Drug Abuse and Illicit Drug Use in Puerto Rico

ABSTRACT

Objectives. Based on an epidemiologic field survey of community households in Puerto Rico, this study estimates the frequency of illicit drug use and clinically defined drug abuse and/or dependence syndromes. Results are compared with those from surveys on the United States mainland. Suspected risk factors are studied as well, with a special focus on childhood misbehavior.

Methods. Trained lay interviewers administered a Spanish Diagnostic Interview Schedule to 912 respondents aged 17 to 68 years who were selected by multistage probability sampling of island households.

Results. An estimated 8.2% of the population had a history of illicit drug use and 1.2% qualified for a standardized lifetime diagnosis of drug abuse, dependence, or both. An estimated 18.4% of the male drug users and 7.7% of the female drug users met criteria for drug abuse and/or dependence. A history of drug use was related to the diagnoses of alcohol abuse and/or dependence and antisocial personality, but few persons who had used illicit drugs at least once in their lifetime reported a history of receiving treatment for alcohol, drug, or mental health problems.

Conclusions. The data were consistent with a suspected association between level of childhood misbehavior and occurrence of illicit drug use, even after statistical control for potentially confounding variables. (*Am J Public Health.* 1993;83:194–200)

Glorisa Canino, PhD, James C. Anthony, PhD, Daniel H. Freeman, Jr, PhD, Patrick Shrout, PhD, and Maritza Rubio-Stipec, MA

Introduction

Popular opinions and widespread beliefs about a high prevalence and risk of drug dependence among ethnic minorities are being challenged by evidence from epidemiologic field surveys conducted on the United States mainland. Epidemiologic catchment area surveys in five US communities found that the estimated prevalence of illicit drug abuse and dependence syndromes for Hispanics and for Blacks was lower or no different from estimates for non-Hispanic whites.[1] Results from the Los Angeles epidemiologic catchment area showed strong evidence of subgroup variation within the broad grouping labeled "Hispanic." Burnam and her colleagues[2] found that a history of drug abuse or dependence was five times more common among Mexican Americans born in the United States and living in Los Angeles than among Hispanics in Los Angeles who were born in Mexico. They also presented evidence that the difference could be explained by degree of acculturation into US society.

The Hispanic Health and Nutrition Examination Survey (HHANES) and later studies also have contributed to the evidence on variation within the broad group termed "Hispanic Americans." Analyses of HHANES data revealed that illicit use of marijuana, cocaine, sedatives, and inhalants was about twice as common among Hispanics born in the United States than among Hispanics born elsewhere.[3]

Ortiz and Medina-Mora compared marijuana use among Mexicans living in Mexico with use among Mexicans living in the United States and found a prevalence difference of 35%.[4] Specifically, the estimated prevalence of marijuana use was 42% for Mexicans living in the United States vs 7% for Mexicans living in Mexico. In addition, Velez and Ungemack[5] reported that the prevalence of illicit drug use was lower among adolescent Puerto Rican islanders than among adolescents of Puerto Rican heritage living on the US mainland.

Epidemiologic studies of drug abuse among Hispanic Americans have shown substantial variations among different Hispanic groups with respect to prevalence of drug use as well as types of drugs used.[6] In addition to acculturation, level of educational achievement and other indicators of social status might account for variations in prevalence of drug dependence. However, to our knowledge, analyses to test this possibility have not yet been carried out with data from the HHANES or epidemiologic catchment area surveys.

In this paper we report on the frequency of drug use and abuse in Puerto Ricans living on the island and compare these rates with rates from other surveys.

Glorisa Canino and Maritza Rubio-Stipec are with the Behavioral Sciences Research Institute, School of Medicine, University of Puerto Rico, San Juan. Maritza Rubio-Stipec is also with the Department of Economics at the University of Puerto Rico. James C. Anthony is with the Department of Mental Hygiene, The Johns Hopkins School of Hygiene and Public Health, Baltimore, Md. Daniel H. Freeman, Jr, is with the Department of Community and Family Medicine, Dartmouth Medical School, Hanover, NH. Patrick Shrout is with the Department of Psychology, New York University, New York, NY.

Requests for reprints should be sent to Glorisa Canino, PhD, Behavioral Sciences Research Institute, Medical Sciences Campus, University of Puerto Rico, PO Box 365067, San Juan, PR 00936-5067.

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We also sought evidence on risk factors for drug use in this population. Our results are from a survey of the Puerto Rico general residential population aged 17 to 68 years. The survey used a standardized assessment, by interview, of drug abuse, drug dependence, and other psychiatric syndromes and disorders. The methods were modeled after procedures used in the Epidemiologic Catchment Area[1] surveys in the United States. Previous studies on the island have documented patterns of illicit drug use in treatment samples of patients with drug addiction.[7-9] One report offered synthetic estimates for population prevalence, based on mathematical extrapolation from observed treatment data and the demographic distribution of the island residents.[10] In comparison, the present study represents the first epidemiologic field survey of illicit drug use and drug abuse and dependence syndromes in the community-dwelling population of Puerto Rico.

Of special interest in our research is the association between childhood misbehavior and risk of drug use.[11,12] Robins[13] described childhood behavior problems as a "sturdy predictor" of later drug abuse. More recent evidence has accumulated from both prospective and retrospective studies,[1,14,15] adding to the observed consistency of this suspected causal association. There also is new evidence on the potential importance of childhood misbehavior as a risk factor for intravenous drug use,[16] which gives the relationship a renewed public health significance because of the risk of human immunodeficiency virus (HIV) infection.

Methods

Data were gathered in 1987 in a multipurpose survey of Puerto Rico's general population. Along with concern about illicit drug use and drug dependence, a central aim of the survey was to collect data on the mental health effects of a disastrous flood and mudslide that had occurred on the island in 1985. Previous publications have offered detailed descriptions of the study sample and methods, mainly in the context of findings on disaster effects.[17,18]

In brief, the study population was defined as all community residents of Puerto Rico aged 17 to 68 years, excluding the homeless, vacationers, and other transients, as well as those living in prisons or other institutions without families in the community. The estimated size of this population was 1 876 000, according to the 1980 census data.

A total of 981 designated eligible respondents were selected for interview by multistage probability sampling from the study population. Immediately after sampling and informed consent procedures, 912 of those eligible agreed to be interviewed, yielding an interview response rate of 92.9%. Similar high response rates have been obtained by the investigators in other psychiatric epidemiology studies carried out in the island.[19,20] Interviewers were trained to make efforts to ensure the privacy of the interview in the household.

Data Collection

Trained interviewers administered a Spanish language version of the National Institute of Mental Health Diagnostic Interview Schedule. We had adapted this instrument from that used in epidemiological catchment area surveys conducted between 1980 and 1985. Lay interviewers asked highly structured, standardized questions about mental ill health, psychiatric symptoms, and illicit drug use and about behavior problems in childhood and adolescence. Diagnostic algorithms for nine mental disorders, including drug abuse and/or dependence syndromes, were scored by computer. The algorithms were based on the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders*, third edition.[21] Because the Diagnostic Interview Schedule retains information at the level of each reported sign, symptom, and behavior, it is possible to identify respondents with a reported history of any illicit drug use.

The psychometric properties of the Spanish version of the Diagnostic Interview Schedule, as well as the translation and adaptation process used in this research, have been reported in previous papers.[22,23] In general, the results of these studies are comparable to those published for the original English language version.

The diagnostic criteria for drug abuse require the presence of both pathological drug use and impairment in social or occupational functioning due to drug use, where "pathological drug use" typically refers to hazardous patterns of use such as daily use of the drug for a long stretch of time, episodes of drug overdose, or having been intoxicated throughout the day. The diagnostic criteria for drug dependence generally require reports of withdrawal symptoms and/or signs after stopping a period of sustained use, or perceived tolerance to perceived drug effects (e.g., needing a larger dose to achieve a stable level of drug high). For marijuana (cannabis), the criteria for dependence require the presence of tolerance and, in addition, either pathological marijuana use or impaired social or occupational functioning due to marijuana use. Implementation of these criteria in the Diagnostic Interview Schedule method has been described by Anthony and Helzer.[1]

Concordance of the Diagnostic Interview Schedule computer-generated diagnoses with independent psychiatric diagnoses has been better for the substance use disorders than for most other mental disorder categories under study.[24,25] For example, Robins et al.[24] reported a sensitivity value of 86% and a specificity value of 98% in relation to the Diagnostic Interview Schedule lifetime diagnosis for drug abuse and dependence syndromes, as compared with a separately made psychiatrist's diagnosis.

All results refer to lifetime use, abuse, or dependence. Thus, whenever we refer to drug use or drug users, we are referring to the use of drugs at least once in the respondent's lifetime. Standardized scales and interview questions to assess other characteristics of the survey respondents accompanied the Diagnostic Interview Schedule. For the purposes of this study, the most relevant characteristics were age, sex, residence in an urban or rural area, education, marital status, migrant status (i.e., whether the respondent had lived more than 1 year in the mainland United States), family history of alcohol or other drug problems (in a first-degree relative), stressful life events (as determined by an interview schedule about specific reported stressors experienced in the past year, such as loss of a job, divorce or separation, or illness), and reported use of health and mental health services.

Statistical Analysis

All survey-based prevalence estimates were weighted to account for selection probability. The weights also are post-stratified by age and sex to match the 1980 US Bureau of the Census estimated population of Puerto Rico. Estimated standard errors for the prevalence values and the tests of statistical significance were calculated with a correction for survey design effects by means of the computer program SUPERCARP.[26]

We used unweighted multiple logistic regression to study the suspected causal association between childhood misbehavior and occurrence of drug abuse and dependence syndromes. We could not retrospectively estimate misbehavior in childhood with the Diagnostic Interview

TABLE 1—Lifetime Prevalence of DIS/DSM-III Drug Abuse and/or Dependence and Illicit Drug Use, by Sex and by Age in Puerto Rico (n = 912)

	Lifetime Drug Abuse and/or Dependence in Total Population			Lifetime Drug Use			Drug Abuse and/or Dependence among Those Who Use In Their Lifetime (n = 75)	
	Unweighted Frequency	Weighted Percent	(SE)	Unweighted Frequency	Weighted Percent	(SE)	Weighted Percent	(SE)
Sex								
Male	11	2.23	(1.06)	55	12.08	(2.22)	18.44	(8.53)
Female	3	0.37	(0.36)	20	4.84	(1.50)	7.71	(2.41)
Age								
<40 y	9	1.77	(0.88)	57	11.07	(2.15)	16.02	(7.29)
40+ y	5	0.55	(0.52)	18	4.56	(1.30)	12.07	(3.94)
Total	14	1.24	(0.53)	75	8.21	(1.38)	15.05	(5.72)

Note. DIS = Diagnostic Interview Schedule; DSM-III = *Diagnostic and Statistical Manual of Mental Disorders*, 3rd ed.[21]

Schedule; instead, we used Anthony et al.'s scale of childhood misbehavior (Cronbach alpha coefficient is 0.71).[27] Survey design factors such as area of residence have been taken into account in the regression model, where the focus of analysis was on the estimation of odds ratios from the sample data and not on prevalence estimation. The need for stratification weights was tested in a separate multiple regression and did not change the conclusions.

Results

Lifetime Prevalence of Illicit Drug Use and Drug Abuse-Dependence Syndromes

Of 912 survey respondents aged 17 to 68 years, 75 persons reported a history of illicit drug use and 14 of those qualified for a lifetime diagnosis of drug abuse or dependence syndrome or both involving controlled psychoactive drugs (e.g., marijuana, cocaine, heroin). After the sample weights and post-stratification factors were applied, the prevalence estimate was 8.2% for illicit drug use and 1.2% for drug abuse or dependence (Table 1). The prevalence estimates from Puerto Rico were substantially lower than published estimates from the epidemiologic catchment area surveys conducted in five selected metropolitan areas on the United States mainland. For a history of illicit drug use, the epidemiologic catchment area estimate was 30.48% in the United States, more than three times the rate in Puerto Rico. This finding cannot be explained by differences in the age distributions across the two survey populations. Because the island sample was younger (it included no persons over age 69), and because illicit drug use is more common among 18- to 39-year-olds than among older adults, the island prevalence might be expected to be higher, not lower.

In Puerto Rico, as in the United States, the prevalence of illicit drug use and drug abuse and dependence varied by gender, but the gender differences seem to have been more substantial on the island. In Puerto Rico, an estimated 12.1% of the men had a history of illicit drug use, compared with 4.8% of the women (Table 1). Epidemiologic catchment area estimates of corresponding male and female values for illicit drug use in the United States were 36.1% and 25.37%, respectively. There was a similar pattern for the drug abuse and dependence syndromes. In Puerto Rico, an estimated 2.2% of men qualified for a lifetime diagnosis of drug abuse or dependence, vs 0.4% of the women. In the United States, the corresponding epidemiologic catchment area estimates were 7.72% and 4.78% for men and women, respectively.[1]

One explanation for the lower prevalence of drug abuse and dependence in Puerto Rico may be the lower prevalence of illicit drug use. To examine this speculation, we computed total population estimates and sex-specific estimates for the proportion of illicit drug users whose history showed that they had developed a drug abuse or dependence syndrome (Table 1). In Puerto Rico, for men and women combined, an estimated 15.1% of illicit drug users qualified for a lifetime diagnosis of drug abuse or dependence, whereas the corresponding epidemiologic catchment area estimate was 20%. For men in Puerto Rico and the United States, the estimates for this proportion were 18.4% and 21%, respectively—not too distant from one another. However, for women, the proportions were not as similar: 7.7% in Puerto Rico, 19% in the United States.[1] It appears that women in Puerto Rico who use illicit drugs are less likely to develop drug abuse or dependence syndromes.

Seeking to understand this difference, we speculated that women in the United States might expose themselves to illicit drug use more frequently, and a higher incidence of drug abuse or dependence might arise out of this more intensive drug involvement. However, among women who had used illicit drugs in their lifetime, the percentage of women with a history of daily drug use lasting for 2 weeks or more was 24.6% in Puerto Rico and 23% in the United States. Corresponding values for men in Puerto Rico and the United States were 23.5% and 31%, respectively.[1]

As noted earlier, the age distribution of Puerto Rico residents differed somewhat from that of United States mainland residents. Nonetheless, controlling for age did not affect the generally lower prevalences found on the island. In Puerto Rico, 11.1% of persons aged 17 to 40 years reported a history of illicit drug use and 1.8% were assigned a lifetime diagnosis for drug abuse or dependence (Table 1). By comparison, published epidemiologic catchment area estimates for 18- to 29-year-old Hispanics in the United States were 39.81% and 7.39% and estimates for Hispanics aged 30 to 44 years were 21.04% and 3.90%.[1]

Suspected Determinants of Illicit Drug Use

Of the internationally controlled psychoactive drugs under study, marijuana was the most commonly used drug in Puerto Rico, as in the United States mainland samples.[1,28] The estimated lifetime prevalence of marijuana use in the Puerto Rico study population was 3.3% (data not shown).

When users are defined as those who have used a drug on more than five occasions, 1.9% used cocaine, 1.9% used sedative-hypnotic drugs, 1.5% used anxiolytic drugs (minor tranquilizers), and 1.21% used heroin. Amphetamines and other controlled drugs (excluding seda-

TABLE 2—Correlates of Lifetime Prevalence Rate of Illicit Drug Use in Puerto Rico

Weighted Correlate	Lifetime Prevalence of Illicit Drug Use: No. (n = 75)	%	SE
Area of residence			
Rural	17	3.77	1.46
Urban	58	10.31	1.87
Education			
<12 y	39	9.85	2.39
12+ y	36	7.10	1.54
Marital status			
Single	30	10.34	2.35
Widowed, separated, or divorced	12	5.91	1.18
Married	33	7.77	2.06
Migrant status			
Return migrant	28	8.54	1.47
Nonmigrant	47	8.06	1.49

TABLE 3—Lifetime Prevalence Rates of Core Diagnoses and Prevalence Ratios for Total Sample and Drug Users in Puerto Rico

	Prevalence in Total Sample (n = 912)		Prevalence in Drug Users (n = 75)		
	Frequency	%	Frequency	%	Prevalence Ratios
Alcoholism	131	12.43	38	44.71	4.68
Major depression	48	6.02	5	14.19	2.68
Dysthymic disorder	74	8.49	9	.31	1.11
Antisocial personality	38	3.55	19	17.21	7.39
Panic disorder	16	1.25	2	1.90	1.58
Posttraumatic stress disorder	54	3.74	9	7.32	2.14
Generalized anxiety disorder	162	17.45	15	33.36	2.08
Any DIS diagnosis other than drug abuse or dependence	244	24.24	34	44.81	2.00

Note. DIS = Diagnostic Interview Schedule.

tives, anxiolytics, and marijuana) were reported too infrequently for separate analysis (data not shown).

We examined four potential determinants of illicit drug use (Table 2): (1) urban/rural residence (an index of drug availability and other higher risk environmental characteristics); (2) migrant status, gauged in relation to reported duration of residence on the United States mainland; (3) education (one index of social class); and (4) marital status. The large standard errors preclude identifying statistically significant differences. There is a suggestion of differences by residence and marital status, but there appear to be no differences in the estimated prevalences for education or for migrant status.

It is not at all clear that psychiatric disturbances are potent risk factors for illicit drug use. At best, the available evidence suggests modest to no influence of mental ill health on the risk of becoming an illicit drug user. To consider this question in relation to the Puerto Rico survey data, we estimated the prevalence of seven specific mental disorder categories for which diagnostic data were available. A crude index of association can be calculated as the ratio of prevalence among illicit drug users to the prevalence among all persons. As Table 3 shows, this ratio indicated a strong association involving illicit drug use and alcohol abuse or dependence (prevalence ratio = 4.68), and also involving illicit drug use and antisocial personality disorder (prevalence ratio = 7.39). The other prevalence ratios were generally modest (Table 3) and were not strongly suggestive of potent causal linkages between these psychiatric disturbances and occurrence of illicit drug use, or vice versa.

Use of General Medical and Specialty Mental Health Services

The epidemiologic catchment area surveys on the mainland suggested that a large majority of drug abuse and dependence cases had never received specialty mental health services or general medical services for treatment of drug, alcohol, or mental health problems.[1] The Puerto Rico survey indicated a similar "iceberg" phenomenon, in that very few of those who had used illicit drugs at least once in their lifetime and who met lifetime criteria for drug abuse or dependence reported receiving any treatment. Only 1 of 75 illicit drug users identified in the Puerto Rico survey reported having received specialty mental health services, and only 5 reported mental health treatment in the context of visiting a general practitioner or other general medical health care (data not shown).

Estimated Association between Childhood Misbehavior and Illicit Drug Use

As in the epidemiologic catchment area studies,[15,16] the childhood misbehavior scale was highly skewed in the Puerto Rico survey sample. A total of 30 respondents had scores in the range of four to nine points, 52 scored three points, 114 scored two points, 287 scored one point, and 417 scored zero points. As shown in Table 4, the odds of having a history of illicit drug use increased with increasing childhood misbehavior values.

When statistical adjustments for sex and age were made through logistic regression, the association between childhood misbehavior and drug use was attenuated. Nonetheless, the general pattern of association between level of childhood misbehavior and odds of illicit drug use persisted throughout this multiple regression analysis, even with statistical control of sex, age, education, area of residence (urban/rural), migrant status, stressful life events, and family history of alcohol or other drug abuse.

Discussion

We found a considerably lower prevalence of illicit drug use and drug abuse and dependence syndromes in Puerto Rico than corresponding estimates from the epidemiologic catchment area surveys conducted on the United States mainland. These findings are consistent with previous mathematical projections from treatment data[10] and from a comparison of adolescents on the island and the mainland,[5] and cannot be explained by different age distributions in the two survey populations. The prevalence of a history of drug abuse or dependence among adults in Puerto Rico (1.24%) was similar to that of Mexican-born immigrants in the Los Angeles epidemiologic catchment area (1.8%) but was much lower than the 8.0% estimate for United States–born or acculturated Mexican Americans.[2] In previous reports, we have described similarities between the prevalence of alcohol abuse and dependence and drinking patterns among residents of Puerto Rico and the preva-

TABLE 4—Estimated Strength of Association Between Level of Childhood Misbehavior and History of Illicit Drug Use, Puerto Rico, 1987

	Score = 1 vs Score = 0	Score = 2 vs Score = 0	Score = 3 vs Score = 0	Score = 4–9 vs Score = 0
Estimated odds ratio for illicit drug use	2.0 (1.40)	4.1 (1.50)	6.0 (1.50)	10.0 (1.50)
Sex only[a]	1.7 (1.40)	2.9 (1.50)	4.3 (1.60)	6.2 (1.60)
Age only[a]	1.8 (1.40)	3.6 (1.50)	5.2 (1.60)	9.0 (1.50)
Sex and age only[a]	1.5 (1.40)	1.0 (1.50)	3.7 (1.60)	5.6 (1.60)
Sex, age, education[a]	1.5 (1.40)	2.5 (1.50)	3.7 (1.60)	5.5 (1.60)
Sex, age, education, area of residence[a]	1.5 (1.40)	2.4 (1.50)	0.3 (1.60)	2.7 (1.50)
Sex, age, education, area of residence, migrant status[a]	1.5 (1.40)	2.3 (1.50)	3.4 (1.60)	4.7 (1.60)
Sex, age, education, area of residence, migrant status, level of stressful life events[a]	1.5 (1.40)	2.2 (1.50)	3.4 (1.60)	3.7 (1.60)
Sex, age, education, area of residence, migrant status, level of stressful life events, family history of alcohol or drug problems[a]	1.4 (1.40)	2.1 (1.50)	3.2 (1.60)	3.5 (1.60)

Note. Standard errors for the log odds ratios are shown in parentheses. All *P*s ≤.05.
[a]The specifically listed variables were held constant while the degree of association between level of childhood misbehavior and history of illicit drug use was estimated, where the lowest level (score = 0) is taken as the reference category against which to compare the odds for successively higher levels of childhood misbehavior.

lence of these disorders among Mexican-born Hispanic Americans. For example, we found in an earlier study that the prevalence of alcohol abuse and dependence among Puerto Ricans was almost identical to that among immigrant Mexican Americans in Los Angeles (13% vs 12.5%).[29]

Our general conclusion that Puerto Ricans have a lower rate of drug problems than the United States mainland population as a whole is sustained by comparative studies of fatal injuries and other causes of death (Puerto Rico Health Department vital statistics, 1987–1988). However, impressions based on recent criminal offenses and on rates of acquired immunodeficiency syndrome (AIDS)[30] appear to be inconsistent with our conclusion. One possible explanation has to do with a limitation of our study. Now 4 years old, our data may underestimate current rates of drug use and substance abuse and dependence. Both in the epidemiologic catchment area surveys and in Puerto Rico there is evidence for a cohort effect for substance abuse, and the past 4 years have been filled with public health and economic events that could affect current rates. However, this will remain a matter for speculation until more definitive epidemiologic trend data are available.

As in the epidemiologic catchment area surveys, very few of the identified illicit drug users reported having received treatment for alcohol, drug, or mental health problems. There are no data available on the number of unduplicated drug abuse cases in treatment in Puerto Rico, but data from the mainland indicate that the rate of Hispanic clients in drug treatment facilities per 100 000 persons was higher than that of White non-Hispanics.[31,32] This apparent contradiction between lower drug use among Hispanics and greater utilization of services is possibly related to drug use patterns.[6] Hispanics on the mainland use heroin, cocaine, and phencyclidine (PCP) as primary drugs of abuse. Use of these drugs may more frequently result in medical emergencies that necessitate help-seeking.

Consistent with evidence from other studies,[1,16] sex, age, reported history of childhood misbehavior, a history of antisocial personality disorder, and alcohol abuse or dependence were found to have generally moderate to strong associations with illicit drug use and/or drug abuse or dependence. The observed association between childhood misbehavior and illicit drug use could not be explained by confounding relationships with sex, age, education, area of residence, migrant status, level of stressful life events, or family history of problems with alcohol or other psychoactive drugs. Further, none of these variables were found to have especially strong associations with the presence of illicit drug use, though there was suggestive evidence of an association between illicit drug use and marital status: "single" was the high-prevalence subgroup, compared with married, separated/divorced/widowed.

There are several study limitations that should be taken into account before further discussion of these results. First and foremost, most of our results are based on a small number of drug users (n = 75) and an even smaller number of drug abusers (n = 14). Although this small sample size limits the statistical precision of our estimates and statistical power of our hypothesis tests, the results are generally coherent in relation to prior evidence.

A second limitation of our analysis is that none of the epidemiologic catchment area surveys on the United States mainland included a sufficient number of Puerto Rican respondents to allow direct comparison. Although the HHANES survey interviewed a significant number of Puerto Ricans, differences in the methods and instruments used for measuring drug use and abuse between that survey and ours preclude direct comparisons of the results. Future surveys of Puerto Ricans on the mainland could be coordinated with surveys in Puerto Rico to provide a more substantial basis for comparisons.

A third weakness is that the epidemiologic catchment area estimates were based on surveys in five selected metropolitan areas not intended to be representative of the entire United States. By comparison, our island survey sample was drawn to be representative of adult household residents of Puerto Rico. Another potential weakness is that the Puerto Rico survey and the epidemiologic catchment area surveys did not take into account the homeless population, in which prevalence of drug abuse may be much higher. Epidemiologic catchment area analyses have indicated that population estimates for drug abuse change very little when appropriately weighted institutional survey data are joined to household survey data. Although incarcerated residents are more likely to have histories of drug abuse, the size of the incarcerated population is small relative to the size of the household population.[1] A similar finding might be observed in coordinated surveys of homeless adults and household residents, but this issue cannot be resolved with the data available to us.

Finally, the comparisons we have made with the epidemiologic catchment area surveys are complicated by differences in study design. We have already noted that our sample was younger than

the epidemiologic catchment area sample. Contrary to the expected bias for this difference, we found a lower prevalence of drug use on the island. In addition, the epidemiologic catchment area surveys interviewed institutionalized persons, who could be expected to have higher rates of drug use and abuse, but this difference was minimized by the weighting of the epidemiologic catchment area data to correct for stratification. Lower rates in Puerto Rico are consonant with the fact that our sample is one third rural, whereas the epidemiologic catchment area is mostly urban. However, epidemiologic catchment area analyses have shown smaller urban–rural differences in prevalence of drug use and abuse than we have observed.

We considered the possibility that residents of Puerto Rico might be less likely than their counterparts on the mainland to report on drug use accurately and completely. We have no direct data relevant to this issue, but indirect data are provided by the comparable levels of agreement between Diagnostic Interview Schedule diagnoses and clinical psychiatric diagnoses.[24] Although inaccurate or incomplete reporting may have produced underestimates in this survey, we believe that associations between childhood misbehavior and illicit drug use may be less vulnerable to this potential source of error. Specifically, there was a moderate, if not strong, degree of association between childhood misbehavior and illicit drug use, even with statistical control for other self-reported characteristics such as family history of alcohol or other drug problems, stressful life events, and related variables. To the extent that respondents' reporting on these variables might depend upon response tendencies, one might surmise that these variables have been controlled in the reported relative odds estimates.

Notwithstanding these study limitations, it may be valuable to consider explanations for low prevalence rates in Puerto Rico. We already have mentioned differences in level of acculturation as a possible explanation. Nonetheless, it would seem worthwhile to consider in future research whether the apparent differences might be due to greater familism and extended kinship networks on Puerto Rico, compared with Puerto Ricans or other Hispanic Americans living on the mainland. The higher rates of family conflict, disintegration, and alienation sometimes found in the families of those with drug abuse and dependence are less common in Puerto Rico, especially compared with Hispanic-American populations in the bigger cities of the United States.[13,33,34]

It is intriguing that returning Puerto Rican migrants who had lived on the US mainland for 1 year or more were no more likely to have become involved in illicit drug use than were Puerto Ricans who did not migrate. Clearly, there is a need for more definitive studies to clarify these apparent observed differences between the prevalence of illicit drug use and drug abuse and dependence syndromes in Puerto Rico and the prevalence on the mainland, and between returned migrants and Puerto Ricans who stayed on the island or who migrated to the mainland and did not return to the island. With greater appreciation for diversity with the Hispanic-American community, it should be possible to improve our understanding of illicit drug use and drug abuse and dependence as public health problems in these important and growing segments of the American population. □

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