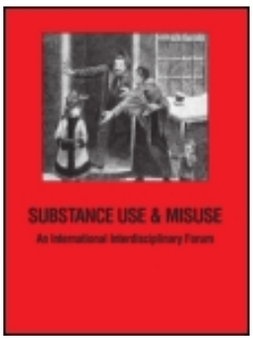

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DRUG USE AND ASSOCIATED FACTORS AMONG RURAL ADOLESCENTS IN COSTA RICA

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ABSTRACT

The objectives of this study, carried out in 1995, were to assess both licit and illicit substance use among rural male and female Costa Rican adolescents, and associated health, psychological, and psychosocial problems. A sample of 304 students from rural schools was randomly selected. The mean age for females was 14.7 years (S.D. = 1.71), and for males was 14.4 years (S.D. = 1.62). The data were collected using the Latin-American version of Drug Use Screening Inventory (DUSI). Results showed a high prevalence of past-year alcohol use for both males and females (56.6% and 47.4%, respectively), and a lower prevalence of past-year tobacco use

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(44.0% and 7.7%). There results also showed a low level of use of solvent inhalants and benzodiazepines. In terms of illicit drugs, males preferred cocaine and marijuana, while females only reported amphetamine use. An analysis of adolescent functioning showed differences among alcohol users and nonusers in behavior patterns and peer relationships. However, no significant differences were found regarding rebellion, depression, and social isolation. The implications of these results are discussed, along with the importance of enhancing prevention, as well as early detection and intervention. [Translations are provided in the International Abstracts Section of this issue.]

Key Words: Adolescents; Rural; Substance use

INTRODUCTION

Young people 10–19 years old comprise approximately 20% of the Costa Rican population. According to the 1984 census, 57.8% of the 10–24-year-old population live in rural areas.[1] However, rural living conditions frequently do not provide adequate social services for young people to continue living in these regions. The lack of opportunities to pursue an education and secure a job leads many rural adolescents to move to the city. Many are successful in their search for improved opportunities, while others find the city such an adverse environment that they end up in prostitution, delinquency, or drug "abuse."[2,3]

Research on the use of tobacco, alcohol, and other drugs among rural Costa Rican adolescents has produced a vast amount of data. A national study of 2784 young people 12–21 years old, conducted in 1990,[4] found that 13.4% had smoked tobacco, with males three times more likely than females to have done so. One-fourth of the males who had smoked first used tobacco before the age of 12, and 60% had started before the age of 16. This study also found that 48% of adolescents had consumed alcohol. Fourteen percent had already been drinking by the age of 12. The proportion increased to 32.7% by age 15, and 44.6% by age 18. Among those 15–19 years old, 13% reported serious alcohol-use-related problems.[4] The study also found that benzodiazepines (tranquilizers such as Valium and Xanax) obtained without medical prescription had been used by approximately 8% of young people in the 12–21 age range, and that significantly more females


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than males ($p < 0.001$) had used this drug. For illicit drugs, 1.2% had ever used marijuana, and 0.2% had used cocaine.[4]

Studies conducted in other Latin American countries found that substance use among rural adolescents is becoming more widespread. For example, in Panama, a study of 1300 7th grade students in one school showed that 40% of subjects reported they had tried beer by age 12. By the 12th grade, 75% of the students reported having tried beer, and 25% reported having access to marijuana, crack cocaine, and powder cocaine.[5] Though the students had access to all these drugs, not everyone used them. A nationwide survey conducted in Mexico in 1988 showed that 27.6% of the urban population in the 12–17 age range had ever used alcohol. In two other national level studies, Maya & Garcia [6] found that 53% of Mexican adolescents 14–18 years old had ever used alcohol, and Belsasso [7] found that the prevalence of alcohol use increased with age, and was more intense in urban areas.

Despite these findings, there is little information available on gender and regional differences for alcohol, tobacco, and other drug use among rural adolescents in Latin America. The objectives of this study were to assess both licit and illicit substance use among rural male and female Costa Rican adolescents, and the associated health, psychological, and psychosocial problems.

METHOD

Subjects

This study was conducted in 1995 among a randomly-selected sample of 304 adolescents enrolled in grades 7 through 11 from both public and private rural schools in Costa Rica. The sample consisted of 150 male and 154 female subjects between the ages of 12 and 18. Mean age for females was 14.47 (S.D. = 1.71), and 14.43 (S.D. = 1.62) for males.

Instrumentation

All subjects completed the Drug Use Screening Inventory (DUSI), a multidimensional self-report instrument that quantifies severity of involvement with drugs and alcohol, and commonly-associated health, psychiatric, and psychosocial problems.[8] Respondents were asked to indicate yes or no to a series of 149 items representing possible problems in 10 domain areas: (1) pattern and severity of drug- and alcohol-use, (2) behavior patterns, (3)

health status, (4) psychiatric disorders, (5) social competence, (6) family systems, (7) school performance, (8) work adjustment, (9) peer relationships, and (10) leisure-recreation. The problem density index, ranging from 0 to 100%, was determined by tabulating the proportion of problems endorsed in each domain. A global problem density score was also obtained. This score indexes the total severity of disturbances across all 10 domains assessed by the DUSI. Scales for depression, social isolation, and rebelliousness were created from the complete pool of DUSI items. A severity index for these symptoms was derived in the same way as for the domains.

Procedure

Students were informed that the survey was about the general subject of health and well-being. The survey itself was administered by members of the research team. Teachers at the school were not allowed to stay in the classroom during the administration of the survey, and only members of the research team were allowed to examine the data. Students were told that their participation was voluntary and that they did not have to answer any questions on the survey that they found objectionable. None of the students found a problem with the DUSI survey, resulting in 100% participation. Students were instructed not to write their names anywhere on the survey form, so that anonymity and confidentiality were maintained.

RESULTS

Prevalence

The most frequently used licit substances were alcohol, tobacco, solvent-inhalants, and minor tranquilizers, with alcohol the most commonly used. Lifetime prevalence of alcohol use showed equally high rates for both male and female adolescents, with approximately two-thirds reporting use (Figure 1). These rates were similar to those found in a national study of the general population, aged 12–70, from urban and rural areas.[4] Past-year prevalence of alcohol use was also high; 56.6% for males and 47.4% for females (Figure 2). The mean age for first use of alcohol in rural adolescents was 10.91 for males (S.D. = 2.4), and 11.3 for females (S.D. = 2.5).

The second most frequently used substance was tobacco, with rates reported by males approximately twice as high as by females (14% and 7.7%, respectively). Past-year prevalence rates were somewhat lower for both males and females (10.7% and 5.1%, respectively).

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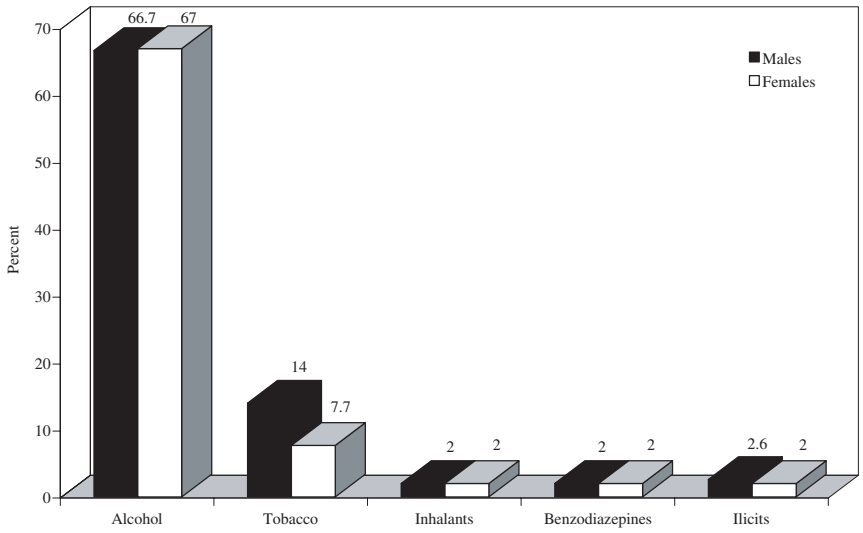

Figure 1. Lifetime substance use among rural students by sex (Costa Rica, 1995).

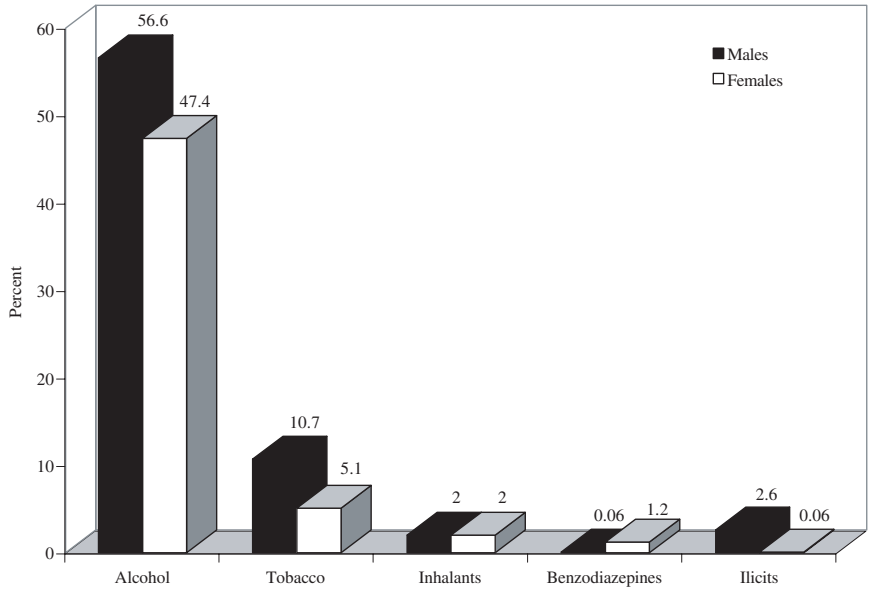

Figure 2. Past-year substance use among rural adolescents by sex (Costa Rica, 1995).

Two other legally-obtainable substances reported by rural adolescents were solvent-inhalants and benzodiazepines. For both, a 2% lifetime prevalence rate for males and females was reported. However, during the past year, females reported use of benzodiazepines more than males (1.2% vs. 0.06%). The mean age of first use of benzodiazepines was somewhat higher for females (13.3 years) than for males (12 years). For solvent-inhalants, the age of first use for males was significantly higher, 13.5 years, compared with 8 years for females.

With regard to illicit substances, lifetime prevalence for both males and females was between 2% and 3%, while past-year use reported by males (2.6%) was similar to lifetime prevalence for females (2%). Past-year use for females was much lower than their reported lifetime prevalence (0.06%). Cocaine was the illicit drug most frequently reported by males, followed by marijuana. Among males, the mean age of first use was 16 years for cocaine (S.D. = 1.18), and 17 years for marijuana (S.D. = 1.6). In addition, females reported using only amphetamines, not cocaine or marijuana. The mean age of first use of amphetamines for females was 12.5 years (S.D. = 0.71).

Severity Index (S.I.)

Using the DUSI, it was also possible to make a comprehensive evaluation of personal functioning. This was done to investigate the effect of drug use on personal functioning, based on the 10 domains assessed by the DUSI. Since alcohol was the most frequently used drug, a comparison was made between students who reported use of alcohol during the past year and those who did not. The results showed differences in the general functioning of these two groups for both males and females (Table 1). For males, those who reported use of alcohol in the past year manifested more problems.

For example, there were significant differences between male alcohol users and nonusers on the severity indices for both behavioral patterns (42.2 for users; 31.5 for nonusers), and peer relationships (27.2 for users; 18.8 for nonusers) (Table 1). The differences between the two groups for both males and females on the index for peer relationships was not significant, although, for both genders, those who had used alcohol in the past year had higher index scores than those who had not (males: 32.8 for users vs. 28.2 for nonusers; females: 23.8 for users vs. 19.5 for nonusers).

For females, the indices for the domains of family system and leisure/recreation were also higher for past-year consumers of alcohol (family systems 24.1 vs. 17.3; recreation/leisure 35.1 vs. 27.2) than for nonusers. The results also indicate that among females who reported alcohol use,

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Table 1. Severity Indices for Rural Students in Each Domain of the DUSI, by Sex (Costa Rica, 1995)

	Males			Females		
Problem	Used	Did Not Use	*p*	Used	Did Not Use	*p*
Behavioral patterns	42.2	31.5	<0.01	34.8	34.0	n.s.
Health status	28.0	23.7	n.s.	26.0	25.0	n.s.
Emotional aspects	32.8	28.2	n.s.	35.5	31.1	n.s.
Social competency	24.9	26.5	n.s.	28.6	24.1	n.s.
Family systems	23.8	21.8	n.s.	24.1	17.3	<0.01
School adjustment	31.4	18.9	n.s.	21.2	17.8	n.s.
Work	18.3	15.0	n.s.	13.3	10.2	<0.01
Peer relationship	27.2	18.8	<0.01	23.8	19.5	<0.01
Leisure/recreation	30.9	27.5	n.s.	35.1	27.2	<0.01
Substance abuse	15.8	13.3	n.s.	11.7	10.0	n.s.

Table 2. Severity Indices of Depression, Rebelliousness and Isolation for Rural Students That Use and Do Not Use Alcohol (Costa Rica, 1995)

	Male			Female		
Problem	Used	Did Not Use	*p*	Used	Did Not Use	*p*
Depression	43.2	36.3	n.s.	47.3	39.7	n.s.
Rebelliousness	49.2	38.4	<0.01	32.2	33.8	n.s.
Isolation	23.6	25.0	n.s.	27.4	24.8	n.s.

the social competence index increased somewhat (indicating problems with social competency). Among males, peer relationships were more affected by alcohol use, with use being associated with more dysfunctional peer relationships.

In addition to the disturbance evaluation in each domain, analysis of symptoms of depression, rebelliousness, and social isolation was performed in order to determine their relationship with alcohol use (Figure 2). An empirical scale using the items related to these three symptoms was created by dividing the number of positive answers by the total number of items. Table 2 shows the severity index for depression, rebelliousness, and social isolation for past-year alcohol users and nonusers by gender.

As a general trend, lower indices of the three symptoms were found in nonusers compared with users. Observation of the data by gender also

showed differences between males and females. For example, an especially strong association was found between rebelliousness and alcohol use for males, but not for females. The highest association for females was found between depression and alcohol use. Although differences between users and nonusers did not reach significance, these differences suggest the need to conduct additional research in order to examine the relationship between these symptoms and alcohol use, and how they may differ by gender.

DISCUSSION

This study provides empirical evidence of the use of both licit and illicit drugs by rural Costa Rican adolescents. Similar to other studies, it was found that alcohol and tobacco were the most frequently used drugs. It is worth emphasizing that this study suggests that the gap reported in earlier studies[9] between male and female alcohol use has disappeared. Currently, a similar proportion of male and female adolescents had ever tried alcohol in rural Costa Rica. The same results have been found in urban areas.[10] This means that Costa Rican adolescents are at risk of increasing alcohol use and suffering the consequences. Further, it is of note that those adolescents who had tried alcohol did so at a very early age.

This study focused on factors associated with drug use and "abuse." It did not pretend to determine a cause–effect relationship among these factors and the consumption of both licit and illicit drugs by rural Costa Rican youth. The authors can only speculate on what is happening, and suggest that additional research is needed in order to examine the complex, dynamic relationship between cause and effect. Having said this, we recommend research that can test the links between substance use and critical issues affecting rural Costa Rica. One such issue is dropping out of school. In Costa Rica, a recent estimate placed the dropout rate from high school among rural adolescents at 48%.[11] This same report identified as another possible cause the high unemployment in rural Costa Rica, caused in part by the mechanization of agriculture and resulting displacement of labor. Coupled with high unemployment is the lack of vocational education opportunities for rural Costa Rican youth. Rural schools are mostly academic and not specifically geared toward job training.[12] Finally, few sport and recreational opportunities are provided through schools and communities in rural Costa Rica.[12]

One contemporary image of adolescents in Costa Rican society [13,14] is that there is widespread use of illicit substances or hard drugs—that is, drugs

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other than tobacco and alcohol. However, this study does not confirm that image. Among rural adolescents, illicit substance use was relatively rare, and the mean age of first use was higher among rural adolescents than has been reported among urban adolescents.[15] The relatively higher proportion of males than females who have used illicit substances suggests that research should address factors that may make males more likely to use illicit substances, and females less likely.

Benzodiazepines have been considered a substance-use problem in Costa Rica since 1990, because of the high levels of prescription use and their addictive capacity.[13,16–18] Although the prevalence of benzodiazepine use among rural adolescents is not very high, it is important, considering the neuropsychological immaturity of this population. The use of this substance as a way to cope with stress is a high-risk behavior, especially for adolescents, and should be considered a health problem. The first steps toward drug addiction can come with the use of chemical substances to reduce stress, especially among young people. In addition, consumption of psychoactive substances limits the capacity of individuals to create their own mechanisms to adjust to stress, without mentioning the consequences that this consumption may have because of the neuropsychobiological immaturity of adolescents.[16] The results of this study suggest that it is important to train health workers and the general population about the dangers of inappropriate benzodiazapine use.

Social tolerance of alcohol use in Costa Rica may have caused society to overlook the magnitude and consequences of adolescent alcohol use.[4,13,19] The recent increasing use of alcohol among adolescents, however, has stimulated an increased interest in evaluating alcohol's impact on the well-being of youth. The results of this study indicate that alcohol use is associated with disturbances in adolescent functioning, and that young males and females may be affected by alcohol use in different ways. These findings can be used to guide the design of appropriate prevention education programs, as well as early detection and intervention programs for alcohol abusers.

Inhalant use, such as solvents, was found to be fairly low among rural adolescents. However, there is always the danger that inhalant use can quickly rise to epidemic levels because inhalants are relatively easy for young people to acquire, either in their own homes or at a store. Information about how to use inhalants to get high can potentially spread from other societies where their use is much greater. Public health workers and educators should be made more aware of the potential dangers of inhalants, and taught to recognize symptoms of inhalant use.

The results of this study are limited to rural adolescents attending school. As a result, these students may experience a greater posited "protec-

tion'' against substance use through stronger social support systems.[20] Adolescents who are not in the school system may lack information about substance use and its consequences. Therefore, it is important that future studies also include young people not in school in order to devise ways of meeting their needs.

In conclusion, we found that there is a certain segment of young people living in rural regions of Costa Rica who are using drugs. Use of drugs affects all aspects of a young person's life [16], but may have a greater affect (and the potential to increase) in rural areas because of high rates of dropping out, high unemployment, lack of job training, and lack of sport and recreational opportunities. In addition, services and educational programs to deal with aspects of drug use and misuse are sparse. Government policy has not recognized the potential problem that exists. We highly recommend that an intensive program of research and action focused specifically on rural Costa Rica become a key element in the country's national health agenda. Policies that increase educational, job, and sport/recreational opportunities for rural areas of Costa Rica must be adopted.

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Federico Uglade, M.S., is the statistician scientist of the research department at the National Institute of Alcoholism and Drug Dependence in Costa Rica. He participated in the national study on drug ''abuse'' done in 1995 and in the projects on drug ''abuse'' surveillance in hospitals and prisons. The focus of his work has been the epidemiology of drug ''abuse'' in adolescents and in the general population. He also supports the research work done in other departments of the Institute and collaborates with drug ''abuse'' research at the University of Costa Rica.

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