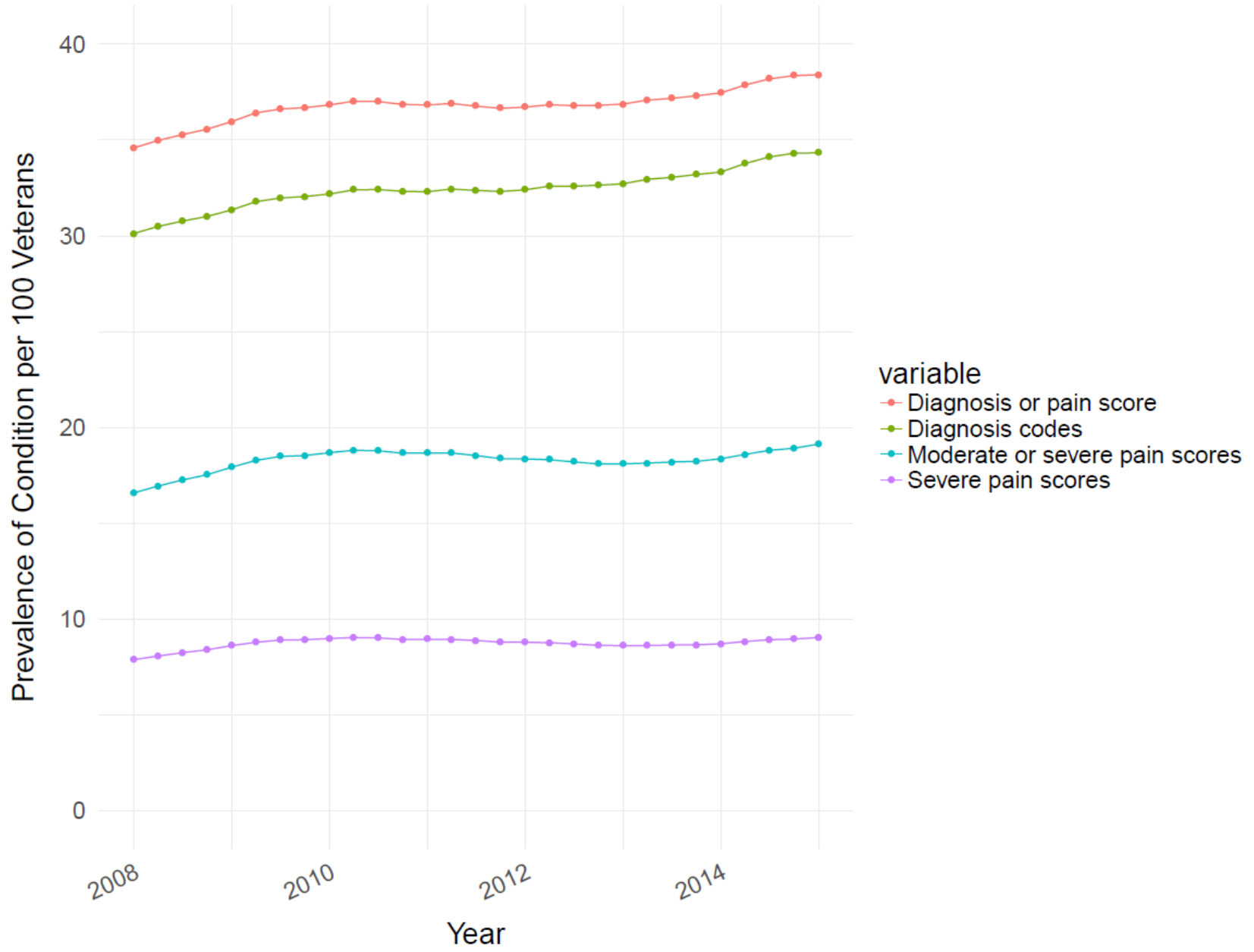
Most conditions related to chronic pain are substantially increasing.

Variable	2008.Q1	2011.Q1	2015.Q2
Abdominal Pain (%)	37614 (0.8)	49403 (1.0)	64201 (1.2)
Arthropathy (%)	73828 (1.6)	69200 (1.4)	80008 (1.5)
back or neck pain (%)	572444 (12.8)	736036 (14.7)	932059 (17.0)
Bladder pain (%)	649 (0.0)	878 (0.0)	1056 (0.0)
Fibromyalgia (%)	21405 (0.5)	31149 (0.6)	34904 (0.6)
Osteoarthritis (%)	472363 (10.5)	518054 (10.3)	538990 (9.8)
Gout (%)	100127 (2.2)	114265 (2.3)	128485 (2.3)
pain headache migraine (%)	88589 (2.0)	124105 (2.5)	164247 (3.0)
Joint Pain (%)	338026 (7.5)	472248 (9.4)	584556 (10.6)
Limb Pain (%)	36373 (0.8)	48245 (1.0)	116210 (2.1)
Neuropathic Pain (%)	138781 (3.1)	178888 (3.6)	247266 (4.5)
Other Pain (%)	22205 (0.5)	63340 (1.3)	124409 (2.3)

Chronic Pain Indicators are Increasing.

Chronic Pain Indicator	2008.Q1	2011.Q1	2015.Q2
Pain Score or Diagnosis (%)	1552439 (34.6)	1846665 (36.8)	2116705 (38.5)
Diagnosis (%)	1351959 (30.1)	1619707 (32.3)	1890035 (34.4)
Pain Score (%)	744176 (16.6)	935916 (18.7)	1065625 (19.4)
Pain score-severe (%)	353462 (7.9)	448267 (8.9)	503426 (9.2)

Chronic Pain Over Time.



2) Is the observed change in the prevalence of chronic pain explained by changes in the demographic composition of the VA Population?

Quasi-Poisson chronic pain modeling summary:

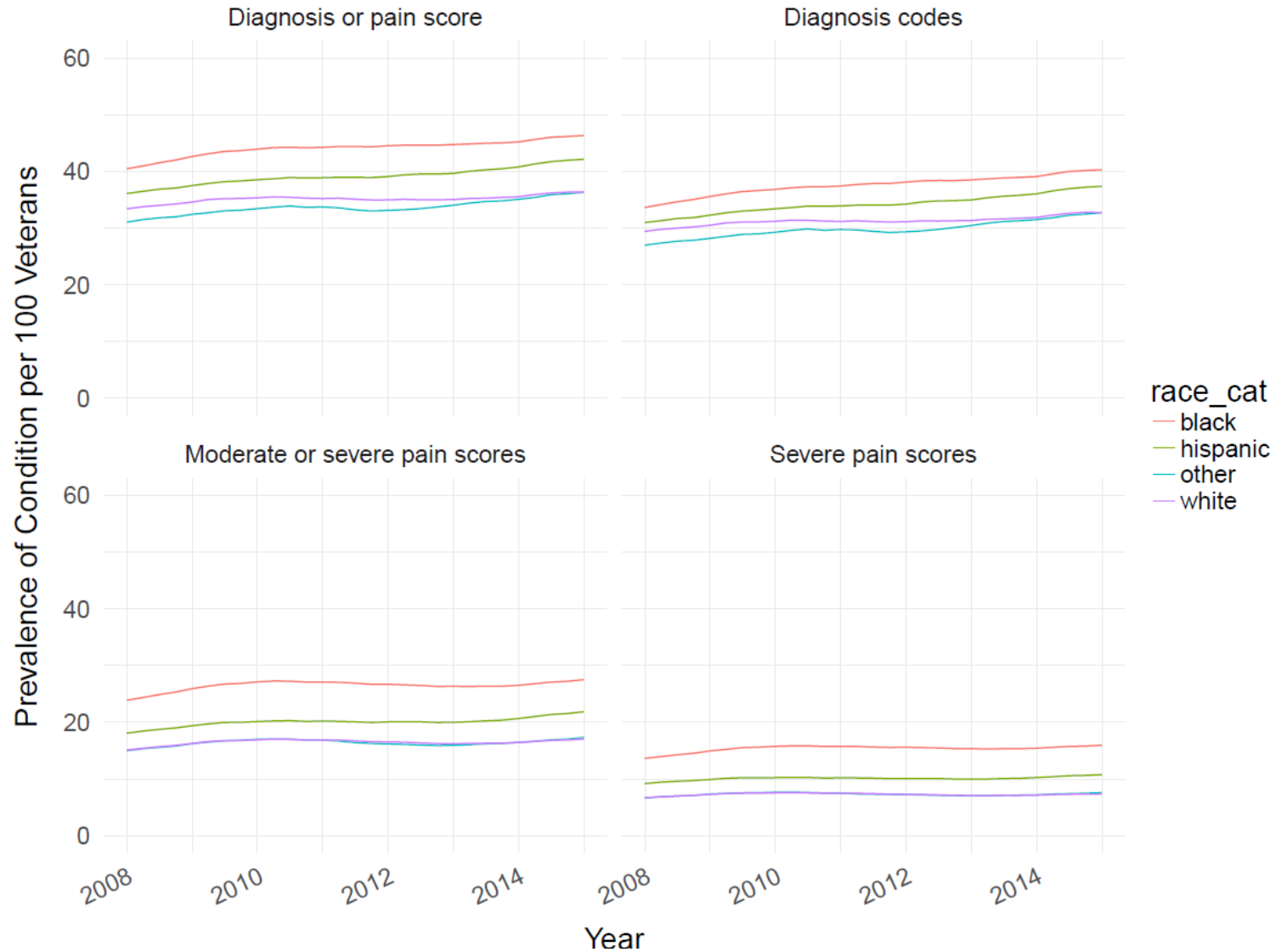
- Compared with 2008, the prevalence of Chronic pain in 2015 is **8.6% Higher**.
- After adjusting for changes in demographics, the risk ratio over the same time period **increases to 10.5%**.
- There is a mild-moderate increase in the prevalence of chronic pain between 2008 and 2015. This increase is not due to changes in underlying Veteran demographics.

Are specific subsets of
Veterans at an increased risk of
reporting chronic pain?

Female Veterans are more Likely to Report Chronic Pain.



Non-white are more Likely to Report Chronic Pain.



Middle-aged Veterans at Highest Risk to Report Chronic Pain



Results Summary.

- Chronic pain prevalence is high among Veterans in primary care at the VA:
 - ~1 in 5 Veterans report persistent pain
 - ~1 in 10 Veterans report severe persistent pain
 - ~1 in 3 Veterans have been diagnosed with a condition related to chronic pain.
- The prevalence of chronic pain and mental health comorbidities in the VA is increasing.
- The VA is becoming more female, more non-white, and the age distribution is shifting in the past 10 years. However, change in the prevalence of chronic pain are not explained by these demographic shifts.
- Female gender, non-white race, and age 40-55 are associated with higher rates of chronic pain in the VA by pain scores or related diagnosis codes.

Implications.

- The absolute number of Veterans seeking care in the VA is increasingly substantially.
- These Veterans are increasingly complex patients to care for, for reasons specific to the VA population:
 - Increase in chronic pain conditions and pain scores.
 - Increase in mental health comorbidities.
- Community care providers may not be adequately equipped to care for these types of Veterans.
- Demographics shifts alone do not explain the increase in chronic pain among VA patients.
 - Possible awareness/diagnosis bias.
 - Resource demand in the VA may continue to shift according to these trends.

Strengths/Limitations

- First national study using a full cohort covering 8+ years of all Veterans in Primary care, focused on chronic pain.
- All data used was observational EHR data.
- Presumption of no chronic pain if there was no utilization!
- Limited to Veterans in 'active primary care'

Project 2: A National Qualitative
Study to Understand Barriers
and Facilitators of Multimodal
Chronic Pain Care for Veterans

Chelsea Leonard

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Background

- Expert guidelines recommend multimodal chronic pain care that utilizes full range of treatment options
- VA Stepped care model for pain management
 - Population based screening
 - assessment and management of chronic pain using the full range of low intensity interventions delivered in primary care settings
 - more intensive treatments targeted to individuals with more complex chronic pain.”
- Substantial variation in the availability and utilization of chronic pain treatment in the Veterans Health Administration (VA)

Study Objectives

- Understand perspectives of healthcare providers and administrators on barriers and facilitators to multimodal chronic pain care in the VA
- Inform development of an intervention to support multimodal chronic pain care in VA

Methods: Sampling

- Identified early and late adopting sites of multimodal chronic pain care
- Purposive sampling at early and late adopting sites, snowball sampling within these sites to identify other key stakeholders

Methods: Interviews and Analysis

- Interview guide designed to identify barriers and facilitators to multimodal pain care
- Practical Robust Implementation and Sustainability Model
- Interviews conducted by phone, audio recorded, transcribed verbatim
- Interview transcripts coded using inductive and deductive conventional content analysis

Results

1) Participants

2) Themes

Participants

Summary Table

Number of Interviews	49
Number of facilities	24
Early adopting facilities	7
Late adopting facilities	9
Medical Centers	12
Urban CBOCs	7
Rural CBOCs	5

Characteristic	N=49 (%)
Role of Participant	
MD/Primary Care	19 (38)
Nurses	16 (32)
Physician Assistant	3 (6)
Psychologist/Psychiatrist	4 (8)
Pharmacist	3 (6)
Social Worker	1 (2)
Program Manager	2 (4)
Chiropractor	1 (2)
Demographics	
Women	27 (55)
Veteran	9 (18)
Race/ethnicity	
White/Caucasian	33 (67)
Black/African American	2 (4)
Mixed/biracial	4 (8)
Asian	3 (6)
Latino/Hispanic	2 (4)
Native Hawaiian	1 (2)
Other	1 (2)
No Data	2 (4)

Themes

1. Temporal shift in pain management from managing pain to monitoring opioid use
2. Competing pressures on primary care teams from expert guidelines, VA policy, facility leadership, and Veterans
3. Lack of time, education, and specialty care support for primary care teams
4. Suggestions

1. Temporal shift in pain management from managing pain to monitoring opioid use



“So we had, when I started, **we had quite a large number of patients who were on very large doses of opioids** [...] The providers that we have now in the clinic have started to **really attempt to wean down the opioid use** and augment it with physical therapy, pain management, acupuncture, any of the other modalities...”

–CNM, late adopting site

1. Temporal shift in pain management from managing pain to monitoring opioid use



“There’s a **huge amount of opioid use within the VA itself** and it has improved with some specific direction [...]I think that the larger amounts of morphine equivalents that, **when I first showed up here 5½ years ago are definitely improved and has decreased”**

–MD, late adopting site

2. Competing pressures on primary care teams from expert guidelines, VA policy, facility leadership, and Veterans



“Well, basically the way things are structured here is that it seems like **the focus [...] seems to be to eliminate narcotic medication at all costs, regardless of the patient’s circumstances as the sole focus.**”

-Psychologist, early adopting site



2. Competing pressures on primary care teams from expert guidelines, VA policy, facility leadership, and Veterans



“When, see, any veteran can go to our local newspaper, any politician can go to our local news and this has happened [...] **our local politician went to our local news and just trashed us, absolutely lied and trashed us and it was all about narcotics [...] so I’ve always felt like the VA should stand up for the VA...**”

— MD late adopting site

2. Competing pressures on primary care teams from expert guidelines, VA policy, facility leadership, and Veterans



“They’re so afraid, there’s so much, there’s so much hostility that this problem will come, it’s like a pendulum, now we were doing fantastic, but the pendulum is now swinging the other way and we’re all afraid, **how can we possibly give good patient care if we’re afraid that our actions will result in our termination”**

-MD late adopting site

3. Lack of time, education, and specialty care support for primary care teams



“Outside of that, that’s where our big struggle is, we have **very limited resources** onsite to assist us.”

-MD, late adopting site

3. Lack of time, education, and specialty care support for primary care teams



“Well, I’m not sure what kind of training is available [...]but at this time, if there is more training available, and you know, **I would like to equip myself with more knowledge and skills to help my patients better and help them with their pain**, so I would welcome that kind of training.”

-Psychologist, early adopting site

3. Lack of time, education, and specialty care support for primary care teams



“...but again it’s a process and it’s slow in coming and nationally, **they’ve got this quota** where you have to have X amount of appointments, **appointments can no longer, can’t be longer than a half hour** and so there’s a lot of barriers to that .”

-Physicians assistant, late adopting site

4. Participant Suggestions

- Public acknowledgment



“And one thing that the VA should do, they should **publicly address this issue** and that’s not just David Shulkin saying we’re gonna deal with the opioid crisis.”

–MD Late adopting site

4. Participant Suggestions

- Information on utility of other modalities



“So, if we have, able to **gather data from the, from other measures**, you know, alternative medicine that helps with pain management that I think that would be helpful...”

–RN, early adopting site

4. Participant Suggestions

- Patient education

“Well, I think what would be important is prior to patients receiving their opioid medication that we make it **mandatory that they have to go through pain management school.**”

-CMO early adopting site

“I would just like to see some **educational information for our patients.** That needs to obviously be you know, fact based and whatever they call that.”

-RN late adopting site

4. Participant Suggestions

- Data/tracking



“I do think it would be nice to see **who of the veterans that are suffering from chronic pain are utilizing the extra resources** and if they’re not, what, be able to know that so we can work with them and see what we can do to make that happen or maybe we need to try something else...”

–MD late adopting site

4. Participant Suggestions

- Multidisciplinary pain teams



“Well, we should have a **dedicated pain specialist**, MD or DO, there should be pain psychologists, we should have a well developed substance abuse treatment program and we don’t [...] we just don’t have the **pain management team** that really we should have when we’re at the same time asking providers to reduce doses of opioids and you know be safer with them...”

–MD late adopting site

Summary

- Little difference between early and late adopters on most topics
- Challenges of pain management in primary care
 - large panel sizes
 - accessibility of additional training
 - leadership support of multimodal pain care
 - Pain management teams
 - Veteran education on opioid safety.
- More support, more data, more training would be helpful

Limitations

- Generalizability
- Sampling issues

Implications

- Primary care providers face several pressures
- Efforts to improve chronic pain management should address organizational *and* patient level challenges

Thank You

- Joseph Frank, Charlotte Nolan, Amy Ladebue, Roman Ayele, Marina McCreight, Bob Kerns, Michael Ho
- Friedhelm Sandbrink
- QUERI

