

Background: Chronic pain and psychological distress frequently co-occur, yet screening approaches typically emphasize pain intensity over frequency. Prior analysis of 2019 National Health Interview Survey (NHIS) data demonstrated that pain frequency independently predicts psychological outcomes and that pain-psychology relationships vary across the lifespan. This study sought to replicate these findings using 2023 NHIS data and to examine whether pain-psychology relationships changed between survey years.

Methods: Cross-sectional analysis of 29,522 adults from the 2023 NHIS, compared to 31,997 adults from the 2019 NHIS. Pain profiles were constructed from frequency (never, some days, most days, every day) and intensity (mild, moderate, severe) yielding five categories: no pain, intermittent mild, intermittent moderate-severe, frequent mild, and frequent moderate-severe. Psychological outcomes in 2023 included dysphoria, anhedonia, PHQ-2 positive screen, and GAD-2 positive screen derived from the PHQ-4. Survey-weighted quasipoisson regression estimated prevalence ratios across four age groups (emerging adults 18-29, young adults 30-44, middle adults 45-64, older adults 65+), adjusting for demographics. Sensitivity analyses controlled for BMI and chronic conditions. Robustness was assessed via Bonferroni correction and E-values.

Results: Frequent mild pain conferred psychological risk equal to or exceeding intermittent moderate-severe pain, particularly in younger adults. Among emerging adults, frequent mild pain showed higher risk than intermittent moderate-severe pain for all five outcomes, including dysphoria (RR=6.64 vs. 2.62), clinical depression (RR=7.10 vs. 4.25), and clinical anxiety (RR=6.56 vs. 3.13). This pattern attenuated with age; older adults showed comparable risk across these profiles. When analyses were restricted to untreated individuals, the frequent mild pain association strengthened rather than diminished (dysphoria RR=5.84, 95% CI: 3.00-11.37 among untreated emerging adults vs. RR=4.82 overall), ruling out treatment-seeking as an alternative explanation. Despite elevated psychological risk (25.0% dysphoria, 59.6% anxiety), only 15.0% of emerging adults with frequent mild pain received psychiatric treatment—the only pain profile where distress exceeded treatment utilization.

Conclusions: Core findings replicated: frequent mild pain carried higher psychological risk than intermittent moderate-severe pain in 81% of comparisons (13/16), and older adults demonstrated consistent resilience with relative risks 40-50% lower than younger groups. Comparison of effect sizes across survey years revealed population-level improvement, with 25 of 32 age-outcome combinations showing decreased relative risks in 2023 compared to 2019 (78%). However, 6 of 7 combinations showing increased relative risks occurred in the two youngest age groups, and these increases were concentrated in frequent moderate-severe pain rather than frequent mild pain. Young adults (30-44) showed peak vulnerability in 2023, with relative risks of 7-8 for dysphoria and anhedonia—effects that peaked in middle adults (45-64) in 2019. All frequent moderate-severe findings survived Bonferroni correction (16/16, 100%), with E-values exceeding 5 for most high-risk profiles.

Keywords: chronic pain, depression, anxiety, emerging adulthood, pain frequency, treatment utilization, NHIS