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Research paper

Circumstances and contexts of heroin initiation following non-medical opioid analgesic use in New York City

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ABSTRACT

Background: As the prevalence of opioid analgesic (OA) misuse and associated harms have increased in the United States, the prevalence of heroin use and rates of unintentional overdose have concurrently risen. Research has begun to identify connections between OA misuse and heroin use, although this relationship remains under explored. The present study explores the context of heroin initiation among persons with histories of OA misuse in New York City.
Methods: In-depth interviews were conducted with 31 individuals with histories of OA misuse who initiated heroin use within the past five years. Data were collected between August 2013 and January 2015. All participants' OA misuse temporally preceded their heroin use. Interviews were coded and analyzed utilizing thematic qualitative methods.
Results: Participants ranged in age from 18 to 44 years; 25 identified as male and 30 identified as non-Hispanic white and heterosexual. All participants had stable housing at the time of interview and all were high school graduates. Participants described several key points of transition along their trajectories from OA misuse to heroin initiation: dual- to single-entity OAs; oral to intranasal OA administration; and the development of physical opioid dependence. Participants described the breaking down of heroin-related stigma across social networks as new drug use permeated social groups.
Conclusion: Several points of transition were identified in participants' trajectories from OA misuse to heroin initiation. In particular the development of physical dependence was a critical factor as existing heroin stigma was rapidly overcome in the face of opioid withdrawal. The relatively short time to heroin initiation documented among new user groups serves as an added challenge to the development of interventions.

Introduction

In the United States, rates of opioid analgesic misuse and the associated deleterious effects have been well-documented (Kenan, Mack, & Paulozzi, 2012; Manchikanti, Fellows, Ailinani, & Pampati, 2010; Paulozzi, Jones, Mack, & Rudd, 2011; Spiller, Lorenz, Bailey, & Dart, 2009). In the past several years, research has begun to explore the connections between opioid analgesic misuse and rising rates of heroin use (Cicero, Ellis, Surratt, & Kurtz, 2014; Jones, 2013). National data have shown a significant increase in past month heroin use, from 161,000 people in 2007 to 289,000 in 2013 (Substance Abuse & Mental Health Services Administration, 2014). Drug-poisoning deaths involving heroin have also risen substantially, and between 2000 and 2013, rates increased from 0.7 to 2.7 deaths per 100,000 persons (Centers for Disease Control & Prevention, 2014). In New York City, heroin-involved drug-poisoning deaths increased by 100% between 2010 and 2013, from 3.1 to 6.2 per 100,000 New Yorkers (Paone, Tuazon, Bradley O'Brien, & Nolan, 2014).

Opioid analgesics, such as oxycodone, hydrocodone, and morphine, are chemically similar to heroin. Both function as respiratory depressants that bind to opioid receptors in the brain, blocking the perception of pain and stimulating feelings of well-being, with similar associated risks of dependence and overdose (Volkow, 2014). Although the extent and nature of the relationship between opioid analgesics and heroin remains ill-defined, research has shown that among new heroin initiates, pathways into use tend to be through opioid analgesic use (Inciardi, Surratt, Cicero, & Beard, 2009; Kuehn, 2013; Lankenau et al., 2012; Levy, 2007; Mars, Bourgois, Karandinos, Montero, & Ciccarone, 2014; Peavy et al.,

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2012), a trend that has significantly increased during the past decade (Jones, 2013).

A main focus of the literature relating to heroin use trajectories has been transition from intranasal to intravenous use. Studies have identified factors associated with transitioning routes of administration including: prior substance use history (Roy, Nonn, & Haley, 2008; Fuller et al., 2002); low-educational attainment (Neaigus et al., 2001); the role of social networks (Koram et al., 2011; Sánchez, Chitwood, & Koo, 2006); market dynamics, such as price and availability (Frank & Galea, 1998); and increasing tolerance to drug effects (Bravo et al., 2003). To date, few studies have examined these specific contextual factors to understand the transition from opioid analgesics to heroin. Available research has found some similarities transitioning routes of heroin administration and the transition from opioid analgesic to heroin use, including: increasing opioid tolerance (Daniulaityte, Carlson, & Kenne, 2006; Dertadian & Maher, 2014; Mars et al., 2014; Pollini et al., 2011), market dynamics (Cicero et al., 2014; Lankenau et al., 2012; Siegal, Carlson, Kenne, & Swora, 2003), and the erosion of stigma through social networks (Mars et al., 2014). However, these studies have tended to draw from in-treatment samples (Cicero et al., 2014) or from street-based injecting drug-using populations with high rates of homelessness (Lankenau et al., 2012; Mars et al., 2014), which may not reflect the heterogeneity of new heroin initiates.

Two recent studies of hepatitis C virus (HCV) infection risk among injecting drug users who initiated prescription opioids prior to heroin included participants who were socioeconomically middle-class (Mateu-Gelabert, Guarino, Jessell, & Teper, 2015), educated beyond high school (Mateu-Gelabert et al., 2015; Pollini et al., 2011), and had lived with their parents during the previous six months (Pollini et al., 2011). Research also suggests that the demographics of people seeking treatment for heroin have shifted from older, less white, and more urban populations to younger, whiter, and less-urban populations (Cicero et al., 2014; Muhuri, Gfroerer, & Davies, 2013; Unick, Rosenblaum, Mars, & Ciccarone 2013). A similar demographic shift in rates of heroin-involved overdose deaths has also occurred. In 2000, the group with the highest rates of drug-poisoning deaths involving heroin were non-Hispanic blacks aged 45–64; however, by 2013, the highest rates of drug-poisoning deaths were among non-Hispanic whites aged 18–44 (Jones, Logan, Gladden, & Bohm, 2015).

The present study aims to augment the existing literature by examining the situational and social contexts of heroin initiation among a subset of persons who have misused opioid analgesics, all of whom had stable housing, and a majority of whom were employed or enrolled in further education. Uniquely, the data presented in this paper represent those participants who reported opioid analgesic misuse as a direct precursor to heroin initiation. By examining the details of these individuals' pathways toward heroin, we seek to identify key points along the trajectory of opioid analgesic misuse that facilitate heroin initiation.

Methods

Between August 2013 and January 2015, in-depth interviews ($n = 93$) were conducted with individuals aged 18 years and older with a history of opioid analgesic misuse. In this study, "misuse" was defined as: using opioid analgesics (OAs) for the experience or feeling they caused; taking more than prescribed; or taking OAs to self-medicate for a different injury/health condition (Blanco et al., 2007). Participants resided in New York City and were recruited through community-based harm reduction and outpatient treatment programs, chain referrals from existing participants, and venue-based street recruitment. Participants were purposefully selected (Patton, 2001) to reflect diversity with regard to age, gender, ethnicity, race, and borough of residence, as well as demographic trends in opioid analgesic misuse (Paone et al., 2014; Paulozzi et al., 2011).

This paper presents data from a sub-sample of 31 individuals who initiated heroin within the previous five years. The majority of these participants ($n = 24$) were recruited through chain referral; six were identified through community-based services; one was recruited through street intercept. While other participants in the broader sample had prior histories of heroin use, the 31 presented here are those whose OA misuse *temporally preceded* their heroin use, with no other prior opioid use. Prior to the interviews, potential participants underwent a verbal consent procedure, including a detailed review of the study protocol, the risks and benefits of participation, and the right to terminate involvement at any time. The interview protocol included a number of broad domains, including: routes of initiation into OA misuse, patterns of use and misuse, OA market dynamics, and heroin initiation. Questions were open-ended and participants were encouraged to elaborate on their experiences. Interviews were conducted in semi-private or private locations, including: participants' homes, coffee shops, interviewers' cars, public parks, and community-based services. Interviews ranged between 39 and 190 min in duration and were audio-recorded and fully transcribed for analysis. No identifying information was documented and the study was approved by the New York City Department of Health and Mental Hygiene Institutional Review Board. A Federal Certificate of Confidentiality was obtained to protect participants from identification. Participants received an honorarium of $30.

Interview transcripts were analyzed using Dedoose, a web-based data analysis software. Utilizing a thematic approach (Guest, MacQueen, & Namey, 2011), the first two authors initially read the transcripts to identify patterns and relationships. Employing an iterative, data-driven process, a preliminary code book was developed via line-by-line coding. Codes were then grouped into categories to form an initial hierarchy of themes. Emergent categories pertaining to this analysis included: initiation events, social aspects of drug use, market dynamics, and trajectories of use. Categories were then refined and sub-themes identified and classified to produce a coherent thematic landscape. Discrepancies between assigned codes were resolved by consensus. Memos were used throughout to catalogue analytic frameworks and "think through" the data (Guest et al., 2011). The data presented below describe participants' trajectory of use from opioid analgesics to heroin. All names reported in the text are pseudonyms.

Results

Sample characteristics

Participants ($n = 31$) ranged in age from 18 to 44 years (median = 22). Six identified as female and 25 as male. The majority ($n = 30$) identified as non-Hispanic white and heterosexual. Twelve participants either completed high school or had passed the tests of general educational development (GED); 15 were currently enrolled in, or had completed, some further education (i.e., trade school, college, or graduate school). At the time of interview, all had stable housing: 21 lived with their families; nine had their own home; one lived in a friend's home. Eighteen participants were employed or current students; 12 were unemployed, and one was receiving disability benefits.

The median age of first OA misuse was 16 years. The median length of time between OA misuse and heroin use was 3 years, with nine participants initiating heroin within one year. Twenty-six reported they were physically dependent on OAs prior to first using heroin, ascertained through participants' self-report of physical