

Prevalence Of Cocaine And Marijuana Use Among Pregnant Women In A Military Health Care Setting

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Abstract: Background: Illicit drug use is common in the United States. The degree of substance abuse among pregnant women, its prevention, and treatment are currently matters of great concern.

Methods: We conducted a blinded cross-sectional study on the prevalence of cocaine and marijuana metabolites in the urines of an obstetric population served by a military community hospital. Ninety percent of patients screened were nonactive-duty family members.

Results: An overall illicit drug use prevalence of 1.6 percent was found. This contrasts to prevalences of 10 to 15 percent reported in civilian obstetric populations.

Conclusions: Job site drug screening of the active-duty soldier may be the reason for differences between the military and nonmilitary populations. (J Am Board Fam Pract 1991; 4:395-8.)

Substance abuse is widespread in the United States, especially among the 18- to 25-year-old age group.^{1,2} Currently, it is estimated that 50-million persons in the US have tried cocaine and that 8 million use it regularly.³ Of cocaine users, women of childbearing age make up an ever-increasing proportion.^{4,5} In addition, as of 1985 approximately 31 percent of US women in their late teens and early 20s reported marijuana use within the past year.⁶

The National Association for Perinatal Addiction Research and Education (NAPARE) surveyed 36 hospitals across the country for perinatal drug exposure. The overall prevalence of illicit drug use in the surveyed hospitals was 11 percent.⁷ Prevalence data from San Francisco General Hospital found that 9 percent of all mothers and 5 percent of all infants delivered had cocaine metabolites detected in their urines.⁸ A study at the University of California at Davis reported that approximately 11 percent of all women who gave birth had recently used cocaine.⁹

Chasnoff and colleagues¹⁰ compared prevalences of illicit drug use among pregnant women

of various ethnic and socioeconomic classes. Fifteen percent of all pregnant women tested positive for either cocaine or marijuana metabolites in their urine. The overall prevalence was independent of ethnic and socioeconomic status.

Several recent studies on illicit drug use in pregnancy^{6,11,12} show that underreporting is common when relying only on self-report. Thus, objective assessment, using urine drug screening in estimating true prevalences of illicit drug use, is important. Improved technology during the 1980s has led to the development of rapid, sensitive, and specific methods of drug testing.¹³⁻¹⁷ The enzyme multiplied immunoassay technique (EMIT) is an immunoassay technique^{14,16,17} that has been used in a number of published studies on obstetric substance abuse.^{4,6,8,10,11,18-22}

In the EMIT assay, a specific antibody recognizes the drug in question. An enzymatic catalytic reaction then occurs, the activity of which is directly related to the concentration of free drug present in the urine sample.¹⁴ According to the Maryland Drug Testing Laboratory (memorandum, Col Marshall J. Bischoff, M.D., M.C., Chief, Department of Pathology, Department of the Army, Fort Ord, CA, 18 November 1987) and others,^{17,23} there are no known drugs that cross-react with cannabinoid and cocaine metabolites, and a positive test for cannabinoid or cocaine metabolites by the EMIT is highly presumptive evidence of use of that drug.¹⁷ Only 3 to 4 percent of specimens EMIT-positive for cannabinoids^{17,23} and only 1 to 2 percent of speci-

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mens EMIT-positive for cocaine metabolites cannot be confirmed.²³

We conducted a blinded cross-sectional study on the prevalence of marijuana and cocaine metabolites in the urines of a pregnant population served by a military community hospital. These drugs were selected because their use is widespread in US society,^{1-3,6} and they can be detected relatively easily and reliably with the EMIT.^{11,17,23,24-26} We hypothesized that the obstetric population we serve has a low prevalence of illicit drug use.

Methods

Silas B. Hays Army Community Hospital (SBHACH) is a 150-bed military community hospital located at Fort Ord, California, in Monterey County. All positive urine pregnancy tests from the SBHACH laboratory between May 1989 and May 1990 were set aside unlabeled. To preserve confidentiality, the SBHACH laboratory technicians were not informed of the nature of the study. The unlabeled specimens were then sent to a different laboratory for toxicologic analysis. Patient identification information was not available except during the latter half of the study, when the specimens were labeled to show whether they came from active-duty soldiers or from nonactive-duty family members. This labeling was done to ascertain the potential impact of active-duty soldiers who are periodically screened for substance abuse. The specimens were then analyzed using the Syva EMIT immunoassay system on a Syva Autocarousel and Syva Emit Toxicology System.²³

The method of data collection used blinded (unlinked) sampling. The Centers for Disease Control and Office for Protection from Research Risks have determined that collection of information from specimens that have otherwise been obtained for routine medical purposes and that cannot be linked to identifiable persons can be considered blinded, and thus informed consent is not required.²⁷ The research protocol was submitted to and approved by the Silas B. Hays Army Community Hospital Education Committee and the Letterman Army Medical Center Research Review Committee.

A separate analysis was also performed on SBHACH obstetric demographic data and SBHACH obstetric income distribution data that

were obtained between February and July 1989 by a survey of new obstetric registrants.

Results

During this study period, there were 609 urine tests positive for pregnancy from the SBHACH laboratory. Of these 609 specimens, six were positive for marijuana metabolites and four were positive for cocaine metabolites. The overall prevalence of cocaine and marijuana metabolites in these samples was 1.6 percent (marijuana, 0.98 percent; cocaine, 0.66 percent).

The first 287 positive urine pregnancy tests were not labeled with any patient identification information. The subsequent 322 positive urine pregnancy tests had labels that indicated whether they came from an active-duty soldier or a nonactive-duty family member. Of these latter 322 specimens, 90 percent (289) came from the nonactive-duty family members, and all of the urine samples positive for either cocaine or marijuana metabolites (3 cocaine and 3 marijuana) were from the nonactive-duty family members. Thus, if the nonactive-duty family member urine samples were looked at alone, the overall prevalence of marijuana and cocaine use for this subset of the population would be 2.1 percent.

A previous survey done independently of this study (not published) showed our obstetric population was 62.4 percent white, 22.3 percent black, 7.3 percent Hispanic, and 3.7 percent Asian. A separate income level analysis also based on this previous survey showed that 54.6 percent of the families had incomes less than \$15,000 per year.

Discussion

Our results showed a low prevalence of illicit cocaine and marijuana use in our population. This finding is in line with an active-duty illicit drug-use prevalence of 2.2 percent detected by random urine drug screening of active-duty soldiers at Fort Ord. That during the time of this study no drug-exposed newborn infants were detected at our hospital either by newborn physical findings or by maternal history supports the results of this study. It can be argued that our results might be due to illicit drug-using patients seeking health care in the surrounding civilian sector; however, only a single military dependent who was believed to have used illicit drugs gave birth outside the

military system in the surrounding county during this study.

We believe that it is important to compare the results of this study with other reports from civilian studies on illicit drug use during pregnancy.⁷⁻¹⁰ Why is there a difference between the military and the civilian populations? There are some potentially relevant differences between the military and civilian communities. Families who join the military are self-selected and therefore differ from a general population of civilian families. Most recruits have a high-school diploma. There is full employment. Active-duty members have body and weight standards to which they must adhere, regular physical fitness tests, and required medical and dental examinations. In addition, the military has a drug-screening program. The available health care system provides universal access to all eligible members at minimal financial cost. These factors may translate into real differences in neonatal outcome. In a recent study, Kugler, et al.²⁸ found that the well-known gap between whites and blacks in neonatal mortality was eliminated in one large military community.

Although the importance of the above-listed variables was not analyzed in this study, we believe that screening the active-duty spouse for illicit drug use may be a major factor in the low prevalence of illicit drug use found in our population. Within the military, urine drug screening has reduced drug use dramatically among the screened population.²⁹ Although military dependents are not screened for substance abuse, it is possible that the effects of job-site screening affect home life and other family members.

The issue of drug screening in obstetric care is currently under debate.^{30,31} How do we define overall risk for illicit drug use during pregnancy? To help identify important variables, a prevalence survey among members of an employer-funded health maintenance organization with job-site screening might be helpful. Outcomes and socioeconomic characteristics could then be compared.

Innovative strategies to reduce illicit drug use in pregnancy need to be considered, especially if findings from the study by Chasnoff, et al.¹⁰ are confirmed by others. To develop these strategies, however, better prevalence and risk factor data are needed. Only by understanding which factors

place a woman at risk for substance abuse during pregnancy can we hope to find effective interventions to stem the current tragedy of illicit drug use in our obstetric populations.

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