Investigating the pain severity and frequent exercise relationship in United States adults using the Medical Expenditure Panel Survey

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Background

- Pain affects 20% of United States (US) adults, while less than 50% of US adults do frequent exercise.
- Frequent exercise is beneficial for overall health, however people with pain are not always able to undertake the recommended amount of exercise.
- Little is known about the relationship between pain severity, demographic, economic, limitation, and health variables with doing frequent exercise.

Objectives

- This study aimed to investigate the relationship between pain severity and frequent exercise among US adults.

Methods

- This cross-sectional database study included US adults aged ≥18 in the Medical Expenditure Panel Survey.
- The independent variable was pain severity (extreme, quite a bit, moderate, little pain), and the dependent variable was frequent exercise (yes, no).
- Differences in demographic characteristics between groups were compared using chi-squared tests.
- The relationship between pain severity and frequent exercise was assessed using multivariable logistic regression adjusting for demographic, economic, limitation, and health variables.
- The complex survey design was maintained and weighted estimates were produced.
- Alpha=0.05 was selected a priori.

Table 1

Characteristics of the study population

	Frequent Physical Exercise: Yes % [95% CI]	Frequent Physical Exercise: No % [95% CI]
Extreme pain	0.7 [0.4, 0.9]	3.3 [2.9, 3.8]
Quite a bit of pain	3.6 [2.9, 4.2]	7.1 [6.4, 7.8]
Moderate pain	6.2 [5.5, 6.9]	8.2 [7.4, 9.0]
Little pain	22.3 [21.1, 23.6]	22.8 [21.5, 24.0]
No pain	67.2 [65.7, 68.8]	58.6 [57.0, 60.1]
Age ≥65	21.8 [20.5, 23.1]	22.7 [21.4, 24.0]
Age 40-64	40.8 [39.3, 42.4]	40.8 [39.2, 42.3]
Age 18-39	37.4 [35.7, 39.1]	36.5 [34.8, 38.2]
Male	52.3 [51.0, 53.6]	44.1 [42.8, 45.5]
Hispanic	15.0 [13.0, 17.0]	19.0 [16.6, 21.4]
White	80.9 [79.0, 82.7]	75.6 [73.5, 77.8]
Married	53.3 [51.5, 55.2]	50.3 [48.7, 51.8]
More than high school education	62.1 [60.2, 64.1]	57.7 [55.6, 59.8]
Employed	67.9 [66.3, 69.5]	62.4 [60.8, 64.1]
Low income	21.1 [19.5, 22.7]	28.7 [26.7, 30.6]
Private health coverage	71.3 [69.4, 73.2]	64.8 [63.1, 66.4]
ADL limitation	0.7 [0.5, 1.0]	2.5 [2.0, 3.0]
IADL limitation	1.8 [1.3, 2.3]	4.5 [3.8, 5.2]
Functional limitation	7.4 [6.7, 8.2]	17.2 [15.9, 18.5]
Work limitation	5.7 [4.9, 6.5]	12.7 [11.6, 13.9]
Good mental health	93.3 [92.5, 94.2]	88.0 [87.0, 89.1]
Good general health	92.7 [91.8, 93.7]	83.3 [82.2, 84.3]
Multimorbidity	38.4 [36.8, 40.0]	45.1 [43.5, 46.8]
Smoker	11.2 [10.0, 12.4]	12.7 [11.6, 13.8]
Overweight/obese	61.6 [59.8, 63.5]	71.0 [69.3, 72.7]

CI = confidence interval. ADL = activities of daily living; IADL = instrumental activities of daily living. Differences between groups were compared using chi-square tests. There were significant differences between groups for all variables except age and smoking status.

Table 2

Multivariable associations with frequent physical exercise among United States adults

	OR [95% CI]
Pain, extreme vs. none	**0.4 [0.2, 0.7]**
Pain, quite a bit vs. none	**0.7 [0.5, 0.9]**
Pain, moderate vs. none	0.8 [0.7, 1.1]
Pain, little vs. none	0.9 [0.8, 1.0]
Age, ≥65 vs. 18–39	**1.3 [1.1, 1.6]**
Age, 40–64 vs. 18–39	**1.2 [1.1, 1.4]**
Sex, male vs. female	**1.4 [1.2, 1.5]**
Hispanic, yes vs. no	**0.7 [0.6, 0.9]**
White race, yes vs. no	**1.5 [1.3, 1.8]**
Married, yes vs. no	1.0 [0.9, 1.1]
More than high school education, yes vs. no	1.0 [0.8, 1.1]
Employed, yes vs. no	1.0 [0.8, 1.1]
Low income, yes vs. no	0.9 [0.8, 1.1]
Health coverage, private vs. none	**1.3 [1.0, 1.6]**
Health coverage, public vs. none	**1.3 [1.0, 1.8]**
ADL limitation, yes vs. no	0.7 [0.4, 1.3]
IADL limitation, yes vs. no	0.9 [0.6, 1.4]
Functional limitation, yes vs. no	**0.6 [0.5, 0.7]**
Work limitation, yes vs. no	0.9 [0.7, 1.2]
Good mental health, yes vs. no	1.2 [0.9, 1.5]
Good general health, yes vs. no	**1.6 [1.3, 2.0]**
Multimorbidity, yes vs. no	0.9 [0.8, 1.0]
Smoker, yes vs. no	1.0 [0.8, 1.1]
Overweight/obese, yes vs. no	**0.7 [0.6, 0.8]**

OR= odds ratio. CI = confidence interval. ADL = activities of daily living; IADL = instrumental activities of daily living. Statistically significant results indicated in bold font.

Conclusions

- US adults who experience extreme or quite bit of pain had lower odds of reporting doing frequent exercise compared to those with no pain. Other demographic, economic, limitation, and health variables were also associated with frequent exercise and should be considered when counselling pain patients on exercise.

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