

Cannabinoids and Health

Module 5

Lecture 2: The Epidemiology of Chronic Pain

The Epidemiology of Pain in the U.S.

- Pain was assessed in the the 2012 National Health Interview Survey, an in-person, household health survey conducted by the National Center for Health Statistic
- A sample of 8,781 people rated:
 - Pain persistence – number of days with pain in the last 3 month
 - How much pain bothered them – a little, a lot, or in-between
- Based on this survey (Nahin, 2015), it was determined that:
 - 126.1 million American adults had chronic pain in the previous 3 months
 - **25.3 million adults reported daily pain**
 - **23.4 million people reported having a lot of pain**

The Epidemiology of Pain in the U.S.

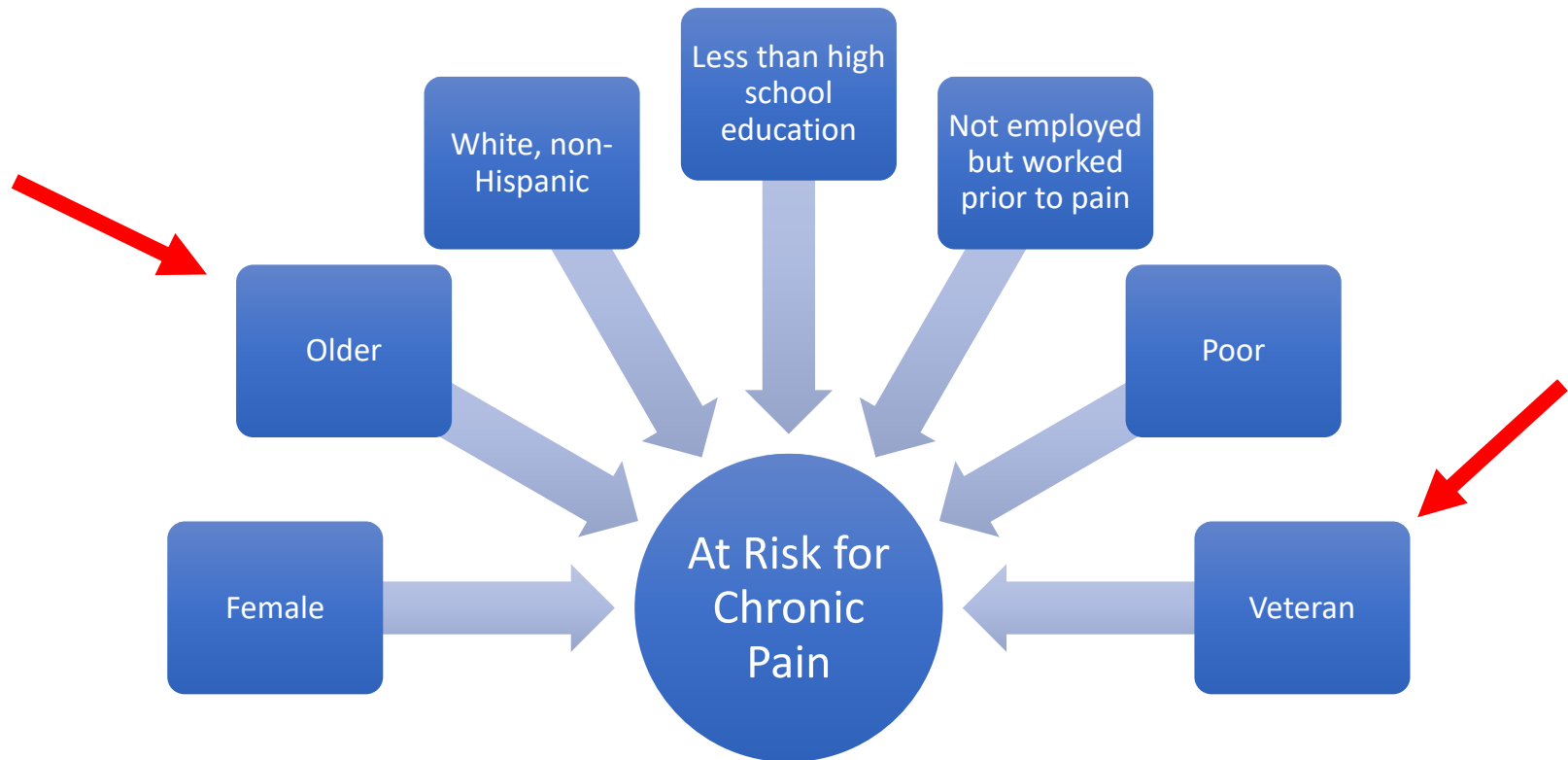
- In the **2016** National Health Interview Survey of 33,028 adults in the US, researchers focused on “high impact chronic pain”
 - defined as chronic pain that limited life or work activities on most days or every day during the past 6 months.
- **20.4% of U.S. adults had chronic pain**
- **8.0% of U.S. adults reported high impact pain (lasting > 3 months while restricting one major activity)**

TABLE. Prevalence of chronic pain* and high impact chronic pain† among U.S. adults aged ≥18 years, by sociodemographic characteristics—National Health Interview Survey, 2016

Characteristic	Chronic pain*			High-impact chronic pain†		
	Estimated no. [§]	Crude % (95% CI)	Age-adjusted [¶] % (95% CI)	Estimated no. [§]	Crude % (95% CI)	Age-adjusted [¶] % (95% CI)
Total	50,009,000	20.4 (19.7–21.0)	19.4 (18.7–20.0)	19,611,000	8.0 (7.6–8.4)	7.5 (7.1–7.9)
Age group (yrs)						
18–24	2,082,000	7.0 (5.8–8.5)	—**	446,000	1.5 (0.9–2.3)	—**
25–44	11,042,000	13.2 (12.3–14.1)	—**	3,681,000	4.4 (3.9–5.0)	—**
45–64	23,269,000	27.8 (26.6–29.0)	—**	10,044,000	12.0 (11.2–12.9)	—**
65–84	11,808,000	27.6 (26.4–29.0)	—**	4,578,000	10.7 (9.9–11.6)	—**
≥85	1,766,000	33.6 (30.1–37.3)	—**	830,000	15.8 (13.2–18.9)	—**
Sex						
Male	21,989,000	18.6 (17.7–19.5)	17.8 (17.0–18.7)	8,276,000	7.0 (6.5–7.6)	6.7 (6.2–7.3)
Female	28,049,000	22.1 (21.2–23.0)	20.8 (19.9–21.6)	11,296,000	8.9 (8.4–9.4)	8.2 (7.7–8.7)
Race/Ethnicity						
Hispanic	5,856,000	15.1 (13.6–16.7)	16.7 (15.2–18.4)	2,754,000	7.1 (6.0–8.3)	7.9 (6.9–9.2)
White, non-Hispanic	36,226,000	23.0 (22.2–23.8)	21.0 (20.3–21.8)	13,230,000	8.4 (7.9–8.9)	7.4 (7.0–7.9)
Black, non-Hispanic	5,148,000	17.9 (16.4–19.6)	17.8 (16.3–19.4)	2,387,000	8.3 (7.2–9.4)	8.1 (7.1–9.2)
Other, non-Hispanic††	2,774,000	13.8 (12.1–15.7)	14.4 (12.7–16.3)	1,326,000	6.6 (5.3–8.1)	7.0 (5.7–8.5)
Education						
Less than high school	7,809,000	26.1 (24.2–28.2)	23.7 (21.7–25.7)	4,069,000	13.6 (12.3–15.2)	12.1 (10.7–13.7)
High school/GED	14,441,000	23.7 (22.5–25.0)	22.6 (21.2–23.9)	5,910,000	9.7 (9.0–10.6)	9.1 (8.4–10.0)
Some college	17,129,000	22.6 (21.5–23.8)	22.9 (21.8–24.0)	6,518,000	8.6 (7.9–9.4)	8.7 (8.0–9.5)
Bachelor's degree or higher	10,383,000	13.4 (12.6–14.3)	12.4 (11.7–13.3)	2,944,000	3.8 (3.4–4.3)	3.5 (3.1–4.0)
Employment status						
Employed	22,085,000	14.7 (14.1–15.5)	14.5 (13.8–15.2)	5,108,000	3.4 (3.1–3.8)	3.2 (2.9–3.6)
Not employed; worked previously	25,737,000	31.5 (30.3–32.7)	29.2 (27.8–30.6)	13,318,000	16.3 (15.4–17.2)	16.1 (15.0–17.3)
Not employed; never worked	2,083,000	15.9 (13.8–18.2)	18.7 (16.1–21.6)	1,192,000	9.1 (7.6–10.9)	11.1 (9.1–13.4)
Poverty status						
<100% FPL	8,017,000	25.8 (24.2–27.6)	29.6 (27.9–31.3)	4,630,000	14.9 (13.6–16.4)	17.5 (16.1–19.0)
100% ≤FPL<200%	11,357,000	26.2 (24.5–27.9)	25.9 (24.2–27.7)	5,375,000	12.4 (11.3–13.6)	12.3 (11.2–13.5)
200% ≤FPL<400%	14,181,000	20.3 (19.2–21.4)	19.3 (18.3–20.4)	5,100,000	7.3 (6.7–8.1)	6.9 (6.2–7.6)
≥400% FPL	16,441,000	16.3 (15.4–17.2)	14.6 (13.8–15.5)	4,438,000	4.4 (4.0–4.9)	3.9 (3.5–4.4)
Veteran						
Yes	6,379,000	29.1 (27.1–31.2)	26.0 (23.5–28.7)	2,258,000	10.3 (9.1–11.8)	9.2 (7.7–11.1)
No	43,519,000	19.5 (18.9–20.2)	19.0 (18.4–19.7)	17,407,000	7.8 (7.4–8.2)	7.5 (7.1–7.9)

See table footnotes on the next page.

Those at greatest risk, as per the National Health Interview Survey



Prevalence of Chronic Pain in the United States

- An internet survey examined the point prevalence of chronic pain
 - 27,035 participants responded
 - **The weighted point prevalence of chronic pain (recurrent pain lasting longer than 6 months) was 30.7%**
- Prevalence was higher for females and increased with age
- Half of respondents with chronic pain experienced daily pain, and average (past 3 months) pain intensity was severe (≥ 7 on a scale ranging from 0 to 10) for 32%
- Low household income and unemployment as significant socioeconomic correlates of chronic pain

The Epidemiology of Chronic Pain Outside the U.S.

- A study of chronic pain in Europe revealed
 - 20% of the European population has chronic pain
 - Prevalence higher for women and increased with age
- Another study found that in developing countries
 - Higher prevalence of chronic pain conditions among females and older persons
 - Chronic pain was similarly associated with depression-anxiety spectrum disorders in developed and developing countries

van Hecke, Torrance, and Smith, 2013

Tsang et al., 2009

How does pain compare to other conditions?
According to the American Academy of Pain Medicine, chronic pain is more prevalent than other significant medical conditions in the U.S.

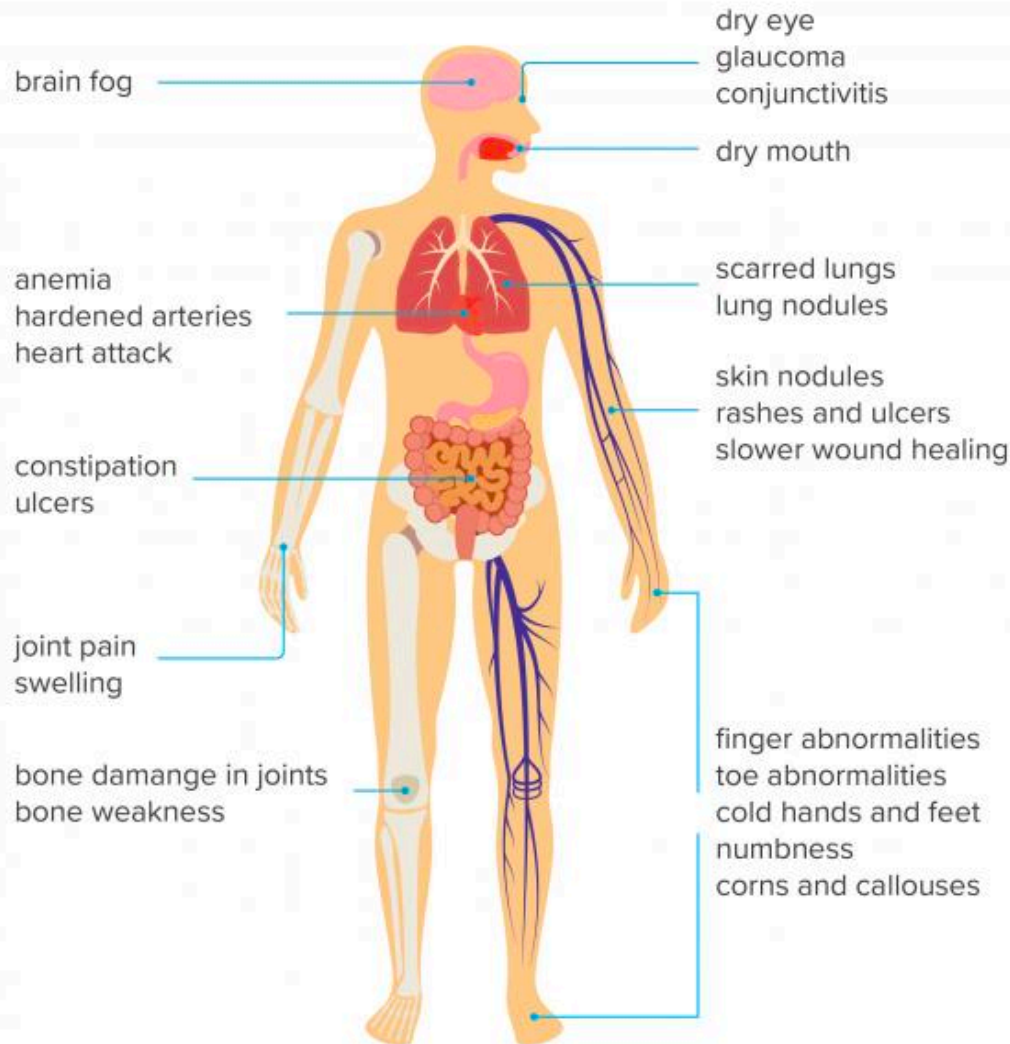
Incidence of Pain, as Compared to Major Conditions

Pain affects more Americans than diabetes, heart disease and cancer combined. The chart below depicts the number of chronic pain sufferers compared to other major health conditions.

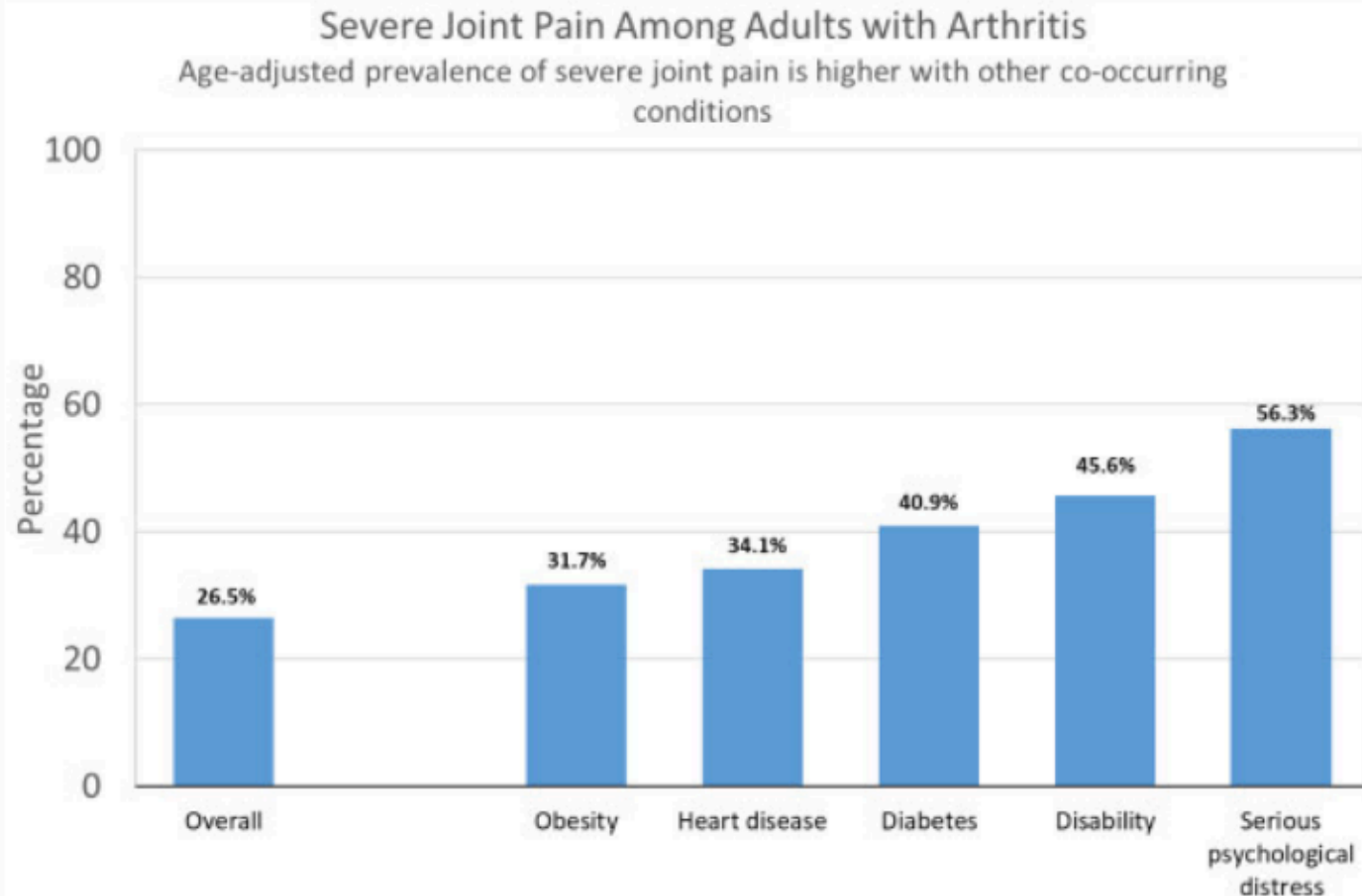
Condition	Number of Sufferers	Source
Chronic Pain	100 million Americans	Institute of Medicine of The National Academies (2)
Diabetes	25.8 million Americans (diagnosed and estimated undiagnosed)	American Diabetes Association (3)
Coronary Heart Disease (heart attack and chest pain) Stroke	16.3 million Americans 7.0 million Americans	American Heart Association (4)
Cancer	11.9 million Americans	American Cancer Society (5)

Effects on the Body

Rheumatoid Arthritis



Arthritis can be one of the most debilitating of the chronic pain conditions. It is worse in conjunction with other conditions



Source: Barbour KE, Boring M, Helmick CG, Murphy LB, Qin J. Prevalence of severe joint pain among adults with doctor-diagnosed arthritis—United States, 2002–2014. *MMWR Morb Mortal Wkly Rep.* 2016;65:1052–1056.

Chronic Back Pain

- Chronic back pain prevalence has doubled in the US over the past two decades
- Back pain (acute and chronic) rates quadrupled between 1964-1994 in England
- Most common cause or work disability



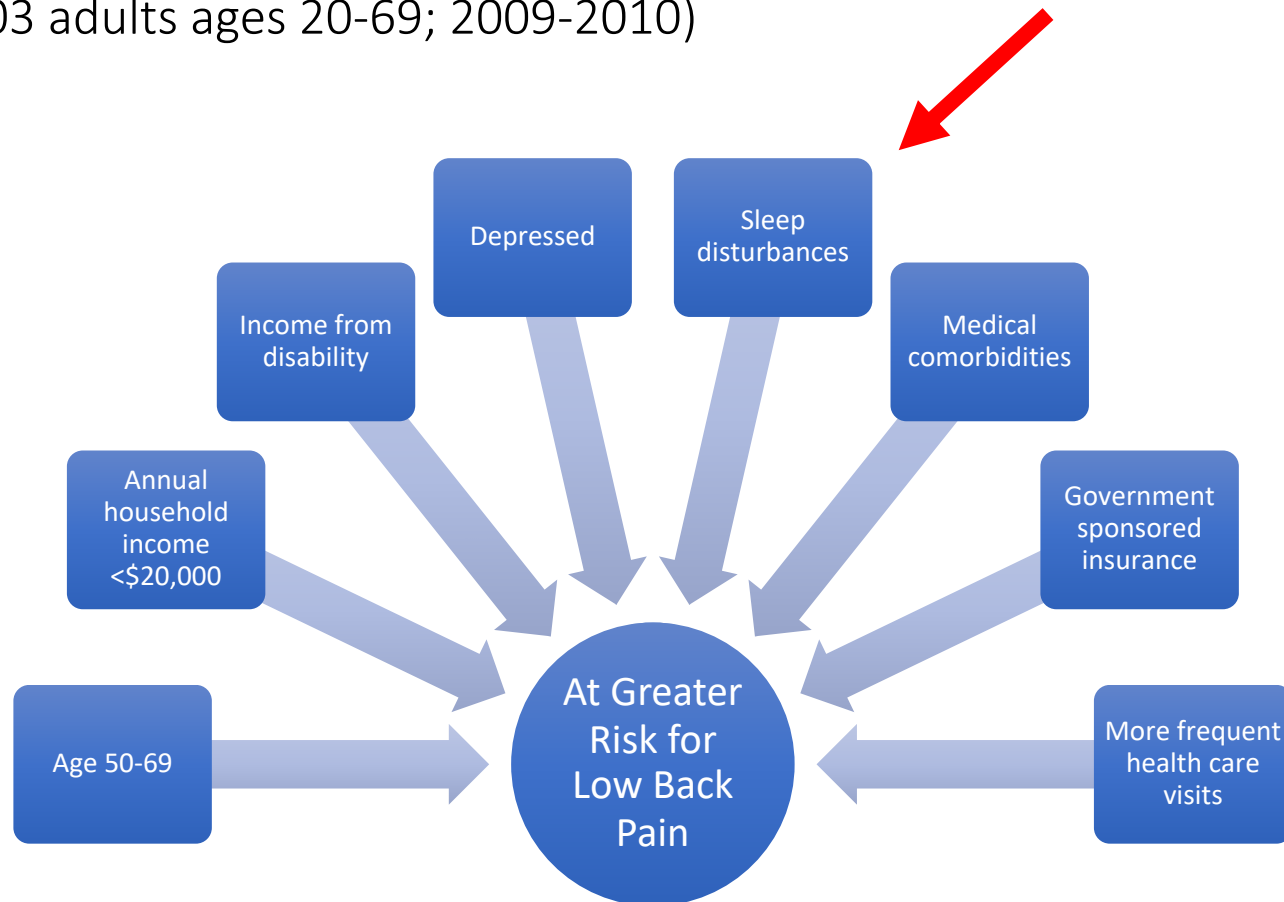
Harkness et al 2005
Freburger et al., 2009
Johannes, Le, Zhou, Johnston, & Dworkin, 2010

The Burden of Chronic Back Pain

- The leading cause of years lived with disability worldwide
- Estimated total costs of \$100–200 billion dollars annually in the US, mostly due to loss of 149 million annual work days
- Prevalence is high and increasing : 8% - 10% of adults meet criteria for impairing CBP in a given year (vs. 3.9% prevalence in 1992)
- The 3rd most burdensome disease in the US, after heart and pulmonary disease

Low Back Pain: National Health and Nutrition Examination Survey

(N=5,103 adults ages 20-69; 2009-2010)

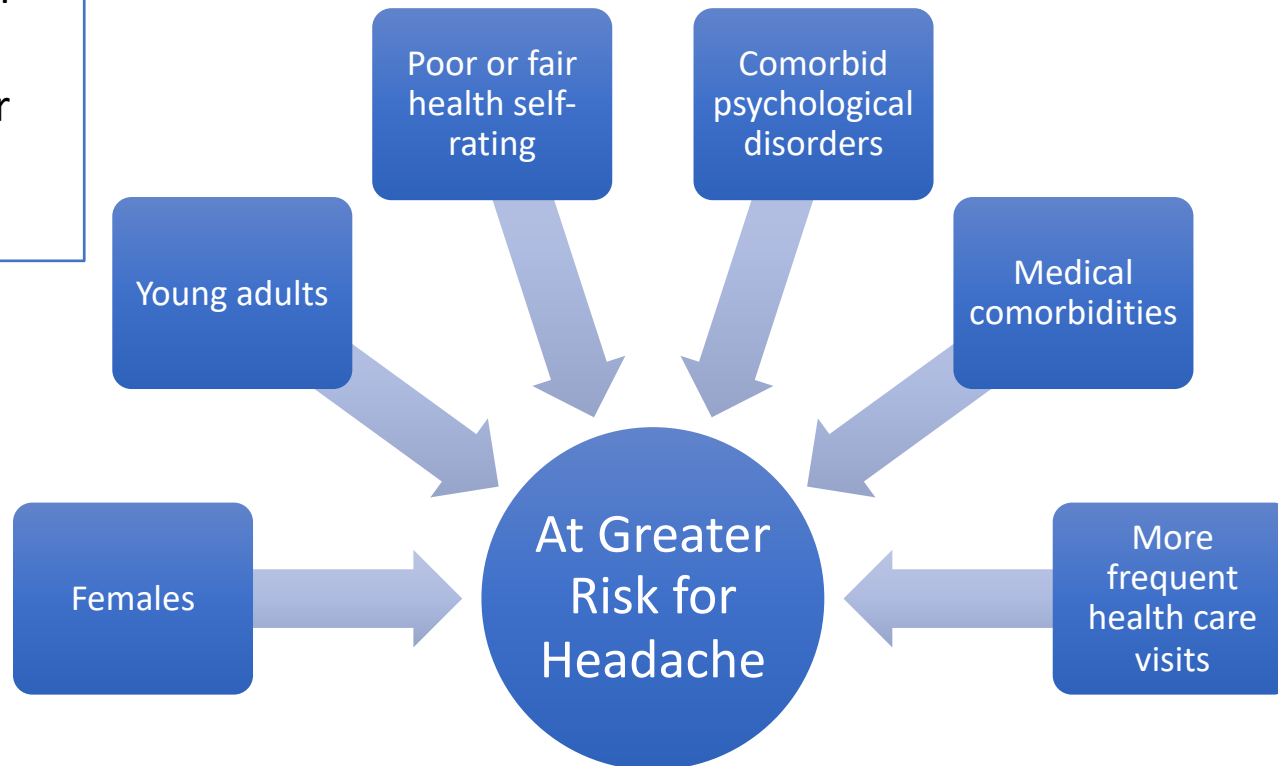


Source: Schmagel, Foley, Ibrahim. Epidemiology of chronic low back pain in US adults: Data from the 2009-2010 National Health and Nutrition Examination Survey. *Arthritis Care and Research*, 2016, 68(11).

Headache: National Health and Nutrition Examination Survey

(N=31,126 adults ages 20-69, 1999-2004)

3 month
prevalence of
severe
headaches or
migraine:
22.73%



Source: Kalaydjian & Merikangas. Physical and mental comorbidity of headache in a national representative sample of US adults. *Psychosomatic Medicine*, 2008, 70:773-780.

Chronic Nerve Pain

- Chronic nerve pain (neuropathic) happens when the nerves are compressed, damaged, or exposed to drugs which damage their protective exterior
 - Sciatica is often caused by nerve compression which triggers a shooting pain down the leg
 - Diabetic neuropathy often seen in the hands or feet.
 - Carpal tunnel syndrome is commonly associated with repetitive motion
 - Postherpetic neuralgia is pain that persists after a shingles outbreak
 - Trigeminal neuralgia is caused by injury to the trigeminal nerve of the face

Summary

- More than 100 million adults in the U.S. report some chronic pain in the past 3 months
- That number is more than the number of people who suffer from diabetes, heart disease, and cancer combined!
- 25.3 million adults in the U.S. reported **daily** pain
- Major socioeconomic costs to the nation
- Primary driver of the opioid epidemic
- The prevalence of chronic pain increases with age
- The aging population and veteran population are impacted the greatest