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Comparisons of polydrug use at national and inner city levels in England: associations with demographic and socioeconomic factors

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ABSTRACT

Purpose: This study compares polydrug use in national and inner city samples to (1) examine patterns of use underlying different prevalence rates and (2) identify how inner city polydrug use needs targeting in ways not suggested by national research.
Methods: Latent class analyses on indicators of illicit drug use in the last year, hazardous alcohol use, and cigarette smoking were compared between the inner city 2008–2010 South East London Community Health study ($n = 1698$) and the nationally representative 2007 Adult Psychiatric Morbidity Survey in England ($n = 7403$). Multinomial logistic regressions then examined latent class solutions with demographic and socioeconomic factors.
Results: Both samples revealed three notably similar classes of polydrug users: a "high-drug" group using multiple substances; a "moderate-drug" group using cannabis, alcohol, and cigarettes; and a "low-drug" group reporting minimal alcohol and cigarette use. However, South East London Community Health reported lower risks of polydrug use for ethnic minorities but not for more educated participants.
Conclusions: Despite higher polydrug use prevalence in the inner city, latent classes of polydrug users were similar between samples. Some demographic and socioeconomic factors differed between the samples, suggesting the need for inner city services to use both local and national data for policy planning.

Introduction

Polydrug use, or recreational use of multiple illicit or licit substances simultaneously or within defined periods, is an understudied phenomenon in the general community. Research has mainly occurred in the United States [1–3] or with samples often limited to self-identified drug-using club goers [4], adolescents and university students [5,6], or users defined by individual drug misuse [7,8]. Previous research has also been limited to more prevalent drugs like alcohol, tobacco, or cannabis [9], solely to illicit drugs [10,11], or lifetime illicit substance use [7,10]. Thus, for epidemiologic research to best inform health policy, we need more research on (1) the full range of substance use patterns, especially given the high co-occurrence of illicit and licit substance use [1,12]; (2) more temporal polydrug patterns where prevalence may have a larger impact on service provision; and (3) patterns of use in community populations across age groups.

One national study examined polydrug use by applying latent class analysis (LCA) to past-year polydrug use indicators from the 1999 US National Household Survey of Drug Abuse and found three groups: (1) abstainers, (2) primarily alcohol users with low probabilities of cannabis use, and (3) alcohol-drugs users with high probabilities of alcohol and cannabis use and moderate probabilities of other illicit substance use. A national analysis of illicit substance use in the 2000 Adult Psychiatric Morbidity Survey (APMS) in Britain also identified three groups including a no-drug group and a "wide-range" group using multiple illicit substances with moderate to high probabilities; however, their "moderate-range" group reported high probabilities of using cannabis and lesser probabilities of using amphetamines, cocaine, and ecstasy [11]. Given that a recent study documented the prevalence of polydrug use in an area of London was over twice the national rate in England [13], polydrug use patterns and etiologic risk factors need to be investigated in inner cities in comparison to national surveys. Urbanicity

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may heighten both the prevalence of polydrug use as well as corresponding health and service needs in inner city areas [13,14].

The present study seeks to expand on previous research by comparing typologies of polydrug users in national and inner city samples with LCAs and descriptive comparisons of demographic and socioeconomic patterns. This research will aid the development of more targeted prevention and treatment because factors related to polydrug use are likely to differ from—and potentially confound—the research on determinants and associations of single substance use [3,15–18]. The comparison of a nationally representative sample with an inner city sample also allows for a potentially richer understanding of polydrug use patterns across the population and in groups with low frequencies in national surveys like ethnic minorities. Furthermore, few studies have elucidated how consistent polydrug use patterns are at national and inner city levels, which is important considering how often research from national data informs public health programes. It is hypothesized that the higher prevalence of polydrug use in the inner city sample will result in polydrug use typologies characterized by a wider range of substances.

Method

Samples

The inner city sample was the South East London Community Health (SELCoH) study of 1698 adults older than the age of 16 years (nb: adults in the UK are defined as older than the age of 16 years) from randomly selected private households in the London boroughs of Southwark and Lambeth [19]. Data were collected between June 2008 and December 2010, with a 52% household participation rate and a 72% participation rate within households.

The national sample came from the 2007 APMS and consisted of 7403 adults older than the age of 16 years from randomly selected private households in England for which the response rate was 57%. Details of SELCoH and APMS 2007 study designs are provided in Appendix 1 [13].

Measures

Polydrug use

Following previous operationalizations [3,11], polydrug use for both surveys was indicated by endorsement of eight illicit substances in the last year: cannabis, cocaine, ecstasy, amphetamines, tranquilizers, lysergic acid diethylamide (LSD), crack, and heroin. Hazardous drinking was indicated if a participant exceeded the recommended threshold of eight on the Alcohol Use Disorders Identification Test [20], a 10 item scale (scores ranging 0–40) of alcohol consumption and dependence in the last year. Finally, participants indicated if they smoked cigarettes "nowadays."

Demographic factors

Gender was included with age (SELCoH mean = 43.59, standard error [SE] = 0.59 and APMS mean = 46.35, SE = 0.28) categorized in 10-year blocks (16–24, 25–34, 35–44, and 45 years or older); marital status categorized as: never-married, married or cohabitating, or previously married (divorced, separated, or widowed); and ethnicity collapsed into four categories of White, Black Caribbean, Black African, or other (the Black Caribbean and African groups were combined in APMS due to low frequencies).

Socioeconomic factors

Employment status was coded as full-time, part-time, unemployed, or other (i.e., student, temporarily sick, disabled, retired, or looking after children); information was missing on individual "other" subcategories in APMS. Education was coded as no qualifications, General Certificate of Secondary Education or equivalent (year 10), General Certificate of Education Advanced Levels or equivalent (year 12), and degree level or above. Due to incongruent wording between samples and missing data, social class based on occupational role was not included. Debt was indicated by at least one source of debt in the past year, and housing tenure compared renting or living rent-free to owned outright or mortgage.

Statistical analysis

Latent class analysis

LCA was used to analyze polydrug user typologies in each sample. LCA proposes that an unobserved respondent-driven variable underlies the substance use indicators and accounts for the covariance among them; other studies have used it to identify profiles of drug and alcohol users [3,10,21,22].

LCA was conducted in MPlus software version 6 (Muthén & Muthén, Los Angeles, CA) [23]. A latent variable of "polydrug user" was regressed on 10 indicators of substance use (i.e., yes-no response to eight illicit substances, hazardous alcohol, and cigarette use) to identify subpopulations (i.e., latent "classes") of participants with probabilities of using different patterns and combinations of substances. The optimal latent class solution was chosen using the Bayesian Information Criterion (BIC) and the Lo-Mendel-Rubin likelihood ratio test (LMR-LRT). BIC values are based on a model's likelihood function relative to its number of parameters; lower scores indicate better fit and are suggested as the best information criterion statistic to use [24]. The LMR-LRT compares the specified latent class structure k with $k - 1$ classes to test for improved model fit, and additional classes are warranted until the test value reaches nonsignificance. The LCA for SELCoH was clustered by household, whereas the LCA for APMS was clustered by primary sampling units based on region and social class; weights accounting for survey response were also applied (weighting schemes are detailed in [19,25]). Past research documented a general decrease in polydrug use with age without examining patterns across cohorts [3,11], so LCAs were also examined within age groups.

Multinomial logistic regression

To profile descriptive characteristics of polydrug users, multinomial logistic regressions between most likely class memberships and demographic and socioeconomic factors were conducted in STATA 10.1 (StataCorp LP, College Station, TX) [26]. Consistent with past research, age and gender were included as confounders, but additional covariates could not be confidently included due to insufficient literature [11,13]. Because latent class memberships are based on probabilities, caution is needed when using classes as definitive outcomes in secondary regressions as SEs can be underestimated [27]. Accordingly, relative risk ratios and significance tests of 0.01 are focused on, although to aid further interpretation, 95% confidence intervals are presented and effects significant at the 0.05 level are discussed as trends.

Results

Sample characteristics

Table 1 shows descriptive statistics and polydrug use prevalence for both samples. The SELCoH sample had higher proportions of female, unemployed, highly educated, and ethnic minority participants. Illicit polydrug use prevalence was over 2.5 times greater in the SELCoH sample than in APMS, although the prevalence of hazardous alcohol use was higher in APMS.

Latent class analysis

Considering the fit statistics determining the optimal latent class solution for the SELCoH and APMS samples, the LMR-LRT value