

Associations between Joblessness and Oral Anti-diabetic Medication Adherence in US Diabetic Working-age Adults

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ABSTRACT

OBJECTIVE: To assess potential associations between joblessness and oral anti-diabetic (OAD) medication adherence in US diabetic working-age adults.

STUDY DESIGN: A retrospective longitudinal panel design used pooled 2001-2007 Medical Expenditure Panel Survey (MEPS) data forming a nationally representative sample of diabetic individuals, ages 24-59 years. Pregnancy, seasonal job status, retired persons, a student designation, and those prescribed insulin were excluded. Adherence was measured using the proportion of days covered (PDC). A PDC ≥ 0.80 was classified as adherent. Descriptive statistics and multivariate regression analysis accounting for the MEPS' complex survey design were conducted.

RESULTS: There were 2256 individuals (means: age 48.3 years [SD 8.15], body mass index 31.1 [SD 0.30], Charlson Comorbidity Index 0.37 [SD 0.79]) who met study criteria. Thirty-four percent were jobless at the first interview round and 29% remained jobless all 5 interview rounds during the 2-year panel period. Reasons cited for joblessness included: waiting to start a new job (73%) and unable to work due to illness or disability (20%). Negligible proportions cited staying home to care for family members or maternity leave as reasons for joblessness. Proportionately, more individuals were nonadherent (55%, SE 0.006). Joblessness was associated with a 16% significant reduction in the PDC ($\beta -15.9$, $P < 0.001$), and a 25% less likelihood of OAD medication adherence compared with those employed (odds ratio 0.75; 95% confidence interval, 0.64-0.90, $P = 0.002$), while holding all other variables constant.

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CONCLUSIONS: The results indicate that jobless working-age individuals with diabetes were significantly less likely to adhere to OAD medication than employed individuals.

KEYWORDS: Diabetes; Employment; Job status; Joblessness; Medication adherence; Medication use

Employment offers individuals the means to generate income, and often provides benefits such as employer-sponsored insurance. As such, employment status may give additional context for health care affordability. Jobless, nondisabled, work-eligible, working-age individuals vulnerable to noninclusion in Medicare and Medicaid, those facing Consolidated Omnibus Budget Reconciliation Act (COBRA) premiums, or those uninsured, face challenging health care choices. Separate from health insurance coverage, joblessness, with its associated income loss, income poverty, and material deprivation often constrains resource availability, potentially impacting personal expenditures.¹ Personal resource reduction may influence spending, purchasing, or consumption patterns for chronic disease management, including pharmacologic intervention. However, few studies examine associations between joblessness and chronic disease in working-age individuals. Joblessness, in individuals with chronic disease, may provide additional context explaining suboptimal medication adherence.

The World Health Organization suggests that chronic disease represents 46% of the global disease burden.² Individuals with chronic disease experience health expenditures twice those without a chronic condition.³ United Nations Resolution 61/225 describes diabetes as “a chronic, debilitating, and costly disease” with devastating human, social, and economic consequences. Globally, diabetes prevalence continues to escalate, and US data report diabetes as the seventh leading cause of death, and the eighth most costly disease to treat, with 2007 total health care costs estimated at \$174 billion.⁴ Type 2 diabetes shows increased out-of-pocket medical and medication costs compared with nondiabetics.⁵ Increased medication costs, including out-of-pocket expenses, influence medication nonadherence.⁶ Diabetes medication adherence remains suboptimal, with reported overall medication nonadherence estimated as 24.8%. Average diabetes medication adherence across 23 studies was reported as 67.5% (95% confidence interval [CI], 58.5%-75.8%).⁶ Pharmacologic nonadherence shows associations with disease progression, complications, hospitalization, premature disability, and mortality.^{6,7} Jobless individuals with diabetes may face financial constraints affecting relationships between medication underuse and poor diabetic health outcomes.

Theoretical constructs suggest that contextual factors, medication regime complexity, clinical factors, and the health system influence cost-related medication underuse.⁸⁻¹¹ Moreover, studies report significant associations between increased medication cost, as well as lower net worth and medication nonuse.¹¹ Although lower net worth is associated with medication nonuse, few studies assess joblessness or unemployment in relation to medication adherence among US working-age diabetics. For working-age individuals, employment generally establishes a main source of income.

The literature about diabetes and employment spanned topics related to worker productivity, eligibility for employment, and job suitability,¹²⁻¹⁴ as well as workplace discrimination, accommodations, and safety.¹⁵ Many studies used a payer perspective to assess workplace disease management, strategic cost minimization, absenteeism, presenteeism, work disability, or health insurance premiums.¹⁶

Research assessing diabetes and unemployment examined indirect costs associated with workforce nonparticipation, or the effects of disease severity or diabetes-related complications on retirement and disability.^{17,18} This literature reported significant associations between socioeconomic status and medication adherence, with incomes \leq US \$46,000, food insufficiency, hunger, poverty, low literacy, substandard housing, and homelessness as factors in nonadherence.¹⁹ Associations between US labor force nonparticipation and medication adherence in diabetes remained unexplored.

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