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The association between nonmedical use of prescription medication status and change in health-related quality of life: Results from a Nationally Representative Survey

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ABSTRACT

Background: Nonmedical use of prescription medication (NUPM) is associated cross-sectionally with a host of medical and psychosocial consequences. Few studies, however, have examined longitudinal outcomes based on NUPM indicators. This study aimed to address this gap by examining change in health-related quality of life as a function of NUPM status.
Methods: Data are from waves 1 and 2 of the National Epidemiological Survey on Alcoholism and Related Conditions (NESARC) a household-based, nationally-representative survey of the US population. 34,653 participants who completed both NESARC waves were included in analyses. The primary outcome measure was the 12-item Short Form Health Survey (SF-12), with history of NUPM of opioids, tranquilizer/sedatives and stimulants (examined separately) at wave 1 and any NUPM between waves 1 and 2 used to group participants. Sociodemographic characteristics were used as control variables.
Results: Across medication classes, results indicated that individuals who initiated NUPM between waves (initiators) had greater declines or smaller increases on many SF-12 scales, when compared to other groups. Individuals with a history of NUPM at wave 1 but no use between waves (quitters) and never users generally had the best outcomes in terms of change in SF-12 scales, with quitters making larger gains (or smaller losses) in mental health-related quality of life. Persistent users were generally intermediate between initiators and quitters or never users.
Conclusions: These data reinforce the importance of preventing NUPM initiation and of promoting NUPM cessation, highlighting the need for greater use of NUPM-related public health interventions.

1. Introduction

The nonmedical use of prescription medications (NUPM) in the United States has been described as a public health concern (Garnier et al., 2009; Schepis and Hakes, 2013) or even an epidemic (Centers for Disease Control and Prevention, [CDC], 2012), with rates of NUPM and NUPM-related substance use disorder (SUD) having increased notably over the past 20 years (Martins et al., 2010; McCabe et al., 2007). While rates have leveled off somewhat, rates of opioid NUPM trail only those of alcohol, tobacco and marijuana (Substance Abuse and Mental Health Services Administration [SAMHSA], 2012); when combined with NUPM from other classes of medication (e.g., tranquilizers, sedatives and stimulants), the total past year prevalence of NUPM is 5.6%, which is larger than the pooled past year prevalence rates (3.9%) of cocaine, methamphetamine, heroin or any hallucinogen use (SAMHSA, 2012).

With increases in NUPM rates, rates of NUPM-related emergency department utilization, substance use treatment and overdose have increased dramatically (CDC, 2012; Manchikanti and Singh, 2008; SAMHSA, 2009, 2010). Moreover, substantial cross-sectional research has associated NUPM with serious psychosocial and neurobehavioral consequences, including psychiatric illness (Goodwin and Hasin, 2002), suicidality (Kim et al., 2012; Kuramoto et al., 2012), other substance use (Boyd et al., 2006b; Schepis and Krishnan-Sarin, 2008), poorer academic performance (McCabe et al., 2005), unemployment (Simoni-Wastila and Strickler, 2004) and poorer self-reported health (Havens et al., 2011). Longitudinal research indicates that NUPM is associated with increased incidence and recurrence of psychiatric disorders (Martins et al., 2012; Schepis and Hakes, 2011) and that psychiatric disorders may

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increase the likelihood of NUPM and NUPM-related SUD (Martins et al., 2012). Longitudinal data also indicate that certain physical conditions increase the risk of NUPM-related SUD at a 3-year follow-up (Katz et al., 2013).

Despite these initial efforts, more longitudinal work is needed to examine the processes that promote NUPM and the consequences of NUPM. To illustrate, no research has examined how NUPM course longitudinally affects health-related quality of life. Health-related quality of life is the individual's perception of his or her physical, mental and social functioning and how such functioning affects his or her well-being and daily activities (Gonzalez-Saiz et al., 2009). The evidence across substance users, with the greatest number of investigations in alcohol and opioid users, indicates that substance users have poorer health-related quality of life than non-users, with the worst health-related quality of life in those with more frequent or severe use (Gonzalez-Saiz et al., 2009; Ugochukwu et al., 2013). In turn, abstinence from substance use is associated with improvements in health-related quality of life (Best et al., 2013; Ugochukwu et al., 2013).

As noted above, NUPM increases the risk of a psychiatric diagnosis over a 3-year follow-up (Martins et al., 2012; Schepis and Hakes, 2011), but no published work has investigated the longitudinal impact of NUPM on a more continuous measure of mental health-related quality of life. While use of categorical diagnoses provides important data about NUPM-related mental health outcomes, diagnostic categorization may miss larger trends toward declining mental health-related quality of life in nonmedical users, especially if such declines are not severe enough in many to warrant a diagnosis. Examination of the longitudinal change in self-reported physical and mental health-related quality of life could provide important data on the consequences of NUPM.

1.1. Aims and hypotheses

This work aims to accomplish this goal through the use of two waves of data from the National Epidemiological Survey on Alcohol and Related Conditions (NESARC). Both waves of the NESARC contain comprehensive assessments of NUPM using opioids, tranquilizers, stimulants and sedatives and the 12-item Short Form Health Survey (SF-12), a validated measure of physical and mental health-related quality of life (Ware et al., 1996). The primary aim was to evaluate changes in SF-12 scores over the 3-year period between NESARC waves by NUPM course: never users (denied any NUPM at both waves), initiators (denied lifetime NUPM at wave 1, but endorsed NUPM between waves), quitters (endorsed past year NUPM at wave 1, but denied NUPM between waves) and persistent users (endorsed lifetime NUPM at wave 1 and between waves). Analyses were performed separately by medication group, with tranquilizers and sedatives combined in a single group; comparisons examined differences in SF-12 scale and subscale change scores between participant subgroups. Across medication class, we hypothesized that never users would have the largest gains or smallest declines in SF-12 scores over the follow-up, followed by quitters and initiators. We also hypothesized that persistent users would have the worst outcomes, as signified by the largest decreases or smallest gains on the SF-12.

2. Methods

The NESARC is a longitudinal survey funded by the National Institute on Alcohol Abuse and Alcoholism (NIAAA), with two available data waves (wave 1: 2001–2002; wave 2: 2004–2005). The NESARC aims to provide a representative sample of the US adult population for analyses of substance use behaviors and correlates. The 2000–2001 Census Supplementary Survey structured the sampling, which is described elsewhere (Grant et al., 2003b; Grant and Kaplan, 2005). The NESARC includes weighting to produce nationally representative data, and to adjust for survey design, young adult oversampling, and non-response at both wave 1 and wave 2 (among wave 1 participants). The US Census Bureau and the US Office of Management and Budget approved the NESARC protocol, and the Texas State University IRB approved this investigation.

At wave 1, 43,093 individuals participated with 39,959 eligible to participate in wave 2. Of those eligible, 34,653 consented to participate in wave 2. The wave 1 response rate was 81.2%, and the wave 2 response rate was 86.7%, with a total response rate of 70.2% (Grant et al., 2003b; Grant and Kaplan, 2005). The weighted NESARC sample is 52% female, 71% Caucasian, 12% Hispanic/Latino and 11% African-American; 13% was under 25 years of age.

2.1. Measures

2.1.1. Lifetime nonmedical use of prescription medication (NUPM). In the NESARC, NUPM is defined as prescription use "without a prescription, in greater amounts, more often, or longer than prescribed, or for a reason other than a doctor said you should use them." Lifetime NUPM and NUPM between waves 1 and 2 were assessed for four classes of medication: opioids, tranquilizers, stimulants and sedatives. Due to low base rates for sedative NUPM, similar pharmacological properties and motives for sedative and tranquilizer NUPM (Boyd et al., 2006a; Hertz and Knight, 2006), sedative and tranquilizer NUPM were pooled.

2.1.2. Frequency of NUPM. For participants who endorsed lifetime NUPM from a given medication class, follow-up questions are asked at wave 1 to determine lifetime maximum use frequency and at wave 2 to assess frequency of NUPM within the past year.

2.1.3. Substance Use Disorder (SUD) from NUPM. SUD diagnosis was obtained through the NIAAA Alcohol Use Disorder and Associated Disabilities Interview Schedule–DSM-IV Edition (AUDADIS-IV; Grant et al., 2003a, 1995). The AUDADIS-IV is a fully structured diagnostic interview that assesses symptoms of many DSM-IV (American Psychiatric Association, 2000) disorders. The AUDADIS-IV appears to have good reliability and validity in assessing SUD (Grant et al., 2003a, 1995). At wave 1, lifetime SUD from NUPM was captured, and at wave 2, SUD from NUPM during the follow-up period was assessed.

2.1.4. Axis I diagnosis. Here, Axis I psychiatric outcomes assessed by the AUDADIS-IV include two depressive disorders (MDD or dysthymia), two bipolar disorders (bipolar I or II), six anxiety disorders (panic disorder with and without agoraphobia, agoraphobia without panic, social phobia, specific phobia or generalized anxiety disorder) and pathological gambling. Disorders were assessed at wave 1, were for past year diagnosis and were included in models as a dichotomous control variable.

2.1.5. Axis II diagnosis. Seven lifetime Axis II personality disorder (PD) diagnoses assessed at wave 1 and three PDs assessed at wave 2 were included in models as a dichotomous control variable. PDs assessed at wave 1 were antisocial, avoidant, dependent, obsessive-compulsive, paranoid, schizoid, and histrionic PD, with borderline, schizotypal and narcissistic PDs assessed at wave 2. The PDs assessed at wave 1 were only assessed at that timepoint, and the PDs assessed at wave 2 were only assessed at that point; in both cases only lifetime PD diagnosis was assessed.

2.1.6. 12-item Short-Form Health Survey, version 2 (SF-12). The SF-12 is a shorter version of the 36-item Short-Form Health Survey, with comparable reliability and validity indicators (Gandek et al., 1998; Ware et al., 1996). The SF-12 contains questions about physical and mental health-related quality of life, answered on a 5-point Likert-type scale. The SF-12 produces two summary scales, the physical component and mental component scales (PCS and MCS, respectively) and eight subscales. The physical functioning, role-physical, bodily pain and general health subscales compose the larger PCS scale, and the vitality, social functioning, role-emotional and mental health subscales compose the larger MCS scale.

Sociodemographic variables assessed were age, gender, race/ethnicity, marital status, education level, household income, employment/full-time student status, and region of participant residence.

2.2. Subsamples

Analyses split participants into 4 groups for each class of medication, based on NUPM status at wave 1 and status between waves. Participants who denied NUPM at both waves were grouped as never users, while those who denied lifetime NUPM at wave 1 but endorsed NUPM between waves were described as initiators. Participants who endorsed both lifetime NUPM at wave 1 and NUPM between waves were grouped as persistent users. The only exception to the lifetime NUPM classification was in quitters, who were classified as those endorsing NUPM in the year prior to wave 1 but no NUPM between waves. Quitters were so classified to isolate the effects of NUPM cessation, as using "lifetime quitters" who engaged in lifetime NUPM with no NUPM between waves would have included many individuals who ceased NUPM many years prior. Participants with lifetime NUPM but no past year NUPM and no NUPM between NESARC waves were excluded from analyses.